CONSUMERS ENERGY COMPANY
RESPONSE TO 104(e) QUESTIONS
SUPLEMENTAL RESPONSE ONE
FORMER PITCHER STREET FACILITY
(PRIOR MANUFACTURED GAS PLANT)

J.P.Dickey

EPA Region 5 Records Ctr.
368945

INFORMATION REQUESTS

1. Identify all persons consulted in the preparation of your responses to these Information Requests.

   John P. Dickey, Attorney
   Ronald L. Fobes, Environmental Department
   Margaret J. Kaiser, Corporate Records
   Matthew D. Morrissey, Environmental Department
   Robert G Neumann, Environmental Department
   Ward J. Wilson, Environmental Department
   Patrick A. Zombo, Environmental Department
   Some documents were obtained from Pfizer, Inc., (formerly The Upjohn Company), Kalamazoo, MI.

   All persons consulted can be reached through John P. Dickey, Esq., One Energy Plaza, Jackson, Michigan 49201, Phone (517) 788-1846, Fax (517) 788-2543
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2. Identify all documents consulted, examined, or referred to in the preparation of your responses to these Information Requests, and provide copies of all such documents. If, in lieu of or along with a textual response to any specific Request, you refer to a document that you believe contains information responsive to that Request, you must identify the specific location (page number, paragraph number) in the document where responsive information can be located.

   See General Objections. .

3. If you have reason to believe that there may be any person able to provide a more detailed or complete response to any Information Request, or who may be able to provide additional responsive documents, identify any and all such persons.

   Pfizer, Inc. may have additional documents concerning the current uses of the property, as well as wastes generated from its operations on the site. We believe we have provided the documents relevant to Consumers Energy's use of the site as a Manufactured Gas Plant and other activities on the site.

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4. Identify and generally describe each Consumers Energy facility at or near the Site, as that term is defined in Attachment 3 (Definitions). For each Consumers Energy facility, provide:

Former Pitcher Street Facility – Former Manufactured Gas Plant

a. the address of the facility;

Generally bounded by Pitcher Street, vacated Spring Street and Portage Street in Kalamazoo, Michigan, although a number of lots bordering on Portage Street and Spring Street were never part of the Consumers Energy property. After closure of the MGP, portions of the site were used as a service center for natural gas and electric utility services for the Kalamazoo area. One small building was also used as a transformer repair shop for some years.

b. past and present EPA ID numbers, RCRA numbers and NPDES numbers for the facility; and

Past – unknown

Present – EPA ID Number for wastes related to MGP investigations:
MIR000042648

b. the current owner of the facility

Most of the facility is owned by Pfizer, Inc., a Delaware Corporation
A small area is owned by Consumers Energy Company
A small area is owned by the City of Kalamazoo

See General Objections.

5. Identify all prior owners and operators of each facility, and their dates of ownership and/or operation.

Prior ownership of the land is extremely complex, involving numerous parcels, each with its own history. The primary owners from the Manufactured Gas Plant times are

Kalamazoo Gas Light Company	1856-1899
Kalamazoo Gas Company	1899-1917
Michigan Light Company	1917-1922
Consumers Energy Company	1922-1965

The Upjohn Company purchased most of the property in 1965

It resold part of the property to Desnoyer Chevrolet, which had an auto show room and repair facilities on the site for some years.

Upjohn subsequently repurchased that property from Desnoyer Chevrolet

The gas plant gradually expanded on the premises.

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For some years the property to the southeast (generally across Lovell Street today) was owned by a series of companies manufacturing buggy springs and parts and then auto springs and parts, before the land was acquired by Consumers Energy for MGP expansion.

6. Provide copies of all local, state, and federal environmental permits ever granted for each facility or any part thereof (e.g., RCRA permits, NPDES permits, etc).

   Unknown for Consumers Energy. Pfizer, Inc. may have permits related to the power plant and perhaps other operations. Consumers Energy does not have copies.

7. For each facility, identify and describe all types of monitoring reports, monitoring data, and documentation sent to or received by federal or state regulatory authorities regarding any materials containing hazardous substances used, generated, stored, treated or disposed at or from the facility.

   See Exhibit 1, especially Page 2
   Exhibit 2
   Exhibit 3 Especially page 14
   Exhibit 4 Especially Volume I, page 38, conclusions
   And Volume II Tables 2 through 8 – Soil and Groundwater Analytical Results

8. Identify and describe the nature of all past and current operations and production processes at each facility. Identify, if available, all current and previous SIC codes associated with each facility.

   From 1856 to 1943 the site was primarily a manufactured gas plant, SIC 4925. Thereafter, most of the site was used as a natural gas and electric utility service center and office, SIC 493 until some time before the property was sold to The Upjohn Company in 1965. A small building on the eastern side was used as a transformer repair shop for some years.

9. Identify each product produced at the facility. Further identify the mass quantity of each product produced on an annual basis.

   While Consumer Energy or its predecessors owned the site, the principal product from the site was manufactured gas, until natural gas began to be delivered to Kalamazoo in 1943. Numerous byproducts are believed to have been sold from the gas manufacturing process, principal among them coal tar and coke. No production activities are known to have occurred under Consumers Energy ownership thereafter. Mass quantities are not available.

   Pfizer has had a coal-fired power plant on the property since 1973, producing electricity and steam.

10. Identify and describe any and all activities or efforts to take production facilities out of operation, and include the dates of each such activity or effort.

Coal gasification ceased in 1943
Coal gasification units were retired in 1956
Coal gas holders were retired in 1958

11. For each facility, identify and provide any data, estimates, analyses or other information regarding any material used, treated, stored or disposed that contained or may have contained PCBs. To the extent available, provide all such data, estimates, analyses or other information on an annual basis.

We have no specific information on PCB content of any materials used at the site. We have no information that PCB would have been used in connection with the coal gasification process, which was the Company's primary site use.

We have no information that any PCB was treated, stored or disposed of at the site, except for temporary storage of transformers at the transformer repair shop, which occupied a small part of the premises at one time. No records were kept of PCB content of transformers handled at the site. Based on sampling done in the 1980's the Company estimates that about 1 percent of its older distribution transformers contained 500 ppm of more of PCB and that about 12 percent were PCB-contaminated (50 to 499 ppm of PCB). Used transformer oil was generally either reused by the Company or sold, rather than being disposed of.

12. For each facility, identify any data, estimates, analyses or other information regarding the concentration of PCBs in any material used, treated, stored or disposed there. To the extent available, provide all such data, estimates, analyses or other information on an annual basis.

See response to question 11.

13. To the extent not already provided in response to Request #11, provide the following information:

a. the type and quantity, on an annual basis, of any oils or other lubricants used, treated, stored or disposed at each facility that are known or suspected to have contained PCBs;

Unknown.

b. the number, handling and disposition of all transformers and conductors at each facility; and

Unknown.

c. data, analysis and other information regarding leaks, discharges or other releases from any transformer, conductor or other equipment using oils or lubricants at each facility.

Unknown.

14. To the extent not already provided in response to Request #12, identify any data, estimates, analyses or other information regarding the concentration of PCBs in the materials identified in your response to Request #13.

See response to question 11 and question 39.

15. Describe the procedures used by you or anyone on your behalf to test PCB concentrations in the materials identified in your response to Requests #11 and #13, above. Include in your response test methods and dates.

See responses to question 11 and 39.

16. Describe the procedures followed by you, or anyone on your behalf, to prevent, mitigate or address the release or threat of release of any material identified in your response to Requests #11 and #13, above.

See principal response to this question provided originally

17. Provide a figure delineating the groundwater flow direction on your property.

See Exhibit MGP-13, Figure No. 2

18. Identify the depth(s) to groundwater at your property.

See Exhibit MGP-13, Table I. Groundwater table varies from approximately 10.4 feet to 3.0 feet below grade from west to east.

19. For each production process at each facility, identify and describe each waste stream from its creation to final disposition.

Waste streams are believed to have been typical of those produced by manufactured gas plants. We do not have data on how the waste streams were managed. It is apparent that at least some tarry substances were spilled to the ground at some time during the period from 1856 to the closing of the MGP facility. However, tar was also a product which was sold, as were numerous other byproducts.

The office facilities would have had typical office waste.

The transformer repair shop would have disposed of some transformers and parts by sale. See response to Question 11 with respect to oil.

20. For each facility, identify all past and present waste units (e.g., underground storage tanks, above ground storage tanks, waste piles, landfills, surface impoundments, lagoons, dry wells, septic systems, floor drains, ponds, pits, machine pits, container storage areas). For each such waste unit identified, provide the following information:

a. The location of all past and present waste units whether currently in operation or not.

See Exhibit MGP-15 and Exhibit MGP-16 for the location of former MGP tanks both underground and aboveground, floor drains, pits, and container storage. No waste piles, landfills, surface impoundments, lagoons or drywells are known.

The Pfizer power plant also has many of the same types of facilities, however, the details are not known to Consumers Energy Company.

b. The type of unit (e.g., underground storage tank, lagoon, dry well, etc).

See exhibits cited above

c. The dates that the unit was in use.

Exact beginning and end dates are not known in general.

d. The purpose of past and/or present usage (e.g., storage, spill containment, waste disposal).

As indicated in drawings.

e. The quantity and type(s) of materials (e.g., manufacturing materials, wastes, hazardous substances, pollutants and contaminants) located in each unit.

Generally unknown, except as indicated in drawings.

f. If the unit is no longer in use, describe how was such unit closed, and what actions were taken to prevent or address potential or actual releases of waste constituents from the unit(s). Include all analytical data from such closure.

Unknown.

21. For each facility, identify any data, estimates, analyses or other information about the presence of PCBs in each waste stream created. To the extent available, provide such information on an annual basis.

With the exception of the transformer repair shop, we have no information that PCB was contained in any waste stream generated at the site. See response to Question 11.

22. For each facility, identify any data, estimates, analyses or other information about the concentration of PCBs in each waste stream created. To the extent available, provide such information on an annual basis.

Unknown. See response to question 21.

23. For each facility, describe the procedures used by you, your predecessor(s), or anyone on behalf of you or a predecessor, to test the PCB concentration in each waste produced, stored, treated or disposed at that facility. Include in your response test methods, media tested, and dates.

Unknown. See response to question 11.

24. For each facility, identify each off-Site location at which wastes that contained or potentially contained PCBs were disposed. Further identify the dates of each such off-Site disposal, and the nature, quantity and PCB concentration of any such wastes.

Unknown for Consumers Energy Company. See response to Question 39 with respect to disposals by the Upjohn Company.

25. For each facility, and for each waste produced, stored, treated or disposed at that facility:

a. identify the PCB concentration of any waste;

Not available. See response to question 11.

b. if the waste contained detectable concentration of PCBs, describe each occasion on which a release of such waste occurred or threatened to occur; and

Not available. See response to question 11.

c. describe the procedures and measures taken by you, or anyone on your behalf, to prevent, mitigate or address the release or threat of release of PCBs or other hazardous materials.

Not available for manufactured gas plant operations. See the response to question 16 for additional information.

26. For each release described in response to Request #25 above, describe the quantity of PCB-contaminated wastes that were released or threatened to be released, and state whether any PCBs contained in the wastes contributed to the presence, or threatened to contribute to the presence, of PCBs in the Kalamazoo River.

No known releases of PCB while the property was owned by Consumers Energy Company. Minute quantities of PCB have been detected in a few soil samples at the site.

The Company has not located any releases confirmed to have contributed to the presence of PCB in the Kalamazoo River. The Company objects to the phrases "threatened to be released" and "threatened to contribute" as being vague and ambiguous.

27. For each facility, identify any data, estimates, analyses or other information about the history of flooding, or any other infiltration of water, from the Kalamazoo River.

Unknown.

28. To the extent not provided in your response to Request #19, describe each wastewater stream, waste oil stream, and wastewater/waste oil mixture stream at each facility, from

its creation in the production process to final discharge point. In your response include a complete description of the fate of any wastewater stream, waste oil stream, and wastewater/waste oil mixture stream produced at each facility (e.g., on-site treatment, discharge to a POTW, discharge to a storm sewer outfall, direct discharge to the Kalamazoo River).

Such details are generally not available. See responses to questions 11 and 19, above.

29. To the extent not provided in response to Requests #19 and #28, identify the quantity of all (a) wastewater, (b) waste oil, and (c) wastewater/waste oil mixture produced, on a monthly basis, from each production process at each facility.

Not available.

30. To the extent not provided in response to Requests #21 and #22, identify any data, estimates, analyses or other information about the presence and/or concentration of PCBs in the wastewater, waste oil and wastewater/waste oil mixture produced from each production process at each facility. To the extent available, provide such information on a monthly basis.

Not available.

31. For each facility, identify any data, estimates, analyses or other information regarding the effectiveness of the treatment system(s) at that facility, if any, to remove PCBs from each wastewater stream, waste oil stream and wastewater/waste oil mixture stream.

No PCB treatment facilities were identified.

32. Identify any data, estimates, analyses or other information regarding procedures and measures taken by you, or by anyone on your behalf, to prevent, mitigate or address the release or threat of release of PCBs from wastewater, waste oils, or wastewater/waste oil mixtures to the Kalamazoo River.

See the response to question 16.

33. For any POTW identified in response to Request #28, provide, for each facility and on a monthly basis, all information regarding the amount of wastewater, waste oil and wastewater/waste oil mixture discharged to a POTW, the concentration of PCBs in the wastewater, waste oil and wastewater/waste oil mixtures discharged to the POTW from that facility and, to the extent such information is available, the PCB concentration in the effluent from the POTW.

The Company has no information about PCB concentration in any waste going to any POTW from the subject facility or any effluent from any POTW in the Kalamazoo area..

34. For each facility, identify each pipe, conduit, storm sewer, sewer line or other outfall that, directly or indirectly, terminates in the Kalamazoo River or its tributaries, past or present, into which treated, untreated or bypassed wastewater, waste oil, or any other

waste (including wastewater/waste oil mixtures), from that facility was discharged. Include a figure identifying the source and location of each pipe, conduit, storm sewer, sewer line or other outfall.

See exhibit MGP 15 for past locations – the drawing indicates most went to City Sewer. The MGP had some drains to Portage Creek during its early years of operations (starting in 1857). However, there is no reason to believe that PCB was in use in the MGP facility at those times, or that any would have gone from the MGP to the Creek. The MGP ceased operations in 1943.

See exhibit MGP 13, Figure No. 1, for current discharge locations. The drawing generally indicates storm sewer or sanitary sewer locations.

35. For each pipe, conduit, storm sewer, sewer line or other outfall identified in your response to Request #34, identify dates of use and each outfall's source at the facility. Further provide, on a monthly basis, the volume of wastewater, waste oil or other waste (including wastewater/waste oil mixtures) discharged from the facility into each pipe, conduit, storm sewer, sewer line or other outfall.

Not available.

36. For each pipe, conduit, storm sewer, sewer line or other outfall identified in response to Request #34, identify all influent and effluent quality data. Include to the extent such information is available, the PCB concentration of all influent and effluent, on a monthly basis.

Not available.

37. For each pipe, conduit, storm sewer, sewer line or other outfall identified in response to Request #34, identify all bypasses or spills into the Kalamazoo River or its tributaries.

Not available.

38. For each facility, identify any data, estimates, analyses or other information regarding the mass quantity of PCBs disposed into the Kalamazoo River as a result of wastewater, waste oil or wastewater/waste oil discharges from the production processes. To the extent available, provide such information on an annual basis.

The Company has not located any information regarding PCB being disposed into the Kalamazoo River from any such processes at Consumers Energy facilities.

39. For each facility, identify any data, analyses or other information regarding the nature and quantity of hazardous substances, including PCBs, in the sediments, soil, groundwater, and surface water at that facility. Identify the concentration levels of PCBs for all samples collected at the facility or at any property abutting the facility.

PCB has been found in the soil at the site. See various reports provided as MGP exhibits. In particular see:

Exhibit MGP-2 – PCB Arochlor 1254 390 ppb at 2-4 feet below grade
PCB Arochlor 1260 400 ppb at 0-.5 feet
PCB Arochlor 1260 350 ppb at 0-.5 feet
Exhibit MGP-3 – PCB non-detect

The following are lab reports performed for the Upjohn Company and are alleged to represent material from the former MGP site.

Exhibit MGP-5 – PCB non-detect in 6 soil samples

Exhibit MGP-17 Nov 21 1986 Characterization of drummed waste and excavation soils 28 samples taken. All analyzed for PCB were non-detect, except PCB Arochlor 1260 1.1 pm in one sample only

Exhibit MGP-18 June 6, 1986 Waste evaluations by KAR lab for Upjohn 3 samples PCB non-detect

Exhibit MGP 19 Dec 17, 1986 Waste Stream Characterization for buried wastes PCB non-detect

Exhibit MGP 20 – March 23, 1987 report of sampling from Dumpster D-01, containing soil, building debris and empty crushed drums.
PCB 0.43 ppm Arochlor 1254

Exhibit MGP 21 Feb 13, 1987 letter from Upjohn re drummed samples –
PCB 1.1 ppm Arochlor 1260

Exhibit MGP 22 1993 KAR Laboratories Inc. Report 1993 report for Upjohn
PCB non-detect in 4 samples from Chiller

The samples shown in Exhibits MGP 2 and MGP 3 are from locations immediately adjacent to public streets and any PCB found may not be from Consumers Energy Operations. Except for samples shown in Exhibits MGP-2 and MGP-3, Consumers Energy has not owned the areas from which samples were taken for over 40 years, and the results found may not be due to any activities of Consumers Energy Company.

Note that the Lovell Street Substation adjoins the site which is the subject of this response.

Responses pertaining to the Lovell Street Substation were given in the Company's original response to EPA's information request. PCB levels for the various equipment which has been tested are shown on the document with stamped number K00003963 and 3964. All equipment tested less than 50 ppm of PCB, except one oil circuit breaker at 50 ppm and one regulator at 171 ppm. There may be some untested minor equipment. There are no known releases of PCB at the Lovell Street Substation.

40. For each facility, provide information regarding any environmental response activities involving or potentially involving PCBs or PCB-containing materials conducted at that

facility, or on the Kalamazoo River, its tributaries, or other abutting property, at your direction or under your control. Indicate the date(s) on which such response activity was performed, what work was performed, the expenses incurred, the results of the response activity and, if it has not concluded, when the environmental response is expected to conclude.

No known PCB response activities.

41. Have you incurred any costs associated with the investigation, remediation or other action to address contamination at the Site or any portion thereof? If yes, identify all costs incurred by you through the date of this Information Request.

The Company has incurred costs in reviewing the draft Remedial Investigation/Feasibility Study and other documents related to the Site. However, it has not collected information on the time spent or out-of-pocket costs at this time. In addition the Company has spent more than $4 million addressing manufactured gas plant residuals at the MGP facility. However, the manufactured gas plant costs do not relate to PCB.

EXHIBIT MGP-1

To	RCWhiting, P24-610	CONSUMERS POWER COMPANY
From	HWVoigt, T-260	
Date	January 24, 1996	Internal Correspondence
Subject	KALAMAZOO - PITCHER STREET SITE - City of Kalamazoo Proposed Portage to Pitcher Connector - Sampling Of January 10, 1996	
CC		File Index No. 519617-320-236

On January 10, 1996 personnel from the Chemistry and Material Services Department (C&MS) of Technical Services along with Piedmont Environmental completed soil sample collections at the proposed City of Kalamazoo - Portage to Pitcher Street connector.

The sampling was requested to determine if environmental contamination exist at the site which maybe encountered during construction activities of the Portage to Pitcher Street connector.

SITE LOCATION

The investigation site is located within the City of Kalamazoo, on the west side of Pitcher Street, 123 feet south of Lovell Street and continuing an additional 178 feet south of Lovell along Pitcher. The site is an irregular triangular shaped property, approximately 52 feet by 178 feet (along Pitcher Street). Site location is detailed in Attachment - Site Location and Sampling Locations.

SUMMARY OF ON-SITE ACTIVITIES

Three soil sampling locations (EP1, EP2 and EP3) were selected based on MissDig clearance and the site accessibility for the truck-mounted sampling equipment. Sample locations are detailed in Attachment - Site Location and Sampling Locations.

A surface soil sample (0.-0.5 feet) was collected at each location and subsurface sampling completed using soil probe sampling techniques. Sampling was continuous from 1-foot below surface grade to the final explored depth of 7 feet using a 24-inch soil sampling probe (i.e., 1-3, 3-5 and 5-7 feet). Groundwater was not encountered, however, samples from 5-7 feet were moist but not near saturation.

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SOIL STRATA

Soil strata are described as: Brown/black sandy-clay loam, moist and dark sand and sandy clay from surface to 0.5 feet. Dark brown sand and sandy clay with some gravel and fill material from 1 to 5 feet. Brown medium sand (moist) and brown sandy clay from

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from 5 to 7 feet. At EP1 only, a black sandy peat material was encountered at approximately 6.5 to 7 feet.

At EP3, a petroleum odor was noticed for soil EP3-S3 (5-7 feet). All other soils were characterized with natural odor only.

SAMPLE ANALYSIS and ANALYTICAL PARAMETERS

Soil samples were returned to C&MS for the determination:

Aromatic Volatiles Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Polychlorinated Biphenyls (PCBs)
Michigan 10 Metals
Cyanide, Total and Amenable

Six soil sample were selected for analysis and are indicated by a 'x' in the sample list.

Sample Depth (ft)	Subsample ID	Sample Location EP1	EP2	EP3
0 - 0.5	S0	-	x	-
1 - 3	S1	x	-	x
3 - 5	S2	-	x	-
5 - 7	S3	x	-	x

Analytical results are attached for your review.

SUMMARY OF RESULTS

PCBs and cyanide (total and amenable) are not detected in any of the soil samples analyzed. BTEX is detected in sample EP3-S3 as Xylenes only at 215 ug/kg. BTEX is not detected in the other samples selected for analysis. Several metals are detected above the Type-A Default Values and are summarized below.

Metal Parameter	Default Value (ug/kg) Type-A	Highest Concentration Detected (ug/kg)	Sample Location Of Highest Concentration
Arsenic	5,800	11,000	EP1-S1
Barium	75,000	86,000	EP2-S0
Cadmium	1,200	710	EP2-S0
Chromium	18,000	13,000	EP1-S1
Copper	32,000	54,000	EP1-S1
Lead	21,000	180,000	EP2-S0
Mercury	130	430	EP2-S0
Selenium	410	<100	-
Silver	1,000	<500	-
Zinc	47,000	180,000	EP2-S0

PAHs are detected at all three soil sampling locations, with elevated levels for soils EP1-S1, EP2-S0 and EP2-S2. The highest concentrations are summarized below, along with the sample locations

PAH Parameter	Direct Contact Value (ug/kg) Type-B	Highest Concentration Detected (ug/kg)	Sample Location Of Highest Concent-ration
Naphthalene	9.3e+6	<330	-
2-Methylnaphthalene	-	<330	-
Acenaphthylene	9.3e+5	<330	-
Acenphthene	4.5e+7	<330	-
Fluorene	3.1e+7	<330	-
Phenanthrene	9.3e+5	720	EP1-S1
Anthracene	2.6e+8	380	EP1-S1
Fluoranthene	3.1e+7	1,900	EP1-S1
Pyrene	1.9e+7	2,200	EP1-S1
Benzo(a)anthracene	1,800	1,300	EP1-S1
Chrysene	180,000	1,200	EP2-S0
Benzo(b)fluoranthene	1,800	3,700	EP2-S0
Benzo(k)fluoranthene	18,000	1,300	EP2-S0
Benzo(a)pyrene	330	7,300	EP2-S0
Indeno(1,2,3-cd)pyrene	1,800	8,900	EP2-S0
Dibenzo(a,h)anthracene	330	1,200	EP2-S0
Benzo(g,hi)perylene	9.3e+5	6,500	SP2-S0

CONCLUSION

Construction activities at the site are likely to encounter soils containing elevated levels of carcinogenic PAHs as the principal target contaminate.

Soils collected at depths of 5-7 feet are moist, but not saturated. Therefore, groundwater could encountered at depths greater than approximately 6 or 7 feet below surface grade. Sampling probes were not advanced greater than 7 feet or into a detecable free water zone and no groundwater samples were collected. Therefore, it is not possible to assess if groundwater is impacted.

Construction spoils may need to be characterized for RCRA parameters if the spoils are disposed of off-site. This would include both soils and groundwater if encountered. Soils with a Lead concentration of 180,000 ug/kg (180 mg/kg, ppm) may fail the RCRA - TCLP limit for Lead (5 mg/L). At this time, no RCRA testing has been requested.

The origin of the petroleum odor noticed with soil EP3-S3 has not been further characterized.

While not determined at this time, construction activities may need to be under the supervision of HAZWOPER AND HAZMAT programs.

If additional analyses is required, please contract me.

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ANALYTICAL RESULTS

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 recommendations. All samples were returned to the Chemistry and Material Services Department (C&MS) for analysis.

Aromatic Volatile Organics (BTEX) - Method 8021A, Halogenated And Aromatic Volatiles By Gas Chromatography Using Electrolytic Conductivity And Photoionization Detectors In Series: Capillary Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270A, Gas Chromatography / Mass Spectrometry For Semivolatile Orgaincs: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polychlorinated Biphenyls (PCBs) - Method 8080A, Organochlorine Pesticides and PCB (PCBs Only). SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Total Metals Preparation - Soils - Method 3051, Microwave Assisted Acid Digestion Of Sediments, Sludges, Soils and Oils. SW-846, Test Methods For Evaluating Solid Waste - Physical/Chemical Methods, USEPA.

Metal Analytes:

Analyte	SW-846 Method
Arsenic	7061
Barium	7081
Cadmium	7131
Chromium (total)	7191
Copper	7211
Lead	7421
Mercury	7470
Selenium	7741
Silver	7661
Zinc	7950

SW-846, Test Methods For Evaluating Solid Waste - Physical/Chemical Methods, USEPA.

Cyanide, Total and Amenable - Method 9010, Cyanide Extraction Procedure For Solids and Oils. Method 9011, Total and Amenable Cyanide. SW-846, Test Methods For Evaluating Solid Waste - Physical/Chemical Methods, USEPA.

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TABLE A1. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO - PITCHER STREET SITE - Proposed Portage To Pitcher Connector - Sampling Date Of January 10, 1996				Project Number CHEM-96-0236	
Sample Identification	EP1 S1	EP1 S3	EP2 S0	EP2 S2	EP3 S1	
Sample Depth, ft	1-3	5-7	0-5	3-5	1-3	
Sample Type	soil	soil	soil	soil	soil	
Sample Date	01-10-96	01-10-96	01-10-96	01-10-96	01-10-96	
Received Date	01-10-96	01-10-96	01-10-96	01-10-96	01-10-96	
Report Date	01-24-96	01-24-96	01-24-96	01-24-96	01-24-96	
Percent Solids, %w/w	80	58	70	90	95	
Extraction Date	-	-	-	-	-	
Analysis Date	01-15-96	01-15-96	01-15-96	01-15-96	01-15-96	
Control Number	960236-02	960236-04	960236-05	960236-07	960236-10	
BTEX, ug/kg - 8021A						**TMDL**
Benzene	nd	nd	nd	nd	nd	10
Toluene	nd	nd	nd	nd	nd	10
Ethylbenzene	nd	nd	nd	nd	nd	10
m/p-Xylene	nd	nd	nd	nd	nd	10
o-Xylene	nd	nd	nd	nd	nd	10
Surrogate Recovery	% Recovery	% Recovery	% Recovery	% Recovery	% Recovery	Criteria
a,a,a-Trifluorotoluene	91	89	93	92	90	80-110

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NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HWW Date 012596 Data File 960236

00092860

TABLE A2. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO - PITCHER STREET SITE - Proposed Portage To Pitcher Connector - Sampling Date Of January 10, 1996					Project Number CHEM-96-0236
Sample Identification	EP3 S3					
Sample Depth, ft	5-7					
Sample Type	soil					
Sample Date	01-10-96					
Received Date	01-10-96					
Report Date	01-24-96					
Percent Solids, %w/w	89					
Extraction Date	-					
Analysis Date	01-15-96					
Control Number	960236-12					
BTEX, ug/kg - 8021A						TMDL
Benzene	nd					10
Toluene	nd					10
Ethylbenzene	nd					10
m/p-Xylene	55					10
o-Xylene	160					10
Surrogate Recovery	% Recovery					Criteria
a,a,a-Trifluorotoluene	90					80-110

KR059B029307

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By KEW Date 01 25 96 Data File 960236

00092861

TABLE B1. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO - PITCHER STREET SITE - Proposed Portage To Pitcher Connector - Sampling Date Of January 10, 1996				Project Number CHEM-96-0236	
Sample Identification	EP1 S1	EP1 S3	EP2 S0	EP2 S2	EP3 S1	
Sample Depth, ft	1-3	5-7	0-5	3-5	1-3	
Sample Type	soil	soil	soil	soil	soil	
Sample Date	01-10-96	01-10-96	01-10-96	01-10-96	01-10-96	
Received Date	01-10-96	01-10-96	01-10-96	01-10-96	01-10-96	
Report Date	01-24-96	01-24-96	01-24-96	01-24-96	01-24-96	
Percent Solids, %w/w	80	58	70	90	95	
Extraction Date	01-11-96	01-11-96	01-11-96	01-11-96	01-11-96	
Analysis Date	01-17-96	01-17-96	01-17-96	01-17-96	01-17-96	
Control Number	960236-02	960236-04	960236-05	960236-07	960236-10	
PAH, ug/kg - Method 8270A						**TMDL**
Naphthalene	nd	nd	nd	nd	nd	330
2-Methylnaphtalene	nd	nd	nd	nd	nd	330
Acenaphthylene	nd	nd	nd	nd	nd	330
Acenaphthene	nd	nd	nd	nd	nd	330
Fluorene	nd	nd	nd	nd	nd	330
Phenanthrene	720	nd	370	370	350	330
Anthracene	380	nd	330	340	nd	330
Fluoranthene	1,900	340	760	1,600	510	330
Pyrene	2,200	nd	1,500	1,400	390	330
Benzo(a)anthracene	1,300	nd	1,100	860	340	330
Chrysene	910	nd	1,200	890	nd	330
Benzo(b)fluoranthene	720	nd	3,700	3,100	nd	330
Benzo(k)fluoranthene	nd	nd	1,300	970	nd	330
Benzo(a)pyrene	410	nd	7,300	4,700	nd	330
Indeno(1,2,3-cd)pyrene	nd	nd	8,900	6,900	nd	330
Dibenzo(a,h)anthracene	nd	nd	1,200	890	nd	330
Benzo(g,h,i)perylene	nd	nd	6,500	4,700	nd	330
Surrogate Recovery	% Recovery	% Recovery	% Recovery	% Recovery	% Recovery	Criteria
Nitrobenzene-d5	78	81	76	80	79	23-120
2-Fluorobiphenyl	85	89	83	92	88	30-115
p-Terphenyl-d14	91	93	87	93	91	18-137

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HWJ Date 012596 Data File 960236

TABLE B2. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO - PITCHER STREET SITE - Proposed Portage To Pitcher Connector - Sampling Date Of January 10, 1996					Project Number CHEM-96-0236
Sample Identification	EP3 S3					
Sample Depth, ft	5-7					
Sample Type	soil					
Sample Date	01-10-96					
Received Date	01-10-96					
Report Date	01-24-96					
Percent Solids, %w/w	89					
Extraction Date	01-11-96					
Analysis Date	01-17-96					
Control Number	960236-12					
PAH, ug/kg - Method 8270A						TMDL
Naphthalene	nd					330
2-Methylnaphtalene	nd					330
Acenaphthylene	nd					330
Acenaphthene	nd					330
Fluorene	nd					330
Phenanthrene	nd					330
Anthracene	nd					330
Fluoranthene	nd					330
Pyrene	nd					330
Benzo(a)anthracene	nd					330
Chrysene	nd					330
Benzo(b)fluoranthene	nd					330
Benzo(k)fluoranthene	nd					330
Benzo(a)pyrene	nd					330
Indeno(1,2,3-cd)pyrene	nd					330
Dibenzo(a,h)anthracene	nd					330
Benzo(g,h,i)perylene	nd					330
Surrogate Recovery	% Recovery					Criteria
Nitrobenzene-d5	79					23-120
2-Fluorobiphenyl	87					30-115
p-Terphenyl-d14	92					18-137

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By pewJ Date 012556 Data File 960236

TABLE C1. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO - PITCHER STREET SITE - Proposed Portage To Pitcher Connector - Sampling Date Of January 10, 1996				Project Number CHEM-96-0236	
Sample Identification	EP1 S1	EP1 S3	EP2 S0	EP2 S2	EP3 S1	
Sample Depth, ft	1-3	5-7	0-5	3-5	1-3	
Sample Type	soil	soil	soil	soil	soil	
Sample Date	01-10-96	01-10-96	01-10-96	01-10-96	01-10-96	
Received Date	01-10-96	01-10-96	01-10-96	01-10-96	01-10-96	
Report Date	01-24-96	01-24-96	01-24-96	01-24-96	01-24-96	
Percent Solids, %w/w	80	58	70	90	95	
Extraction Date	01-11-96	01-11-96	01-11-96	01-11-96	01-11-96	
Analysis Date	01-11-96	01-11-96	01-11-96	01-11-96	01-11-96	
Control Number	960236-02	960236-04	960236-05	960236-07	960236-10	
PCBs, ug/kg - 8080A						**TMDL**
PCB-1016	nd	nd	nd	nd	nd	330
PCB-1221	nd	nd	nd	nd	nd	330
PCB-1232	nd	nd	nd	nd	nd	330
PCB-1242	nd	nd	nd	nd	nd	330
PCB-1248	nd	nd	nd	nd	nd	330
PCB-1254	nd	nd	nd	nd	nd	330
PCB-1260	nd	nd	nd	nd	nd	330
PCB-1262	nd	nd	nd	nd	nd	330

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By RWJ Date 012596 Data File 960236

KR059B029310

00092864

TABLE C2. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO - PITCHER STREET SITE - Proposed Portage To Pitcher Connector - Sampling Date Of January 10, 1996					Project Number CHEM-96-0236
Sample Identification	EP3 S3					
Sample Depth, ft	5-7					
Sample Type	soil					
Sample Date	01-10-96					
Received Date	01-10-96					
Report Date	01-24-96					
Percent Solids, %w/w	89					
Extraction Date	01-11-96					
Analysis Date	01-11-96					
Control Number	960236-12					
PCBs, ug/kg - 8080A						**TMDL**
PCB-1016	nd					330
PCB-1221	nd					330
PCB-1232	nd					330
PCB-1242	nd					330
PCB-1248	nd					330
PCB-1254	nd					330
PCB-1260	nd					330
PCB-1262	nd					330

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By [illegible] Date 01 25 96 Data File 960236

KR059B029311

00092865

TABLE D1. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO - PITCHER STREET SITE - Proposed Portage To Pitcher Connector - Sampling Date Of January 10, 1996				Project Number CHEM-96-0236	
Sample Identification	EP1 S1	EP1 S3	EP2 S0	EP2 S2	EP3 S1	
Sample Depth, ft	1-3	5-7	0-5	3-5	1-3	
Sample Type	soil	soil	soil	soil	soil	
Sample Date	01-10-96	01-10-96	01-10-96	01-10-96	01-10-96	
Received Date	01-10-96	01-10-96	01-10-96	01-10-96	01-10-96	
Report Date	01-24-96	01-24-96	01-24-96	01-24-96	01-24-96	
Percent Solids, %w/w	80	58	70	90	95	
Preparation Date	01-13-96	01-13-96	01-13-96	01-13-96	01-13-96	
Analysis Date	01-15/19-96	01-15/19-96	01-15/19-96	01-15/19-96	01-15/19-96	
Control Number	960236-02	960236-04	960236-05	960236-07	960236-10	
TOTAL METALS, ug/kg						**TMDL**
Arsenic - 7061	11,000	7,700	5,500	2,100	2,000	100
Barium, 7081	82,000	60,000	86,000	45,000	44,000	1,000
Cadmium - 7131	190	120	710	150	120	50
Chromium (total) - 7191	13,000	12,000	8,900	8,100	6,800	2,500
Copper - 7211	54,000	13,000	36,000	13,000	16,000	1,000
Lead - 7421	150,000	19,000	180,000	51,000	34,000	1,000
Mercury - 7470	170	nd	430	nd	nd	100
Selenium - 7741	nd	nd	nd	nd	nd	500
Silver - 7761	nd	nd	nd	nd	nd	500
Zinc - 7950	57,000	30,000	180,000	73,000	46,000	1,000

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By *[illegible]* Date *01 25 96* Data File 960236

KR059B029312

00092866

TABLE D2. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO - PITCHER STREET SITE - Proposed Portage To Pitcher Connector - Sampling Date Of January 10, 1996					Project Number CHEM-96-0236
Sample Identification	EP3 S3					
Sample Depth, ft	5-7					
Sample Type	soil					
Sample Date	01-10-96					
Received Date	01-10-96					
Report Date	01-24-96					
Percent Solids, %w/w	89					
Preparation Date	01-13-96					
Analysis Date	01-15/19-96					
Control Number	960236-12					
TOTAL METALS, ug/kg						**TMDL**
Arsenic - 7061	650					100
Barium, 7081	14,000					1,000
Cadmium - 7131	nd					50
Chromium (total) - 7191	5,900					2,500
Copper - 7211	3,500					1,000
Lead - 7421	17,000					1,000
Mercury - 7470	nd					100
Selenium - 7741	nd					500
Silver - 7761	nd					500
Zinc - 7950	11,000					1,000

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HWJ Date 01 25 96 Data File 960236

TABLE E1. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO - PITCHER STREET SITE - Proposed Portage To Pitcher Connector - Sampling Date Of January 10, 1996				Project Number CHEM-96-0236	
Sample Identification	EP1 S1	EP1 S3	EP2 S0	EP2 S2	EP3 S1	
Sample Depth, ft	1-3	5-7	0-5	3-5	1-3	
Sample Type	soil	soil	soil	soil	soil	
Sample Date	01-10-96	01-10-96	01-10-96	01-10-96	01-10-96	
Received Date	01-10-96	01-10-96	01-10-96	01-10-96	01-10-96	
Report Date	01-24-96	01-24-96	01-24-96	01-24-96	01-24-96	
Percent Solids, %w/w	80	58	70	90	95	
Preparation Date	01-17-96	01-17-96	01-17-96	01-17-96	01-17-96	
Analysis Date	01-17-96	01-17-96	01-17-96	01-17-96	01-17-96	
Control Number	960236-02	960236-04	960236-05	960236-07	960236-10	
INORGANICS, ug/kg						**TMDL**
Cyanide, Total - 9010/9011	nd	nd	nd	nd	nd	200
Cyanide, Amenable - 9010/9011	nd	nd	nd	nd	nd	500

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By [illegible] Date 01/25/96 Data File 960236

KR059B029314

00092868

TABLE E2. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO - PITCHER STREET SITE - Proposed Portage To Pitcher Connector - Sampling Date Of January 10, 1996					Project Number CHEM-96-0236
Sample Identification	EP3 S3					
Sample Depth, ft	5-7					
Sample Type	soil					
Sample Date	01-10-96					
Received Date	01-10-96					
Report Date	01-24-96					
Percent Solids, %w/w	89					
Preparation Date	01-17-96					
Analysis Date	01-17-96					
Control Number	960236-12					
INORGANICS, ug/kg						**TMDL**
Cyanide, Total - 9010/9011	nd					200
Cyanide, Amenable - 9010/9011	nd					500

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

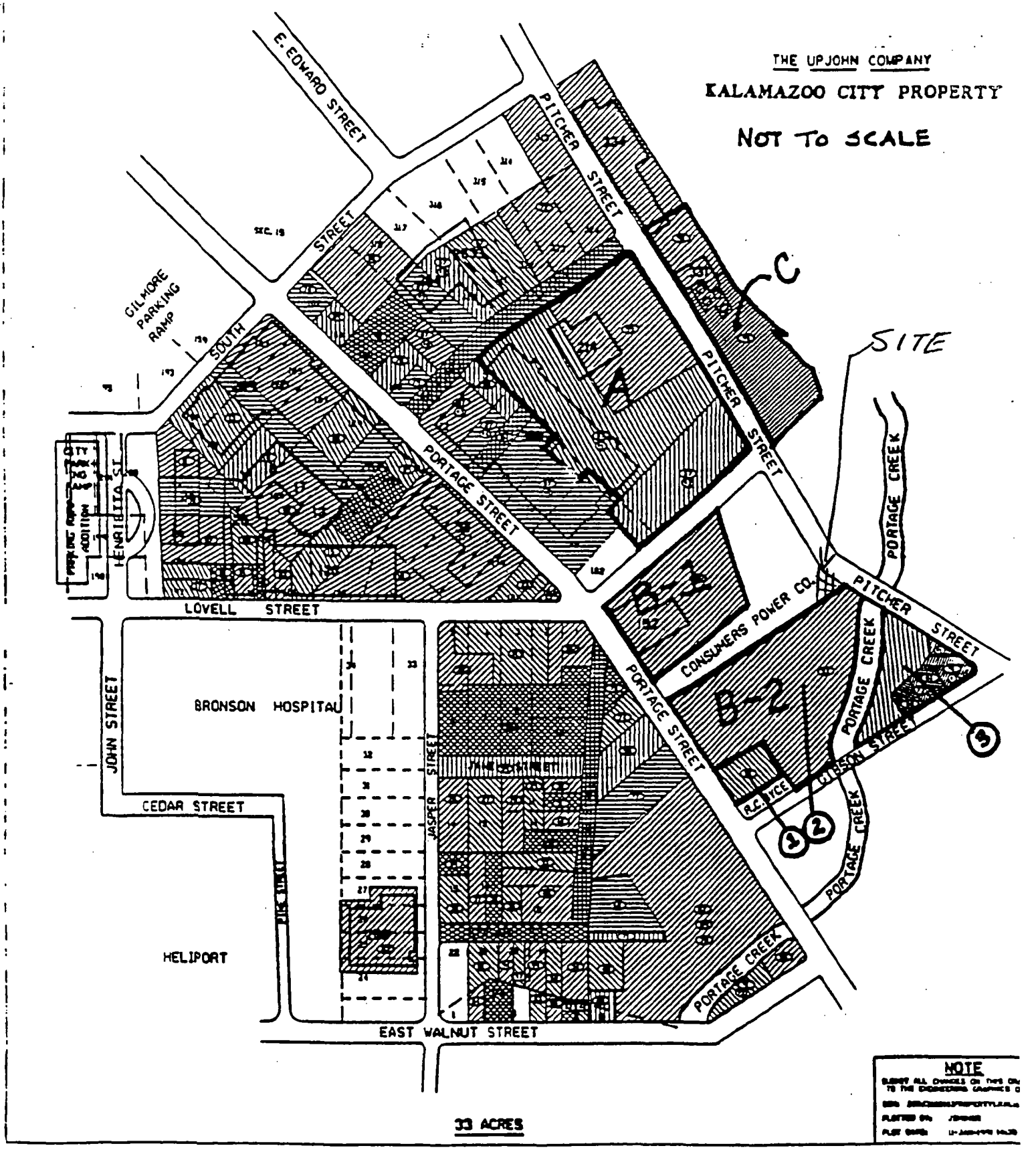
Reviewed By pewU Date 01 25 96 Data File 960236

KR059B029315

00092869

SITE LOCATION and SAMPLING LOCATIONS

APPENDIX 2



KR059B029317

00092871

KR059B029318

RECEIVED FEB 27 1995

THE CITY OF Kalamazoo

DEPARTMENT of PUBLIC WORKS
234 W. Cedar Street
Kalamazoo, Michigan 49007-5170

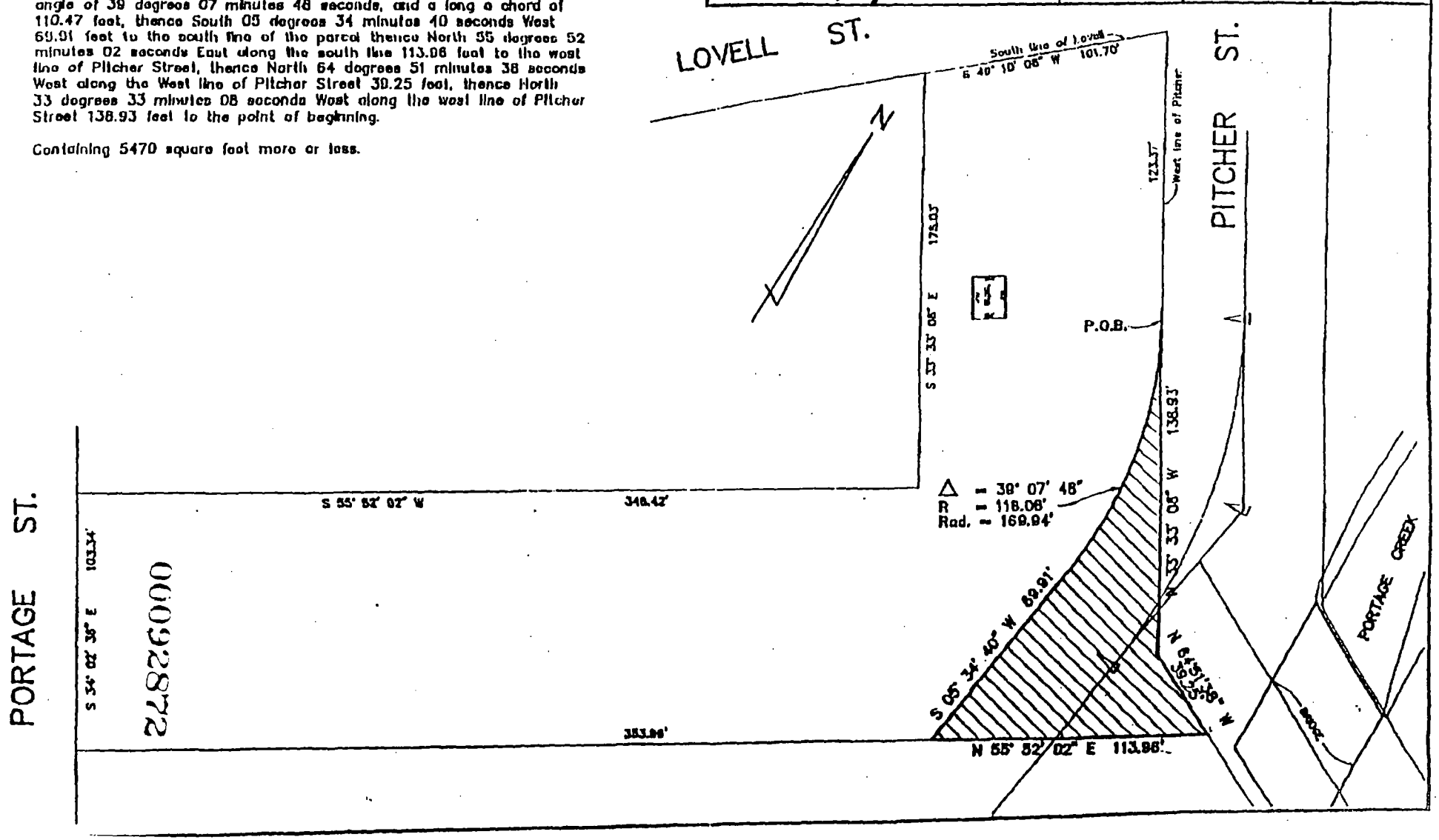
Additional Right of Way Required for:
PORTAGE to PITCHER CONNECTOR

DRAWN BY: JJH	CHECKED BY:	SHEET 1 OF 1
SCALE: 1" = 40'	PROJ. NO.	DATE: 10\05\93

Description of the Taking

Commencing at the point on the west line of Pitcher Street that is 123.27 feet south of the south line of Lovell Street, thence along a curve to the right 116.06 feet, with a radius of 169.94 feet, a central angle of 39 degrees 07 minutes 48 seconds, and a long a chord of 110.47 feet, thence South 05 degrees 34 minutes 40 seconds West 69.91 feet to the south line of the parcel thence North 55 degrees 52 minutes 02 seconds East along the south line 113.06 feet to the west line of Pitcher Street, thence North 64 degrees 51 minutes 38 seconds West along the West line of Pitcher Street 39.25 feet, thence North 33 degrees 33 minutes 08 seconds West along the west line of Pitcher Street 138.93 feet to the point of beginning.

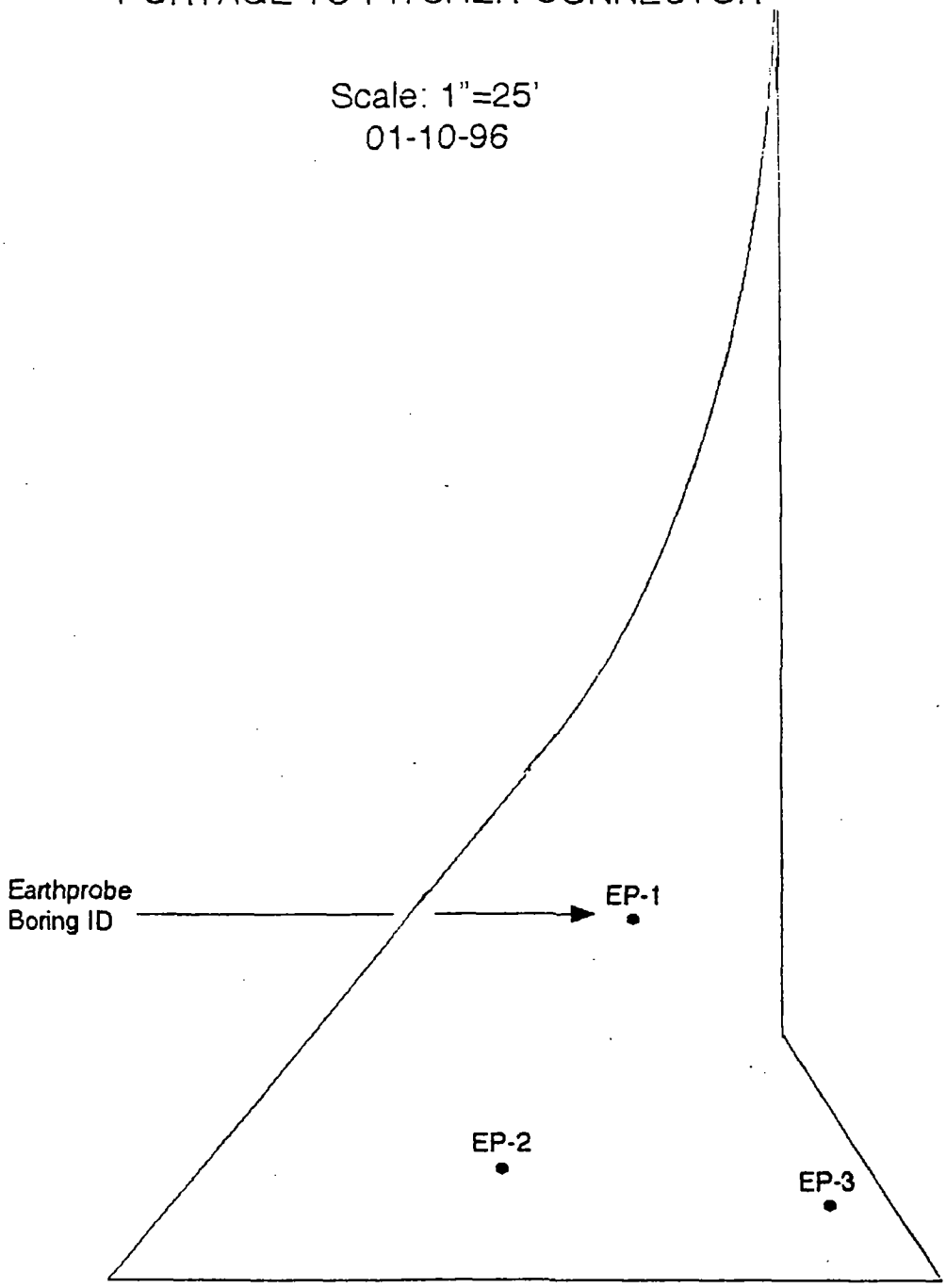
Containing 5470 square feet more or less.



5011.2

KALAMAZOO
PORTAGE TO PITCHER CONNECTOR

Scale: 1"=25'
01-10-96



KR059B029319

00092873

EXHIBIT MGP-2

To	JPDickey, M-1046 BWRasher, P24-501A	
From	RCWhiting, P24-610 RCW	CONSUMERS POWER COMPANY
Date	April 18, 1996	
Subject	KALAMAZOO MGP SITE- PROPOSED PORTAGE TO PITCHER CONNECTOR	Internal Correspondence
CC	SMCarlson, JSC 200C	RCW96-04.005

Attached for your information and review is a copy of the report for the sampling (2 locations) done on March 15,1996 along Lovell and Pitcher streets in Kalamazoo in the area of the former Manufactured Gas Plant. As you may remember this Parcel 2 location was a small triangular area which the City of Kalamazoo needs in order to complete it Portage to Pitcher streets connector project. The connector project is still set for the Spring/Summer of 1996.

I have reviewed the results and they show that for both samples Aromatic Volatiles Organics(BTEX) was not detected. Polynuclear Aromatic Hydrocarbons (PAHs) although detected, were below both the Generic Residential Direct Contact levels as well as the Generic Industrial Direct Contact levels. Polychlorinated Biphenyls (PCBs) were detected in both samples, however it was only one araclor and the level was well below Generic Residential and Industrial Direct Contact Values. The samples were analyzed for Cyanide (Total and Amenable) too and both indicated non-detect. Finally the soil samples were analyzed for the Michigan 10 Metals and although each were detected only the parameter "Lead" was above Generic Residential and Generic Industrial Direct Contact Values. The Lead in both samples exceeded the direct contact values in the 0-0.5ft and the 2.0-4.0ft ranges but not the middle 0.5-2.0ft range.

In addition I have looked at the sampling results (sent to you on 2/9/96) again for Parcel 1 (north of the creek along Pitcher) which the City of Kalamazoo also needs for the connector project. Once again the only parameter that exceeds the Generic Residential and Generic Industrial Direct Contact Values here is "Lead". The remainder of the parameters tested on this parcel were either non-detect or below the generic levels.

I have not contacted the City with either of these results. I was waiting until I had received the second report. Since "lead" exceeds both Residential and Industrial values should we change our original strategy ? The strategy, as you may remember, was to inform the City of the results and tell them that although parameters were detected they were below Industrial levels and that we didn't believe the contamination necessarily to be the results of former MGP activities, but could be contributed to the City's own operation of a sewage basin on that parcel. In addition we planned no further remediation at these sites and would sell them to the City provided they would be willing to agree to restrict future use.

Please contact me by Thursday April 25,1996, so that I can inform the City as to our Company's plans regarding these parcels and their own street project.

RECEIVED APR 16 1996

To RCWhiting, P24-610

From HWVoigt, T-260

Date April 12, 1996

Subject KALAMAZOO - PITCHER STREET SITE
- City of Kalamazoo Proposed Portage to Pitcher Connector

- Sampling Of March 15, 1996

CC

CONSUMERS POWER COMPANY

Internal Correspondence

File Index No. 519617-320-733

On March 15, 1996 personnel from the Chemistry and Material Services Department (C&MS) of Technical Services along with Piedmont Environmental completed soil sample collections at the proposed City of Kalamazoo - Portage to Pitcher Street connector.

The sampling was requested to determine if environmental contamination exist at the site which maybe encountered during construction activities of the Portage to Pitcher Street connector.

SITE LOCATION

The investigation site is located within the City of Kalamazoo, at the southwestern corner of the intersection of Pitcher Street and Lovell Street. The site is a triangular shaped, approximately 15 feet along Pitcher Street and 15 feet along Lovell Street and adjacent to the inside perimeter of the existing sidewalks. Site location is detailed in Attachment - Site Location and Sampling Locations.

SUMMARY OF ON-SITE ACTIVITIES

Two soil sampling locations (EP1 and EP2) were selected based on MissDig clearance and the site accessibility for the truck-mounted sampling equipment. Sample locations are detailed in Attachment - Site Location and Sampling Locations.

A surface soil sample (0.-0.5 feet) was collected at each location and subsurface sampling completed using soil probe sampling techniques. Sampling was continuous from 0.5-feet below surface grade to the final explored depth of 4 feet using a 24-inch soil sampling probe (i.e., 0.5-2.0 and 2.0-4.0). Sampler refusal at 4 feet was encountered at 8 investigative boring locations from which two locations were selected for sample collection. Groundwater was not encountered.

KR059B029322

SOIL STRATA

Soil strata are described as: Brown/black sandy-clay loam and cinders from surface to 0.5 feet. Dark brown sand and sandy clay with some gravel and fill material (red brick) from 1 to 4 feet. Sampler refusal was encountered at 4 feet.

00092836

SAMPLE ANALYSIS and ANALYTICAL PARAMETERS

Soil samples were returned to C&MS for the determination:

Aromatic Volatiles Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Polychlorinated Biphenyls (PCBs)
Michigan 10 Metals
Cyanide, Total and Amenable

Analytical results are attached for your review.

SUMMARY OF RESULTS

BTEX and cyanide (total and amenable) are not detected in any of the soil samples analyzed. PCBs are detected in samples EP1-S1, EP1-S3 and EP2-S1 at concentrations for Total PCBs of 400, 390 and 350 ug/kg (parts-per-billion) respectively. Several metals are detected above the Type-A Default Values and are summarized below.

Metal Parameter	Default Value (ug/kg) Type-A	Highest Concentration Detected (ug/kg)	Sample Location Of Highest Concentration
Arsenic	5,800	21,000	EP1-S3
Barium	75,000	100,000	EP1-S3
Cadmium	1,200	5,000	EP2-S2
Chromium	18,000	23,000	EP1-S3
Copper	32,000	130,000	EP1-S3
Lead	21,000	140,000	EP1-S1
Mercury	130	<100	EP2-S0
Selenium	410	<100	-
Silver	1,000	<500	-
Zinc	47,000	750,000	EP1-S3

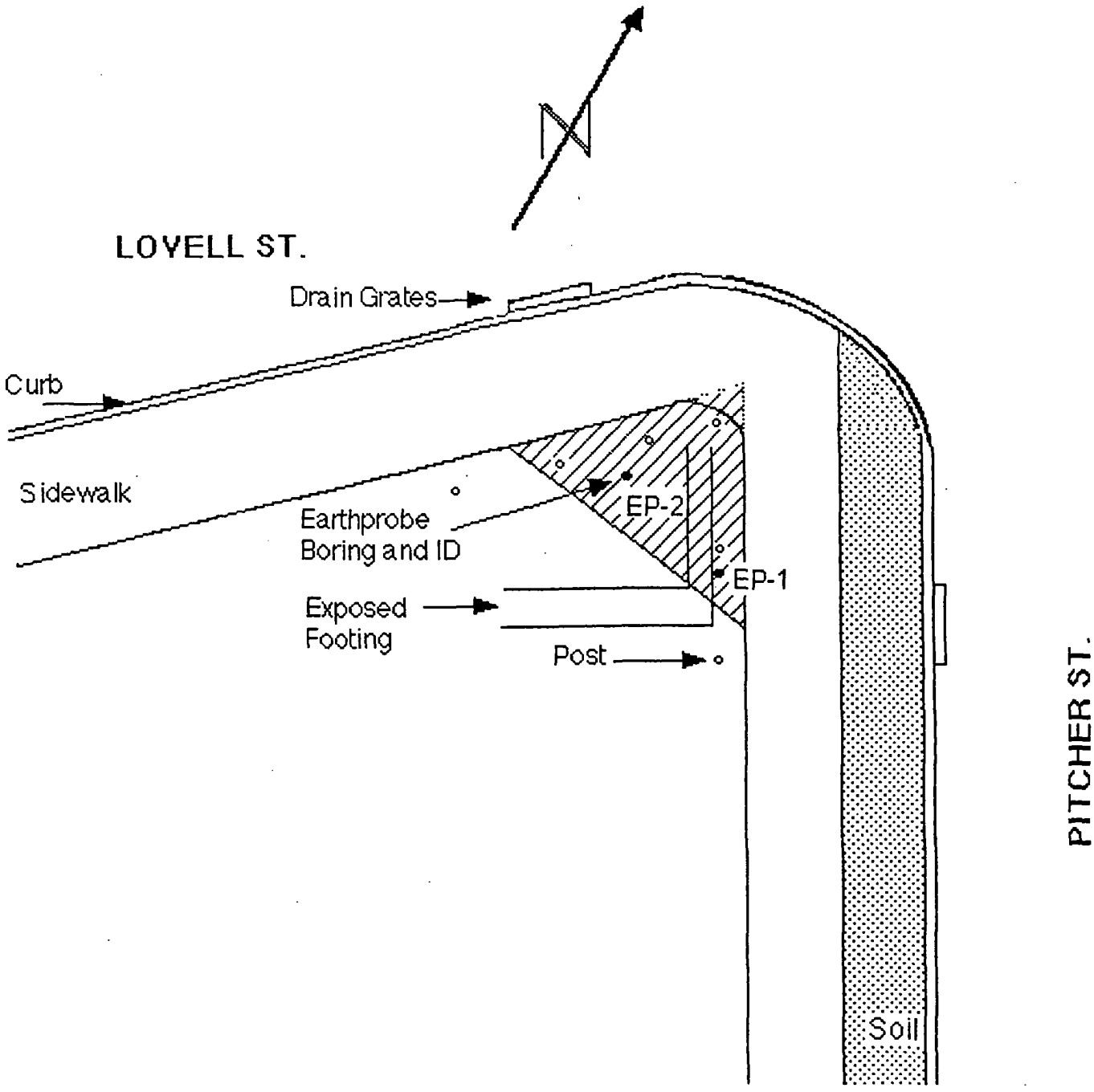
Elevated levels of PAHs are detected in all samples from the two soil sampling locations.

CONCLUSION

Construction activities at the site are likely to encounter soils containing elevated levels of carcinogenic PAHs as the principal target contaminate.

If additional analyses is required, please contract me.

SITE LOCATION and SAMPLING LOCATIONS



Right Of Way Aquisition and Easement
Pitcher & Lovell Streets, Kalamazoo

1" = 10'

KR059B029325

00092839

KR059B029326

RECEIVED FEB 27 1995

THE CITY OF Kalamazoo

DEPARTMENT of PUBLIC WORKS
234 W. Cedar Street
Kalamazoo, Michigan 49007-5170

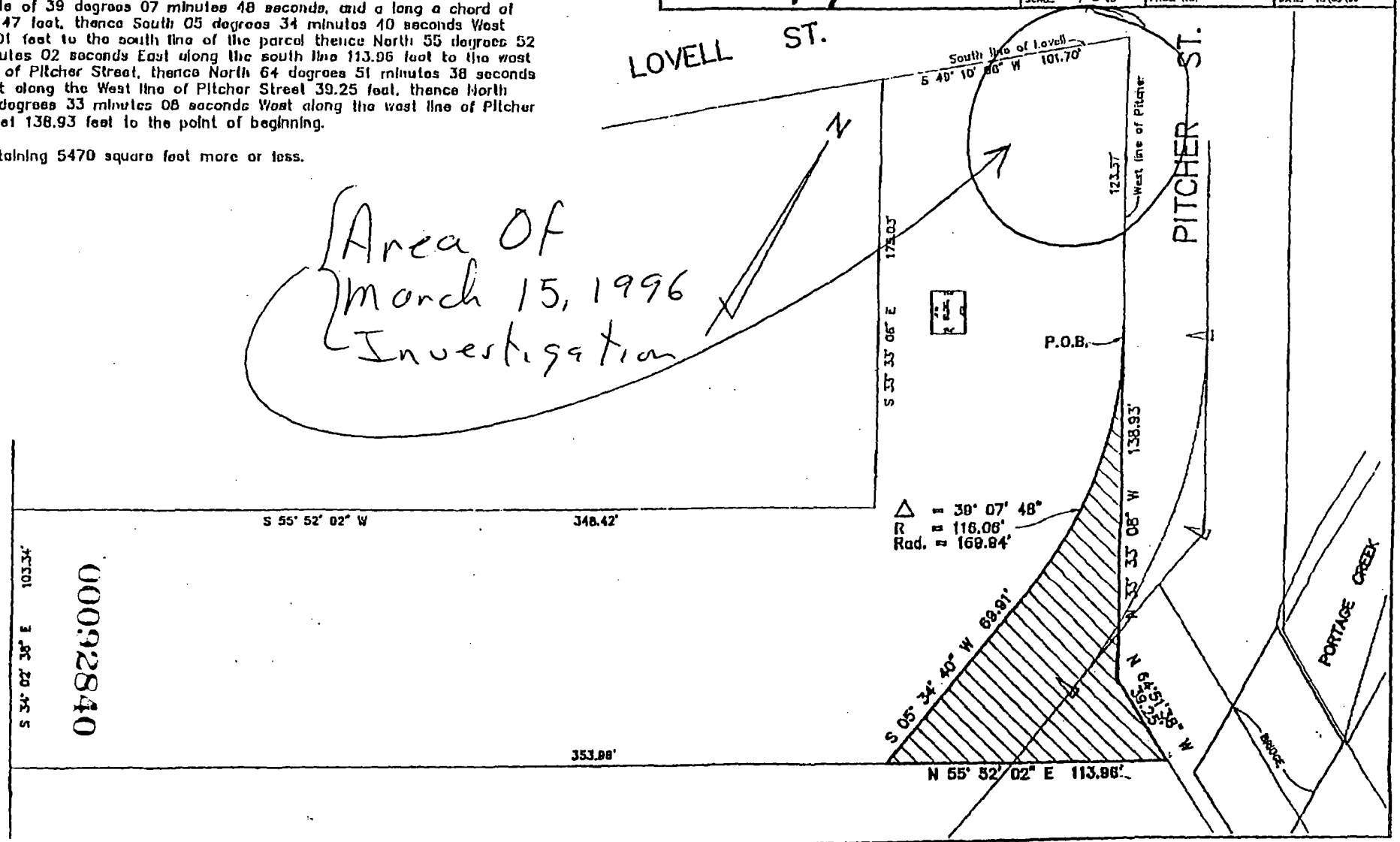
Additional Right of Way Required for:
PORTAGE to PITCHER CONNECTOR

DRAWN BY: JBA	CHECKED BY:	SHEET 1 OF 1
SCALE: 1" = 40'	PROJ. NO.	DATE: 10\05\93

Description of the Taking

Commencing at the point on the west line of Pitcher Street that is 123.27 feet south of the south line of Lovell Street, thence along a curve to the right 116.06 feet, with a radius of 169.94 feet, a central angle of 39 degrees 07 minutes 48 seconds, and a long a chord of 110.47 feet, thence South 05 degrees 34 minutes 40 seconds West 69.91 feet to the south line of the parcel thence North 55 degrees 52 minutes 02 seconds East along the south line 113.96 feet to the west line of Pitcher Street, thence North 64 degrees 51 minutes 38 seconds West along the West line of Pitcher Street 39.25 feet, thence North 33 degrees 33 minutes 08 seconds West along the west line of Pitcher Street 138.93 feet to the point of beginning.

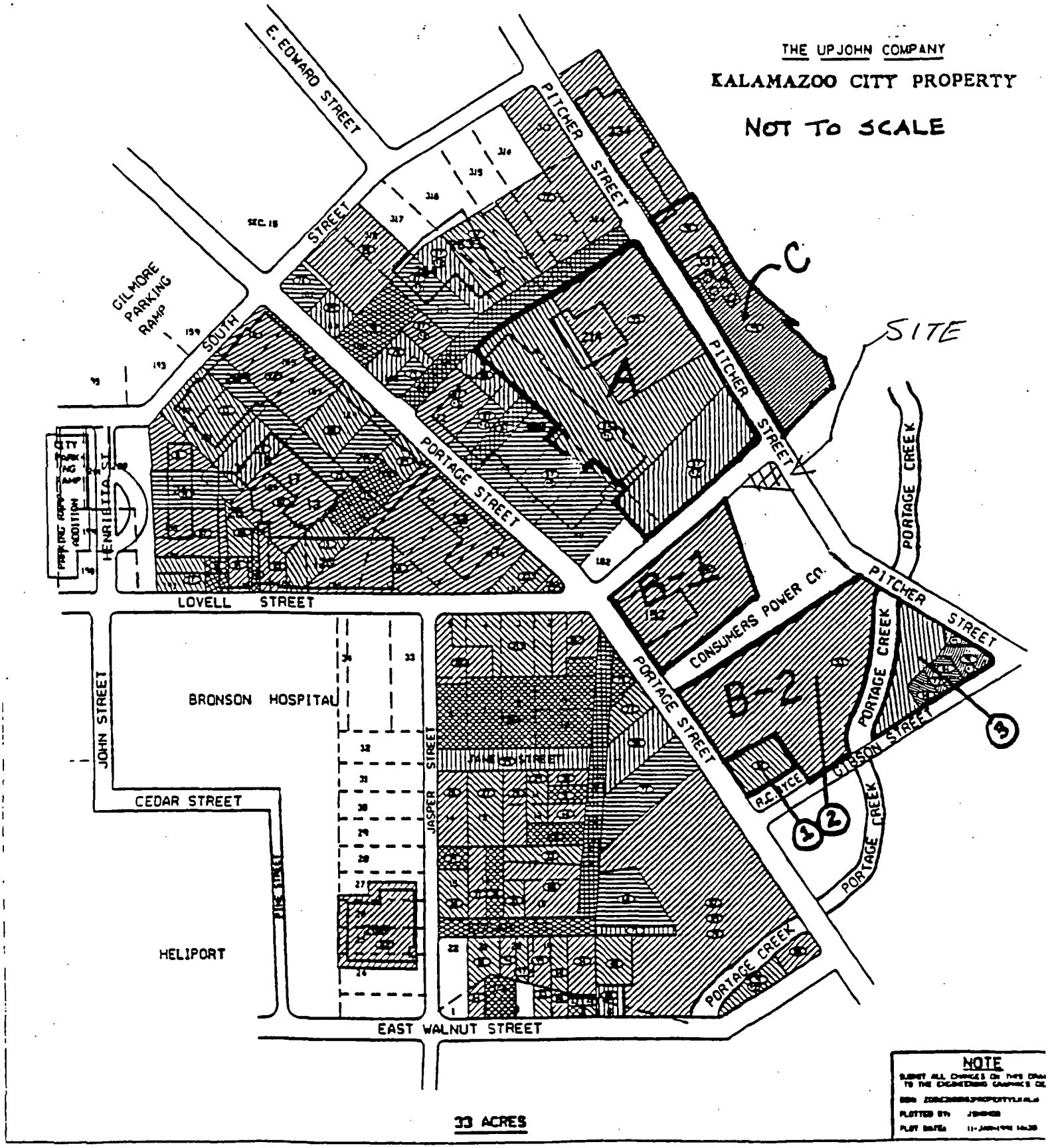
Containing 5470 square feet more or less.



Area Of March 15, 1996 Investigation

50111.2

APPENDIX 2



KR059B029327

00092841

ANALYTICAL RESULTS

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 recommendations. All samples were returned to the Chemistry and Material Services Department (C&MS) for analysis.

Aromatic Volatile Organics (BTEX) - Method 8021A, Halogenated And Aromatic Volatiles By Gas Chromatography Using Electrolytic Conductivity And Photoionization Detectors In Series: Capillary Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270A, Gas Chromatography / Mass Spectrometry For Semivolatile Orgaincs: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polychlorinated Biphenyls (PCBs) - Method 8080A, Organochlorine Pesticides and PCB (PCBs Only). SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Total Metals Preparation - Soils - Method 3051, Microwave Assisted Acid Digestion Of Sediments, Sludges, Soils and Oils. SW-846, Test Methods For Evaluating Solid Waste - Physical/Chemical Methods, USEPA.

Metal Analytes:

Analyte	SW-846 Method
Arsenic	7061
Barium	7081
Cadmium	7131
Chromium (total)	7191
Copper	7211
Lead	7421
Mercury	7470
Selenium	7741
Silver	7661
Zinc	7950

SW-846, Test Methods For Evaluating Solid Waste - Physical/Chemical Methods, USEPA.

Cyanide, Total and Amenable - Method 9010, Cyanide Extraction Procedure For Solids and Oils. Method 9011, Total and Amenable Cyanide. SW-846, Test Methods For Evaluating Solid Waste - Physical/Chemical Methods, USEPA.

TABLE A1. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO – PITCHER STREET SITE – Proposed Portage To Pitcher Connector – Sampling Date Of March 15, 1996					Project Number CHEM-96-0733
Sample Identification	EP1 S1	EP1 S2	EP1 S3			
Sample Depth, ft	0.0–0.5	0.5–2.0	2.0–4.0			
Sample Type	soil	soil	soil			
Sample Date	03-15-96	03-15-96	03-15-96			
Received Date	03-15-96	03-15-96	03-15-96			
Report Date	04-12-96	04-12-96	04-12-96			
Percent Solids, %w/w	90	91	81			
Extraction Date	–	–	–			
Analysis Date	03-22-96	03-22-96	03-22-96			
Control Number	960733-01	960733-02	960733-03			
BTEX, ug/kg – 8021A						**TMDL**
Benzene	nd	nd	nd			10
Toluene	nd	nd	nd			10
Ethylbenzene	nd	nd	nd			10
m/p-Xylene	nd	nd	nd			10
o-Xylene	nd	nd	nd			10
Surrogate Recovery	% Recovery	% Recovery	% Recovery			Criteria
4-Bromofluorobenzene	103	98	101			80–120

KR059B029330

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By _____ Date 04/12/96 Data File 960733

00092844

TABLE A2. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO – PITCHER STREET SITE – Proposed Portage To Pitcher Connector – Sampling Date Of March 15, 1996				Project Number CHEM-96-0733	
Sample Identification	EP2 S1	EP2 S2	EP2 S3			
Sample Depth, ft	0.0–0.5	0.5–2.0	2.0–4.0			
Sample Type	soil	soil	soil			
Sample Date	03–15–96	03–15–96	03–15–96			
Received Date	03–15–96	03–15–96	03–15–96			
Report Date	04–12–96	04–12–96	04–12–96			
Percent Solids, %w/w	94	91	87			
Extraction Date	–	–	–			
Analysis Date	03–22–96	03–22–96	03–22–96			
Control Number	960733–04	960733–05	960733–06			
BTEX, ug/kg – 8021A						**TMDL**
Benzene	nd	nd	nd			10
Toluene	nd	nd	nd			10
Ethylbenzene	nd	nd	nd			10
m/p–Xylene	nd	nd	nd			10
o–Xylene	nd	nd	nd			10
Surrogate Recovery	% Recovery	% Recovery	% Recovery			Criteria
4–Bromofluorobenzene	98	101	102			80–120

KR059B029331

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts–per–billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry–Weight Basis

Reviewed By [illegible] Date 04-12-96 Data File 960733

00092845

TABLE B1. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO - PITCHER STREET SITE - Proposed Portage To Pitcher Connector - Sampling Date Of March 15, 1996				Project Number CHEM-96-0733	
Sample Identification	EP1 S1	EP1 S2	EP1 S3			
Sample Depth, ft	0.0-0.5	0.5-2.0	2.0-4.0			
Sample Type	soil	soil	soil			
Sample Date	03-15-96	03-15-96	03-15-96			
Received Date	03-15-96	03-15-96	03-15-96			
Report Date	04-12-96	04-12-96	04-12-96			
Percent Solids, %w/w	90	91	81			
Extraction Date	03-22-96	03-22-96	03-22-96			
Analysis Date	03-26-96	03-26-96	03-26-96			
Control Number	960733-01	960733-02	960733-03			
PAH, ug/kg - Method 8270A						**TMDL**
Naphthalene	nd	nd	nd			330
2-Methylnaphtalene	nd	nd	nd			330
Acenaphthylene	nd	nd	nd			330
Acenaphthene	nd	nd	nd			330
Fluorene	nd	nd	nd			330
Phenanthrene	1,400	370	1,200			330
Anthracene	910	560	710			330
Fluoranthene	850	1,000	420			330
Pyrene	2,100	1,100	1,300			330
Benzo(a)anthracene	910	600	930			330
Chrysene	1,200	510	140			330
Benzo(b)fluoranthene	410	400	980			330
Benzo(k)fluoranthene	nd	400	710			330
Benzo(a)pyrene	780	610	3,700			330
Indeno(1,2,3-cd)pyrene	340	350	580			330
Dibenzo(a,h)anthracene	nd	nd	340			330
Benzo(g,h,i)perylene	330	nd	710			330
Surrogate Recovery	% Recovery	% Recovery	% Recovery			Criteria
Nitrobenzene-d5	82	81	84			23-120
2-Fluorobiphenyl	88	91	93			30-115
p-Terphenyl-d14	98	103	99			18-137

KR059B029332

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By [illegible] Date 04/29/96 Data File 960733

00092846

TABLE B2. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO - PITCHER STREET SITE - Proposed Portage To Pitcher Connector - Sampling Date Of March 15, 1996				Project Number CHEM-96-0733
Sample Identification	EP2 S1	EP2 S2	EP2 S3		
Sample Depth, ft	0.0-0.5	0.5-2.0	2.0-4.0		
Sample Type	soil	soil	soil		
Sample Date	03-15-96	03-15-96	03-15-96		
Received Date	03-15-96	03-15-96	03-15-96		
Report Date	04-12-96	04-12-96	04-12-96		
Percent Solids, %w/w	94	91	87		
Extraction Date	03-22-96	03-22-96	03-22-96		
Analysis Date	03-26-96	03-26-96	03-26-96		
Control Number	960733-04	960733-05	960733-06		
PAH, ug/kg - Method 8270A					**TMDL**
Naphthalene	nd	nd	nd		330
2-Methylnaphtalene	nd	nd	nd		330
Acenaphthylene	nd	nd	nd		330
Acenaphthene	nd	nd	nd		330
Fluorene	nd	nd	nd		330
Phenanthrene	920	nd	nd		330
Anthracene	830	nd	nd		330
Fluoranthene	1,100	nd	490		330
Pyrene	2,100	810	1,100		330
Benzo(a)anthracene	1,400	610	710		330
Chrysene	1,500	480	990		330
Benzo(b)fluoranthene	2,300	410	370		330
Benzo(k)fluoranthene	1,100	nd	nd		330
Benzo(a)pyrene	4,800	850	480		330
Indeno(1,2,3-cd)pyrene	6,100	530	330		330
Dibenzo(a,h)anthracene	1,100	340	nd		330
Benzo(g,h,i)perylene	4,800	650	330		330
Surrogate Recovery	% Recovery	% Recovery	% Recovery		Criteria
Nitrobenzene-d5	85	84	83		23-120
2-Fluorobiphenyl	92	95	94		30-115
p-Terphenyl-d14	103	97	98		18-137

KR059B029333

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HWU Date 04/29/96 Data File 960733

00092847

TABLE C1. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO – PITCHER STREET SITE – Proposed Portage To Pitcher Connector – Sampling Date Of March 15, 1996				Project Number CHEM-96-0733	
Sample Identification	EP1 S1	EP1 S2	EP1 S3			
Sample Depth, ft	0.0–0.5	0.5–2.0	2.0–4.0			
Sample Type	soil	soil	soil			
Sample Date	03-15-96	03-15-96	03-15-96			
Received Date	03-15-96	03-15-96	03-15-96			
Report Date	04-12-96	04-12-96	04-12-96			
Percent Solids, %w/w	90	91	81			
Extraction Date	03-19-96	03-19-96	03-19-96			
Analysis Date	03-19-96	03-19-96	03-19-96			
Control Number	960733-01	960733-02	960733-03			
PCBs, ug/kg – 8080A						**TMDL**
PCB-1016	nd	nd	nd			330
PCB-1221	nd	nd	nd			330
PCB-1232	nd	nd	nd			330
PCB-1242	nd	nd	nd			330
PCB-1248	nd	nd	nd			330
PCB-1254	nd	nd	390			330
PCB-1260	400	nd	nd			330
PCB-1262	nd	nd	nd			330
Surrogate Recovery	% Recovery	% Recovery	% Recovery			Criteria
Decachlorobiphenyl	87	86	90			60-120

KR059B029334

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By [illegible] Date 6/12/96 Data File 960733

00092848

TABLE C2. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO - PITCHER STREET SITE - Proposed Portage To Pitcher Connector - Sampling Date Of March 15, 1996				Project Number CHEM-96-0733	
Sample Identification	EP2 S1	EP2 S2	EP2 S3			
Sample Depth, ft	0.0-0.5	0.5-2.0	2.0-4.0			
Sample Type	soil	soil	soil			
Sample Date	03-15-96	03-15-96	03-15-96			
Received Date	03-15-96	03-15-96	03-15-96			
Report Date	04-12-96	04-12-96	04-12-96			
Percent Solids, %w/w	94	91	87			
Extraction Date	03-19-96	03-19-96	03-19-96			
Analysis Date	03-19-96	03-19-96	03-19-96			
Control Number	960733-04	960733-05	960733-06			
PCBs, ug/kg - 8080A						**TMDL**
PCB-1016	nd	nd	nd			330
PCB-1221	nd	nd	nd			330
PCB-1232	nd	nd	nd			330
PCB-1242	nd	nd	nd			330
PCB-1248	nd	nd	nd			330
PCB-1254	nd	nd	nd			330
PCB-1260	350	nd	nd			330
PCB-1262	nd	nd	nd			330
Surrogate Recovery	% Recovery	% Recovery	% Recovery			Criteria
Decachlorobiphenyl	87	80	94			60-120

KR059B029335

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By Lee J Date 04/12/96 Data File 960733

00092849

TABLE D1. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO - PITCHER STREET SITE - Proposed Portage To Pitcher Connector - Sampling Date Of March 15, 1996				Project Number CHEM-96-0733	
Sample Identification	EP1 S1	EP1 S2	EP1 S3			
Sample Depth, ft	0.0-0.5	0.5-2.0	2.0-4.0			
Sample Type	soil	soil	soil			
Sample Date	03-15-96	03-15-96	03-15-96			
Received Date	03-15-96	03-15-96	03-15-96			
Report Date	04-12-96	04-12-96	04-12-96			
Percent Solids, %w/w	90	91	81			
Preparation Date	03-21-96	03-21-96	03-21-96			
Analysis Date	03-21/29-96	03-21/29-96	03-21/29-96			
Control Number	960733-01	960733-02	960733-03			
TOTAL METALS, ug/kg						**TMDL**
Arsenic - 7061	9,300	9,100	21,000			100
Barium, 7081	48,000	56,000	100,000			1,000
Cadmium - 7131	1,400	1,200	2,100			50
Chromium (total) - 7191	17,000	11,000	23,000			2,500
Copper - 7211	34,000	19,000	130,000			1,000
Lead - 7421	140,000	16,000	42,000			1,000
Mercury - 7470	nd	nd	nd			100
Selenium - 7741	nd	nd	nd			500
Silver - 7761	nd	nd	nd			500
Zinc - 7950	550,000	660,000	750,000			1,000

KR059B029336

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By [illegible] Date 04/28/ Data File 960733

00092850

TABLE D2. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO - PITCHER STREET SITE - Proposed Portage To Pitcher Connector - Sampling Date Of March 15, 1996				Project Number CHEM-96-0733	
Sample Identification	EP2 S1	EP2 S2	EP2 S3			
Sample Depth, ft	0.0-0.5	0.5-2.0	2.0-4.0			
Sample Type	soil	soil	soil			
Sample Date	03-15-96	03-15-96	03-15-96			
Received Date	03-15-96	03-15-96	03-15-96			
Report Date	04-12-96	04-12-96	04-12-96			
Percent Solids, %w/w	94	91	87			
Preparation Date	03-21-96	03-21-96	03-21-96			
Analysis Date	03-21/29-96	03-21/29-96	03-21/29-96			
Control Number	960733-04	960733-05	960733-06			
TOTAL METALS, ug/kg						**TMDL**
Arsenic - 7061	7,500	5,400	7,300			100
Barium, 7081	65,000	66,000	63,000			1,000
Cadmium - 7131	1,400	5,000	400			50
Chromium (total) - 7191	28,000	11,000	15,000			2,500
Copper - 7211	51,000	59,000	38,000			1,000
Lead - 7421	81,000	17,000	58,000			1,000
Mercury - 7470	nd	nd	nd			100
Selenium - 7741	nd	nd	nd			500
Silver - 7761	nd	nd	nd			500
Zinc - 7950	330,000	190,000	130,000			1,000

KR059B029337

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By _____ Date 04/29/ Data File 960733

00092851

TABLE E1. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO – PITCHER STREET SITE – Proposed Portage To Pitcher Connector – Sampling Date Of March 15, 1996				Project Number CHEM-96-0733	
Sample Identification	EP1 S1	EP1 S2	EP1 S3			
Sample Depth, ft	0.0-0.5	0.5-2.0	2.0-4.0			
Sample Type	soil	soil	soil			
Sample Date	03-15-96	03-15-96	03-15-96			
Received Date	03-15-96	03-15-96	03-15-96			
Report Date	04-12-96	04-12-96	04-12-96			
Percent Solids, %w/w	90	91	81			
Extraction Date	03-19-96	03-19-96	03-19-96			
Analysis Date	03-20-96	03-20-96	03-20-96			
Control Number	960733-01	960733-02	960733-03			
INORGANICS, ug/kg						**TMDL**
Cyanide, Total - 9010/9011	nd	nd	nd			200
Cyanide, Amenable - 9010/9011	nd	nd	nd			500

KR059B029338

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By RWJ Date 05.2.96 Data File 960733

00092852

TABLE E2. ANALYTICAL RESULTS

CONSUMERS POWER COMPANY

Environmental & Technical Services Department

LOCATION	KALAMAZOO – PITCHER STREET SITE – Proposed Portage To Pitcher Connector – Sampling Date Of March 15, 1996				Project Number CHEM-96-0733	
Sample Identification	EP2 S1	EP2 S2	EP2 S3			
Sample Depth, ft	0.0–0.5	0.5–2.0	2.0–4.0			
Sample Type	soil	soil	soil			
Sample Date	03–15–96	03–15–96	03–15–96			
Received Date	03–15–96	03–15–96	03–15–96			
Report Date	04–12–96	04–12–96	04–12–96			
Percent Solids, %w/w	94	91	87			
Extraction Date	03–19–96	03–19–96	03–19–96			
Analysis Date	03–20–96	03–20–96	03–20–96			
Control Number	960733–04	960733–05	960733–06			
INORGANICS, ug/kg						**TMDL**
Cyanide, Total – 9010/9011	nd	nd	nd			200
Cyanide, Amenable – 9010/9011	nd	nd	nd			500

KR059B029339

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By [illegible] Date 04-12-96 Data File 960733

00092853

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Lovell at Pitcher St, Kalamazoo

PROJECT NUMBER: 519617- -733

SAMPLING TEAM: GLCatbell

DATE SHIPPED: Hand carried 03-15-96

SITE SKETCH ATTACHED? CIRCLE ONE: (YES) NO

PAGE 1 OF 1

SEND REPORT TO: R Whiting

PHONE:

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	PAH	BTEX	PCBs	RCI 10 metals	CN-			REMARKS
96-0733-1	3/15/96	1025	soil	EP1, S1	0-6"	1ea. 2oz 1ea 16oz.								
-2		1035		, S2	6"-2'									
-3		1042		, S3	2-4'									
-4		1045		EP2, S1	0-6"									
-5		1048		, S2	6"-2'									
-6		1051		, S3	2-4'									

00092854

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
MLatta	03/15/96, 1330	Sample Refrig.
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

KR059B029340

ORIGINAL TO LAB COPY TO CUSTOMER

EXHIBIT MGP-3

Consumers Energy

Count on Us

CONSUMERS ENERGY COMPANY

PART 201, SECTION 7a AND 14(1)(g) PLAN

(FORMER MANUFACTURED GAS PLANTS)

KALAMAZOO
JUNE 3, 1997

KR059B029342

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INTRODUCTION

KR059B029343

Consumers Energy

Count on Us

Manufactured Gas Plant Locations
Part 201, Section 7a & 14(1)(g)

KR059B029344

cd/docs:graphs:copomap.cdr/copomap2.cdr - 5/97

INTRODUCTION

1.0 Purpose

The purpose of this document is to help meet Consumers Energy's obligation under Part 201 Sections 7a and 14(1)(g), of the Natural Resources and Environmental Protection Act (NREPA, Act 451). This requires Consumers Energy to meet applicable "due care" obligations and to "diligently pursue" response activities necessary to achieve cleanup criteria at any of the 23 formerly owned/operated Manufactured Gas Plant sites, to the extent, if any, that such obligation may apply to any of these sites.

2.0 Background

Prior to widespread use of natural gas, gas was manufactured from coal and oil. Manufactured gas served as the primary source of fuel for lighting and cooking throughout the nineteenth century until the invention of the electric light bulb. Electric lighting took the place of manufactured gas in the lighting industry. As light bulbs became more widely used, the role of manufactured gas shifted more towards heating and cooking until it began to be replaced -- this time by natural gas, beginning in the early 1920's until its total demise as a base fuel in the 1950's.

The first manufactured gas company in the United States was organized in Baltimore Md. (in 1816) and by the turn of the century almost every good size town across the United States had its own manufactured gas plant (MGP). In many cases the larger cities had two or more. Michigan was no exception, with numerous plants throughout the state.

Consumers Energy Company had owned or operated 23 former MGPs. These former plants were located throughout the Lower and Upper Peninsulas of the State of Michigan. The primary types of production processes used at Consumers Energy's sites were coal carbonization and carburetted water gas. Due to the evolutionary nature of the gas manufacturing industry, most of the coal carbonization plants were changed to utilize the carburetted water gas method. Generally, the carburetted water gas method proved to be the most economical. A general description of these processes is as follows:

COAL CARBONIZATION - The coal carbonization process utilized coal and coke with a moderate amount of residual coke generated. The process is a high temperature destructive distillation of coal in the absence of air. Coal is added to a closed vessel (retort or coke oven) and heated. The gas is immediately quenched with water to cool it and condense any coal-tar by products. The gas then went through further purification steps to remove sulfide, cyanide, and ammonia before being placed in the distribution system. Coke as a by-product was used in the iron and steel making industries, as smokeless fuel, and in foundries.

CARBURETTED WATER (BLUE GAS) - This process produced gas by cooking the coal, "steaming" or spraying hot steam over heated incandescent carbon in a reducing atmosphere. This produced essentially equal quantities of carbon monoxide and hydrogen which was then enriched by adding gaseous hydrocarbons. As with the coal carbonization process, the gas was immediately

quenched to cool it and condense any coal-tar by products. The gas way then purified to primarily remove sulfide.

In 1984 and 1985, Consumers Energy Company (then known as Consumers Power Company) notified all persons who owned portions of the former sites at the time through personal visits and correspondence, that their property was the location of a former MGP. At that time all sites were screened by Consumers Energy to assure that groundwater was not being used as a drinking water supply. During this period a human health and environmental risk assessment was conducted at two selected sites. The study concluded that the sites were suitable for the existing use, but that a risk assessment should be employed for any future development. A summary of the assessment results from both studies were provided to all the property owners in 1985. Although the results should be similar at all the former sites, it was also suggested by Consumers Energy that each owner conduct a site-specific risk assessment should they have any future development plans at their property.

Consumers Energy has worked diligently to address issues which arose at various sites, while attempting to address sites on the basis of perceived relative priorities. Consumers Energy during this period of time has been active primarily at the following five locations;

Bay City	Jackson
Flint Court St	Zilwaukee
Lansing	

and to a limited extent the following six locations;

Alma	Plymouth
Ionia	Pontiac
Kalamazoo	Royal Oak

3.0 Plan Overview

In the Spring and Summer of 1996, Consumers Energy met several times with the MDEQ and participated in a symposium on Manufactured Gas Plants in an effort to determine what was needed to document that it is meeting its obligation on developing a plan under Part 201 section 7(a) & 14(1)(g) of Act 451.

In October 1996, as a result of those meetings with the MDEQ, Consumers Energy contracted with Environmental Consulting Technology (ECT), Inc to perform an environmental assessment of all 23 former MGP sites and to formalize its plan. ECT is a Michigan registered professional engineering and geological consulting firm with three offices in Michigan. ECT personnel have extensive experience in conducting Act 451, Part 201 remedial investigations, feasibility studies, risk assessments, remedial action planning and remedial action oversight at several former MGP sites.

The 23 sites were first categorized on the basis of Consumers Energy's current owner/operator status and whether Consumers has any knowledge that the former property is a facility (Tables 1-4). This level of characterization identified thirteen sites where "knowledge" exists. The term "knowledge" as used here includes not only cases where soil or ground water data indicated MGP residuals exceeding residential criteria, it also included those sites where visual observations have revealed the existence of MGP residuals.

Of the thirteen sites, ten are owned wholly or in part by Consumers Energy. Partial Consumers ownership in most cases consists of a small parcel for a gas regulator station, located in an area where past MGP activities were likely to have occurred. Where Consumers Energy owns only an area not likely to have been used for MGP operations, the Company is not considered an owner in this analysis.

TABLE 1: SITES WHERE CONSUMERS ENERGY IS AN OWNER AND HAS KNOWLEDGE THAT THE PROPERTY IS A FACILITY		TABLE 2: SITES WHERE CONSUMERS ENERGY IS AN OWNER BUT HAS NO KNOWLEDGE THAT THE PROPERTY IS A FACILITY	
Alma	Kalamazoo	Charlotte	Owosso
Bay City	Lansing	Hastings	St Johns
Ionia	Mt Clemens	Marshall	
Jackson	Royal Oak		
Flint-Court Street	Zilwaukee		

TABLE 3: SITES WHERE CONSUMERS ENERGY IS NOT AN OWNER BUT HAS KNOWLEDGE THAT THE PROPERTY IS A FACILITY	TABLE 4: SITES WHERE CONSUMERS ENERGY IS NOT AN OWNER AND DOES NOT HAVE KNOWLEDGE THAT THE PROPERTY IS A FACILITY
Alpena	Flint-East Street
Manistee	Grand Ledge
Plymouth	Saginaw
Pontiac	Sault Ste Marie

As part of the Part 201 section 7(a) & 14 (1)g Plan development, Consumers Energy worked with the MDEQ to reach an understanding on facility prioritization criteria related to risk potential of exposure pathways. The exposure pathways considered in Consumers prioritization were:

Air Exposure Indoor ___ Residential
Air Exposure Indoor ___ Commercial
Air Exposure Ambient
Distance to Nearest Water Well
Distance to Nearest Surface Water
Surface Cover/Runoff
Likelihood of Community Development
Dermal Contact Soil
Dermal Contact Groundwater
Proximity to Residential Areas

The sites where Consumers Energy has no knowledge (Table 2 and 4) were then prioritized with respect to potential risks using assessment of potential exposure pathways. As a result of

Consumers Energy's assessment of the former MGP sites, a final prioritization was developed (Table 5) based on the Department of Defense and USEPA Site Prioritization models.

Table 5 SITE PRIORITIZATION

Site	Overall Score	Air Exposure Indoor-Res	Air Exposure Indoor-Comm/Ind	Air Exposure Ambient	Distance to Nearest Water Well	Distance to Nearest Surface Water	Surface Cover/ Runoff	Likelihood of Community Development	Dermal Contact Soil	Dermal Contact Ground Water	Residential Areas
S. S. Marie	151	20	21	15	10	21	10	14	15	15	10
Hastings	147	30	21	5	30	21	15	0	5	15	5
Marshall	147	30	21	10	20	21	5	0	10	15	15
Grand Ledge	145	30	14	10	30	21	10	0	15	0	15
Alpena	138	30	7	15	10	21	10	0	15	15	15
Charlotte	132	30	7	15	20	0	15	0	15	15	15
St. Johns	126	30	21	15	20	0	0	0	15	15	10
Owosso	118	30	21	15	10	7	0	0	15	15	5
Alma	110	0	21	15	20	14	10	0	15	15	0
Flint-East	106	0	21	5	30	21	0	14	5	10	0
Flint-Court	95	0	21	5	30	14	5	0	10	10	0
Zilwaukee	92	0	21	15	0	21	5	0	15	15	0
Bay City	86	0	21	0	30	21	0	14	0	0	0
Mt. Clemens	85	30	21	5	0	7	5	7	5	0	5
Royal Oak	85	10	21	5	0	0	5	14	10	10	10
Saginaw	82	0	21	0	20	21	5	0	5	10	0
Pontiac	80	0	21	15	0	14	5	0	10	15	0
Kalamazoo	79	0	21	5	10	21	0	7	5	10	0
Manistee	72	0	21	5	10	21	0	0	5	10	0
Lansing	69	0	21	5	0	21	5	7	5	5	0
Jackson	64	10	7	5	0	7	5	0	15	0	15
Ionia	62	0	21	5	10	21	0	0	5	0	0
Plymouth	61	10	21	5	0	0	5	0	5	5	10

Note: Likelihood of Community Development -- This category is based partially on speculation and partly on statements made by current owners.

Direct Contact with Groundwater -- A value of "0" was used for these sites for which no groundwater information was available (Manistee, Mt. Clemens)

The rating factor scale levels and the multipliers are based on the Department of Defense and USEPA Site Prioritization models (U.S. Air Force Illustration Restoration Program, Hazard Assessment Rating Methodology (HARM), U.S. Air Force Occupational and Environmental Health Laboratory-Brooks AFB-Texas). The rating factor scale levels (Table 6) are weighted factors that reflect the likelihood of exposure to a potential receptor for the particular rating factor. The multiplier is also a weighted factor that reflects the significance of a rating factor with respect to exposure to a potential receptor. The rating factors most likely to impact exposure are (1) inhalation due to exposure to contaminants in indoor residential air, (2) ingestion of groundwater due to proximity of the site to drinking water wells,

(3) human health and ecological impacts due to contaminants entering surface water bodies, and (4) potential multipathway exposure due to potential development of the property.

Table 6 RISK ANALYSIS FACTORS

Rating Factor	Rating Factor Scale Levels 0	1	2	3	Multiplier
Air Exposure Indoor Air-Residential	No residences within 500 ft of site	1-25 residences within 500 ft of site	>25 residences within 500 ft of site	Residences on and adjacent to site	10
Air Exposure Indoor Air-Commercial/ Industrial	No commercial or industrial structures within 1,000 ft of site	Commercial or industrial structures 500 to 1000 ft from site	Commercial or industrial structures within 500 feet of site	Commercial or industrial structures on or adjacent to site	7
Air Exposure Ambient Air	Complete containment (>95%)	Substantial containment (50-95%)	Partial containment (<50%)	No containment	5
Distance to Nearest Water Well	>1 mile	2,500 ft-1 mile	1,000-2,500 ft	<1,000 ft	10
Distance to Nearest Surface Water	>1 mile	2,500 ft-1 mile	1,000-2,500 ft	<1,000 ft	7
Surface Cover/Runoff	no erosion	slight erosion	moderate erosion	severe erosion	5
Likelihood of Community Development	none	>5 years	2-5 years	0-2 years	7
Dermal Contact - Soil	Complete containment (>95%)	Substantial containment (50-95%)	Partial containment (<50%)	No containment	5
- Ground water	Depth to water > 20 ft	Depth to water 15 - 20 ft	Depth to water 10 - 15 ft	Depth to water <10 ft	5
Residential Areas - population within 1,000 ft of site	0	1-25	26-100	>100	5

4.0 Conclusion

Consumers Energy believes that it has met its obligation under Part 201 of Michigan's NREPA (ACT 451) to meet "due care" obligations and to "diligently pursue" response activities necessary to achieve cleanup criteria, to the extent such obligation may apply at all of the 23 former owned/operated MGP sites.

The information available at this time may or may not be sufficient to determine whether or not any portion of the sites discussed in this report may be a facility, as defined in Part 201 of NREPA. However, if it is determined that any of the sites or portions of

the sites are facilities, Consumers Energy and its consultants will attempt to work with the Michigan Department of Environmental Quality, the site owners and occupants, and any other identified parties who have a legal interest in the site. To the extent, if any, that any contamination issues arise from former manufactured gas plant operations of Consumers Energy (then know as Consumers Power Company), or from other operations of the Company, Consumers Energy will attempt to resolve such issues.

We will continue working at those sites where we currently are active. In addition, for the remaining sites we will address those which received the highest ratings considering each exposure pathway risk. The priority of consideration will be in keeping with the understanding reached with the MDEQ during our past meetings. This would be; air issues, groundwater issues, surface issues, community development issues and finally dermal contact.

This submittal is a three volume set with an introduction, a map with each former Consumers Energy MGP location indicated, a table listing the Consumers Energy contact and by MDEQ Region/District office by former MGP site and twenty three (23) individual sections addressing each former Consumers Energy MGP. Each individual section (MGP site report) is comprised of the following:

Executive Summary
Purpose and Scope
Physical Site Assessment
Site History and Records Review
Field Investigation
Risk Assessment
Conclusion and Recommendations

CONSUMERS ENERGY COMPANY
MANUFACTURED GAS PLANT LOCATIONS
PART 201, SECTIONS 7a & 14(1)g PLAN
(MDEQ DISTRICT OFFICE - CONSUMERS ENERGY CONTACT LIST)

Region/District		Location	Consumers Energy Contact	
I.	Newberry	Sault Ste Marie	Dave Olsen	(517) 788-2980
II.	Gaylord/Grayling	Alpena	Dave Olsen	(517) 788-2980
	Cadillac	Manistee	Roger Whiting	(517) 788-2230
	Saginaw/Bay	Bay City	Dave Olsen	(517) 788-2980
		Saginaw	Dave Olsen	(517) 788-2980
		Zilwaukee	Dave Olsen	(517) 788-2980
III.	Grand Rapids	Ionia	Bob Neumann	(517) 788-0350
	Shiawassee	Alma	Roger Whiting	(517) 788-2230
		Charlotte	Roger Whiting	(517) 788-2230
		Flint Court Street	Bob Neumann	(517) 788-0350
		Flint East Street	Bob Neumann	(517) 788-0350
		Grand Ledge	Roger Whiting	(517) 788-2230
		Lansing	Roger Whiting	(517) 788-2230
		Owosso	Roger Whiting	(517) 788-2230
		St Johns	Roger Whiting	(517) 788-2230
	Plainwell	Hastings	Bob Neumann	(517) 788-0350
		Kalamazoo	Bob Neumann	(517) 788-0350
	Jackson	Jackson	Roger Whiting	(517) 788-2230
		Marshall	Bob Neumann	(517) 788-0350
	Southeast Michigan	Mt Clemens	Gary Kelterborn	(517) 788-1723 (517) 788-2482
		Pontiac	Gary Kelterborn	(517) 788-1723 (517) 788-2482
		Plymouth	Gary Kelterborn	(517) 788-1723 (517) 788-2482
		Royal Oak	Gary Kelterborn	(517) 788-1723 (517) 788-2482

KR059B029351

ASSESSMENT

KR059B029352

ENVIRONMENTAL SITE ASSESSMENT
FORMER MGP SITE
KALAMAZOO, MICHIGAN

PREPARED BY:

ECT
Environmental Consulting & Technology, Inc.

220 BAGLEY
SUITE 600
DETROIT, MICHIGAN 48226

MAY 1997
PROJECT NO: 96-698-1100

KR059B029353

00011

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KR059B029355

EXECUTIVE SUMMARY

A preliminary Environmental Site Assessment was completed of the former manufactured gas plant (MGP) located in Kalamazoo, Michigan. The subject site is located in a light manufacturing land use area. The former MGP site is occupied by a variety of buildings, parking lots, walkways, and landscape. The site was used as a gas plant from 1856 to 1956, and was owned by Consumers Energy Company (then known as Consumers Power Company) from 1917 until 1965. The south part of the site is stilled owned by Consumers Energy Company for an electric substation and gas regulator station.

During a reconnaissance of the subject property there was no visible: environmental contaminant on the surface soils; former MGP structures; solid or liquid materials; electrical or hydraulic equipment; and no suspect asbestos containing materials (ACMs) were observed to exist on the former MGP site or adjacent properties.

Federal, State, and local environmental records were reviewed and a commercial database search was commissioned. These included the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS), National Priorities List (NPL), Resource Conservation and Recovery Information System (RCRIS), Emergency Response Notification System (ERNS), Hazardous Materials Incident Report System (HMIRS), Toxic Release Inventory System (TRIS), and Toxic Substances Control Act (TSCA) databases. They also included State of Michigan Hazardous Waste Sites (SHWS), formerly the Michigan Sites of Environmental Contamination (Act 307 list), registered underground storage tank (UST) sites, leaking underground storage tank (LUST) sites, and landfill sites. The results of this review has indicated the presence of eight Michigan Sites of Environmental Contamination, one NPL site, and one CERCLIS site within one mile, and six RCRIS sites, seven UST sites, and five LUST site within ¼ mile of the subject parcel.

After assessing the physical state of the site and surroundings, the site history, and likely exposure pathways, it is reasonable to conclude that the present conditions at the former Kalamazoo MGP do not present a significant risk to human health and the environment. Despite the uncertainties caused by the lack of environmental analytical data, no immediate action is recommended at this site because of the minimal likelihood of exposure.

Although data is preliminary and there remains more study to be done, the results of the work to date suggest that portions of the site are or may be a facility, as defined by Part 201 of the Natural Resources and Environmental Protection Act (NREPA). Consumers Energy Company and its consultants will attempt to work with the Michigan Department of Environmental Quality (MDEQ), the site owners and occupants, and any other identified parties who have a legal interest in the site discussed in this report. To the extent, if any, that any contamination issues arise from manufactured gas plant operations of Consumers Power Company, or from other operations of the Company, the Company will attempt to resolve such issues.

KR059B029356

1.0 PURPOSE AND SCOPE

Environmental Consulting & Technology, Inc. (ECT) was retained by Consumers Energy Company to conduct Environmental Site Assessment and Risk Assessment activities of the former manufactured gas plant (MGP) site located in Kalamazoo, Michigan. The objective of this assessment was to evaluate the present environmental condition of the property for potential environmental impairment or contamination at the site based on available information that, if present, may result in unacceptable environmental risks and liability. This assessment was conducted during the period of November 20, 1996 through May 2, 1997.

The preliminary environmental site assessment was based upon information collected through the following activities:

- Visual inspection of the property.
- Evaluation of potential environmental impacts from proximate properties.
- Evaluation of past site usage through the review of historical maps/photographs, governmental regulatory agency data, historical ownership records, and discussions with persons familiar with the site and local area.
- Review of available environmental incident reports contained in records and databases from the appropriate regulatory agencies.
- Review of known sites of contamination from the state and federal agency sources, including the United States Environmental Protection Agency (USEPA) Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), National Priority List (NPL), Resource Conservation and Recovery Information System (RCRIS), Emergency Response Notification System (ERNS), Hazardous Materials Incident Report System (HMIRS), Toxic Release Inventory System (TRIS), and Toxic Substances Control Act (TSCA) data files, State Hazardous Waste Site (SHWS) information, landfill databases, underground storage tank (UST) and leaking underground storage tank (LUST) information, state and local Fire Marshal records, and other available sources.
- A review of registered USTs and Aboveground Storage Tanks (ASTs) in the proximate area.
- A survey of the electrical equipment which may have PCB containing oils.
- Review of available site investigation reports and additional information collected from previously performed site investigations.

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2.0 PHYSICAL SITE ASSESSMENT

2.1 SITE LOCATION

The former MGP site is located on five individually described contiguous parcels of property in the City of Kalamazoo, Kalamazoo County, Michigan (Figure 1). The site is located between Pitcher Street and Portage Street near East Lovell and what was once known as Spring Street. As indicated on the Kalamazoo Quadrangle U.S.G.S. 7.5 minute topographic maps, the site is located in Section 15, Southeast 1/4, and Section 22, Northwest 1/4, Township 2 South, Range 11 West, City of Kalamazoo, County of Kalamazoo, State of Michigan.

The parcels are more specifically described as:

> Commencing at a point on the Westerly line of Pitcher Street 559.76 feet Southeasterly of the Southwest corner of Spring and Pitcher Streets; thence Southwesterly at an internal angle of 100°30' with the Westerly line of Pitcher Street a distance of 308.25 feet; thence Southwesterly at an angle of 178°41' with the aforementioned line (or slightly to the right of the course previously mentioned) a distance of 148.36 feet to the Easterly walk of Portage Street, said point is also being 545.91 feet North of the North line of Gibson Street; then Northwesterly along the Easterly walk line of Portage Street a distance of 28.33 feet to the Southwest corner of land owned by Willard P. Darling, Liber 619 of Deeds, page 234; thence Northeasterly along the Southerly line of the above mentioned property a distance of 148.75 feet more or less to the line of land conveyed by the Kalamazoo Spring & Axle Co. To the Kalamazoo Gas Co. On or about September 11, 1906; thence Northwesterly along the aforementioned line a distance of 60 feet more or less to the Northeast corner of land owned by Willard P. Darling; thence Northeasterly parallel to the first description course a distance of 318.54 feet more or less to a point on the Westerly line of Pitcher Street, said point being 493.11 feet Southeasterly of the Southwest corner of Spring and Pitcher Streets; then Southeasterly along the Westerly line of Pitcher Street 66.65 feet to the point of beginning.
>
> and
>
> Commence on the rear line of Lot 176 of the plat of Kalamazoo, 10 rods Easterly of the Easterly line of Portage Street in the City of Kalamazoo and 12 feet from the Southeasterly corner of said lot; thence Northerly on the Easterly line of Lots 176, 174 and 172 of the plat of Kalamazoo, to the Southerly line of Spring Street in said City of Kalamazoo; thence Easterly along said Southerly line to the Southwest corner of Spring and Pitcher Streets; thence Southeasterly along the Westerly line of Pitcher Street to a point which is about 364.2 feet Southeasterly from the Southwest corner of Spring and Pitcher Streets; thence Southwesterly along a line that is an extension of a line 5 rods and 2 feet Southerly from and parallel with the Northerly line of Lot 180 of the plat of Kalamazoo to a point 155 feet Easterly along said line from the Easterly line of Portage Street; then Northerly parallel with the Easterly line of said

Portage Street 5 rods and 2 feet to the Northerly line of said Lot 180; thence Southwesterly on the line between Lots 178 and 180 15 feet; thence Northerly parallel with the Easterly line of Portage Street 5 rods and 12 feet to a point 12 feet Northerly of and parallel with the Southerly line of Lot 176 of the plat of Kalamazoo that is 140 feet Northeasterly along said line from the Easterly line Portage Street; thence Northeasterly parallel with the Southerly line of said Lot 176 to the place of beginning.

and

Also all that part of the following described land lying Northwesterly of the Northwesterly line of that part of Lovell Street lying between Portage and Pitcher Streets: Commencing 130.3 feet Northeasterly from a point in the Easterly line of Portage Street which is 25.15 feet Northwesterly from a point where the North line of that part of Lovell Street lying Westerly of Portage Street prolonged intersects the Easterly line of Portage Street; thence Northeasterly in the same course to a point in the Westerly line of Pitcher Street which is 504.4 feet Southeasterly from the Southwest corner of Spring and Pitcher Streets; thence Northwesterly along the Westerly line of Pitcher Street 140.2 feet to the Southerly line of the premises last above described; thence Southwesterly along the line of said premises described above and the line of land now or formerly owned by James F. Farnam, being an extension of a line 5 rods and 2 feet Southerly of and parallel with the North line of Lot 180 of the plat of Kalamazoo 356 feet to the Northeasterly corner of a parcel of land now or formerly owned by C.H. Dutton, being 132 feet more or less from the Easterly line of Portage Street, and thence Southeasterly in a straight line 103.6 feet to the place of beginning.

and

Also beginning on the Easterly line of Portage Street at its intersection with the Southerly line of that part of Lovell Street lying between Portage and Pitcher Streets; running thence North 49°12' 30" East along the Southerly line of Lovell Street 148.27 feet; continuing thence along the Southerly line of said Lovell Street North 47°53' 30" East 206.54 feet; thence South 31°36' 30" East 175.03 feet; thence South 57°48' 40" West 348.42 feet to the Easterly line of Portage Street; thence North 32°06' West along said Easterly line of Portage Street 117.25 feet to the place of beginning.

and

A parcel of land in the Southeast ¼ of Section 15 and in the Northeast 1/4 of section 22, Township 2 South, Range 11 West, City of Kalamazoo, County of Kalamazoo, and State of Michigan, described as: Commencing at a point on the Westerly line of Pitcher Street 559.76 feet Southeasterly of the Southwest corner of spring and Pitcher Streets; thence Southeasterly, along the Westerly line of Pitcher Street, 88.14 feet to the Southeast corner of land conveyed by the Kalamazoo Spring & Axle Company to the Kalamazoo Gas Company by deed dated September 11, 1906 and recorded in Liber 131 at Page 407, Kalamazoo County Records;

thence continuing Southeasterly, along the Westerly line of Pitcher Street, 174.48 feet to an angle in the Westerly line of Pitcher Street; thence Southeasterly, along the Westerly line of Pitcher Street, 39.25 feet to the Northerly line of land deeded to North & Coon by deed dated April 18, 1890 and recorded in Liber 77 at page 173, Kalamazoo County Records; thence Southwesterly, along the Northerly line of the land deed to North & Coon, to a point on the Easterly line of Portage Street 689.7 feet North of the centerline of Walnut Street (formerly First Street); thence Northwesterly, along the Easterly line of Portage Street, to a point on the Easterly line of portage Street 428.66 feet North of the North line of Gibson Street, being the Southwesterly corner of land conveyed by Consumers Power Company to The Upjohn Company by deed dated September 10, 1965 and recorded in Liber ___ at ____ , Kalamazoo County Records; thence North 57°48'40" East 348.42 feet, along the Southerly line of the land conveyed to The Upjohn Company; thence North 31° 36'30" West 175.03 feet, to the Southerly line of Lovell Street; thence continuing along the Southerly line of Lovell Street, North 47°53'30" East 101.71 feet to the point of beginning.

2.2 GENERAL SITE DESCRIPTION

The property consists of five parcels of land as previously described. The former MGP site is bordered to the northeast by Pitcher Street, to the southeast by a vacant lot (approximately 430 feet northwesterly from Gibson Street), to the southwest by Portage Street, and to the northwest by a street formerly known as Spring Street, now vacated. The property is located in close proximity to Portage Creek. The site is essentially rectangular in shape, both north and south of Lovell Street. The portion north of Lovell Street began 10 rods east of Portage Street behind the former DeNooyer Chevrolet car dealership property continuing to Portage Street. The portion from Lovell Street to the vacant lot ran between Pitcher Street and Portage Street. Representative site photographs are included in Appendix A.

Geologic information was obtained from available U.S. Geological Survey reports, U.S.G.S. topographic maps, and other available local geological informational papers. The site elevation is approximately 770 ft above mean sea level (ft-msl) as indicated on the U.S.G.S. Kalamazoo Quadrangle topographic map. The local soils are described as glacially stratified sequences of glacial till material, including lenses of clay, silt and sand. The former MGP site is generally topographically flat, with a drop off directly into Portage Creek to the east of the site.

2.3 CURRENT LAND USE

The former plant site is currently occupied by several commercial and industrial structures including a power plant for Upjohn Company and other Upjohn facilities, parking lots, and walkways. A Consumers Energy Company gas regulator and electrical substation is located on the southern portion of the property south of Lovell Street. The substation is surrounded by grassy areas.

2.4 ADJACENT LAND USE

The former MGP site is located in a light manufacturing area surrounded by numerous Upjohn Company facilities, railroad right-of-ways, and city streets. Portage Creek lies to the east of the site.

2.5 SOLID AND LIQUID MATERIALS

The subject parcels were visually inspected for the presence of solid and liquid waste, toxic materials, or any other environmental contamination which may be present. Site characteristics which typically represent the potential for environmental contamination include chemical spills and leaks, dead or dying foliage, ground discoloration and disturbances, unusual odors, and the improper storage of solid, liquid, or gaseous products and wastes. The site reconnaissance did not indicate: unusual odors or stressed vegetation; historical hazardous material storage; visual evidence of the former MGP plant structures or gas holders.

2.6 STORAGE TANKS

The site and neighboring sites were visually inspected for the presence of USTs and ASTs. A review of the available state and county records was conducted with regard to storage tanks. The physical inspection of the sites revealed evidence of two ASTs on the current manufacturing facility's property. Upon interviewing the City of Kalamazoo Fire Marshal, it was discovered that two 30,000 gallon USTs with unknown contents were removed in the spring of 1990 from the former MGP site. In addition, the City Fire Marshal stated that two 500 gallon USTs containing waste oil were discovered on December 21, 1991. Further investigation has indicated that these latter tanks were present on the former DeNooyer Chevrolet property adjacent to the former MGP site. No visual evidence of contamination was observed during the removal of any of these UST systems.

The visual inspection of the adjacent properties revealed no current use of USTs. The review of Registered and Leaking UST sites that were determined to be located in the area will be addressed in the regulatory review section (Section 3.0).

2.7 POLYCHLORINATED BIPHENYLS (PCBs) & ASBESTOS CONTAINING MATERIALS (ACMs)

PCBs are present in some electrical equipment, transformers, capacitors, fluorescent light ballasts, and hydraulic systems. The visual inspection of this property did not indicate the presence of any PCB containing transformers or equipment on the site.

A cursory visual survey for refuse material that may be present was conducted to determine whether suspect ACMs were present on the subject site. Asbestos was used primarily in the 1950s through

1970s in a wide variety of construction and insulative materials. It has been found in roofing and flooring materials, ceiling tiles, and insulation materials. Asbestos can become an environmental or health risk when the asbestos fiber is released and inhaled or ingested. ACMs present environmental risks when exposed or disturbed. No refuse suspect ACMs were observed at accessible locations during the site reconnaissance. The building interiors were not accessible and not inspected.

2.8 FILL MATERIALS

No visual evidence was discovered during the assessment of the site that would indicate that any unnatural fill materials or landfilling had occurred on the site or adjoining sites; however, according to the Planning Department, marshlands east of the site were entirely filled in during the late 1800s.

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3.0 SITE HISTORY AND RECORDS REVIEW

A site history was compiled by researching the records maintained at applicable federal, state, county and local regulatory agencies, including a commission of the EDR report (Appendix B) for the subject property and surrounding area. The regulatory file review was performed in order to confirm the information which was presented on the database and to search for any sites that may have been missed by the data search. In addition, those sites that were in close enough proximity to the site or which were of concern were investigated in greater detail. These included the United States Environmental Protection Agency (USEPA) CERCLIS, NPL, RCRA, ERNS, HMIRS, TRIS, and TSCA data files, former Michigan Act 307 Sites of Contamination information, landfill databases, UST and LUST information, and state and local Fire Marshal records.

3.1 HISTORICAL RECORDS

A site title history was provided by Consumers Energy Company. More detailed title information is included in Appendix C.

Available aerial photography of the site and surrounding area was reviewed at the Kalamazoo Public Library and the Kalamazoo City Clerk's Office in Kalamazoo, Michigan. Aerial photograph records were not available that would have depicted historical uses. No legible aerial photographs were available at either of the above mentioned locations.

Sanborn Fire Insurance Maps are historical map records primarily used by insurance companies to asses fire risks for a particular property and can offer valuable information regarding the presence of USTs, ASTs, and types of businesses and operations that have historically occupied a particular property. Sanborn maps of the subject properties were reviewed for the years 1891, 1896, 1902, 1908, 1932, 1950, 1958, 1965, and 1972 (Figures 2A through 2I, respectively). The 1891 Sanborn map of the former MGP site depicts the location and presence of the plant structures, including the purifying house, two gas holders, coal shed and retort areas. The 1896 Sanborn map depicts the presence of a third gas holder and a railroad spur near Pitcher and Spring Streets. In addition, the name Kalamazoo Gas Light Co. appears on the property. The 1902 Sanborn map indicates the addition of a fourth gas holder, a coke pile and coke stream way, a water gas plant, and a second railroad spur entering the property off of Pitcher Street. The original railroad spur appears to have been moved farther north across Spring Street. The 1908 Sanborn map contains the same structures as the 1902 map, but three more coal pits have been added as well as a condenser house, an ammonia still, an office, two more railroad spurs, and several more unidentified buildings. The 1932 Sanborn map depicts a mass reorganization of the property. The map depicts different locations of three gas holders, two ammonia tanks, the condenser house, the water gas plant, the ammonia still, three to four railroad spurs, and several other buildings. The 1950 and 1958 Sanborn maps are essentially the same as the 1932 map except for the removal of one of the gas holders and the name Consumers Power Company now appears on the property. The 1965 and 1972 Sanborn maps do not depict the site clearly.

3.2 REGULATORY FILE REVIEW

The purpose of the regulatory file review is to obtain and review records that will help identify potential environmental concerns in connection with the property or adjoining properties. The primary source of this information is the EDR report (see Appendix B) which presents the findings of a computerized environmental records search for the subject property, adjoining properties, and nearby properties. The EDR report documented available information under the following databases: United States Environmental Protection Agency (USEPA) CERCLIS, NPL, RCRIS, ERNS, HMIRS, TRIS, and TSCA data files, SHWS, landfill databases, UST, AST, and LUST information, and state and local Fire Marshal records. The significant findings of ECT's records review are discussed in the following text.

The CERCLIS and NPL databases are prepared under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) by the USEPA. The NPL sites are those sites most in need of remediation and clean-up as promulgated by the EPA. The CERCLIS sites are those under investigation for possible placement on the NPL list. Of the sites listed for the State of Michigan, and those specifically indicated within a one mile radius of the subject site, one NPL and one CERCLIS site were found in the database.

The RCRIS database includes selective information on properties that generate, transport, store, treat, and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Three types of properties are identified in the USEPA RCRIS data base: (1) small-quantity generators (SQGs), (2) large-quantity generators (LQGs), and (3) treatment, storage, and disposal (TSD) facilities. Review of the RCRIS database reveals that six RCRIS sites are located within ¼ mile of the subject property.

A search of the ERNS, HMIRS, and Department of Transportation (DOT) records was conducted. The search indicated that no hazardous material spills have reportedly occurred within a ¼ mile radius of the site.

The TRIS/TSCA data files did not list any sites within one mile of the subject property.

The SHWS database (formerly Michigan Sites of Environmental Contamination - Act 307 list), maintained by the MDEQ was reviewed. A total of eight sites were identified within a one mile radius of the subject site, none being located within a ¼ mile radius.

Michigan Solid Waste and Landfill Facilities database, prepared under the Michigan Solid Waste Management Act of 1978 (Act-641) shows no listed landfill or disposal sites within a ¼ mile radius of the subject properties.

The EDR report provides a list of property owners who have registered USTs on their property. Based on review of the EDR report, seven USTs are registered at properties located within ¼ mile of the former Kalamazoo MGP site. Most of the tanks have been removed, as indicated on the EDR report

4.0 FIELD INVESTIGATION

A site specific subsurface investigation of the former plant site was not conducted as a part of this assessment. Some historical and some limited recent information as to subsurface environmental conditions and the possible presence of contamination at the former MGP property, however, was available and reviewed.

Most of the former MGP site was sold to Upjohn-Pharmacia Company (formerly Upjohn Company). The Upjohn-Pharmacia Company constructed a powerplant and office building on the parcels. Numerous reports developed for these construction projects indicate the subsurface and groundwater conditions related to the former MGP.

In addition, due to the City of Kalamazoo's plans to undertake a major street construction which will affect the remaining parcel of the former site owned by Consumers, Consumers initiated a limited subsurface investigation in 1996 to assess two small portions of the property. The analytical results show detection of some typical MGP constituents but at levels below Industrial or Commercial cleanup standards.

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5.0 RISK ASSESSMENT

5.1 GENERAL

This risk assessment is based on an evaluation of the most likely exposure pathways and the chemical properties of the constituents found in the samples collected at the site. Further sampling and analysis is necessary to more fully assess the likelihood, if any, of risk to public health and the environment.

The data and information collected during the preliminary site investigation has been used to perform a screening level risk assessment of the former Kalamazoo MGP site. In addition, Consumers Manufactured Gas Plant - Facility Prioritization Criteria (outlined in a December 10, 1996 submittal to the MDEQ-ERD) was used for analysis of the due care obligations, potential receptors, potential exposure pathways, and potential liability issues.

Existing site and chemical specific data were evaluated with respect to the screening level risk assessment. An exposure pathway assessment was performed and included an evaluation of contaminant distribution, potential migration pathways, and potential receptors. Potential offsite receptors may include nearby residents or persons using water supplies located down gradient of the site, and plant and animal communities in the vicinity. The exposure pathways were identified and prioritized in terms of potential health and environmental impacts.

5.2 DATA EVALUATION

Existing site data and the results of the background information investigation were evaluated to identify whether chemicals present on the former Kalamazoo MGP site are likely due to impacts from the former MGP. The results of this evaluation are summarized in Sections 5.3 and 5.4.

Review of the file materials and discussions with Consumers Energy staff lead to the conclusion that MGP residuals have been detected on site in quantities that may, according to Part 201 rules, classify the former Kalamazoo MGP site as a facility. File materials did not identify other likely sources of the chemicals detected in soil and groundwater at the subject property.

5.3 EXPOSURE PATHWAY ASSESSMENT

The exposure pathway assessment has taken into account potential contaminant distribution, migration pathways, and potential receptors to define the likelihood of exposure attributable to site contamination. The results of this assessment were then evaluated to assess the risk of exposure to either onsite or offsite receptors.

The potential exposure pathways that were assessed included indoor air exposure (residential),

indoor air exposure (commercial/ industrial), ambient air exposure, distance to nearest water well, distance to nearest surface water body, presence of surface cover/runoff, likelihood of community development, potential of dermal contact with soil, potential of dermal contact with groundwater, and presence of residential areas adjacent to the site.

5.3.1 INDOOR RESIDENTIAL AIR EXPOSURE

Since no residential properties are located within 500 feet of the former Kalamazoo MGP site, there is a minimal potential risk that residential indoor air exposure may occur.

5.3.2 INDOOR COMMERCIAL/INDUSTRIAL AIR EXPOSURE

Since commercial/industrial properties are located on or adjacent to the former Kalamazoo MGP site, there is a relatively high potential risk that commercial/industrial indoor air exposure may occur.

5.3.3 AMBIENT AIR EXPOSURE

Since the former Kalamazoo MGP site is predominantly paved or built upon in the area where chemicals were detected, there is a relatively low potential that ambient air exposure may occur.

5.3.4 EXPOSURE TO GROUNDWATER

The background information investigation (Kalamazoo City Planning and Engineering Departments) revealed that one water supply well is located more than ½ mile from the former Kalamazoo MGP site. In addition, the reported groundwater table depth ranges from 10 to 15 feet below ground surface.

Since the nearest water well is more than ½ mile from the former Kalamazoo MGP site, the potential is low that exposure may occur due to ingestion of contaminated drinking water.

5.3.5 IMPACT OF GROUNDWATER ON SURFACE WATER

Portage Creek is less than 500 feet from the former Kalamazoo MGP site, therefore the potential would be expected to be high that impact to surface water may occur from possible residuals at the former Kalamazoo MGP site. However, Upjohn-Pharmacia tested the water leaching into the creek and found no contamination. In addition, most of the source of potential contamination was removed during Upjohn-Pharmacia's construction projects. Therefore the actual potential is low.

5.3.6 SOIL CRITERIA PROTECTIVE OF GROUNDWATER

Since the former Kalamazoo MGP site is predominantly paved or built upon in the area where contaminants were detected, the potential is low for contaminant runoff or infiltration leaching to occur at the site.

5.3.7 LIKELIHOOD OF COMMUNITY DEVELOPMENT

During the information investigation, it was learned that the city of Kalamazoo is interested in purchasing this site for construction of a roadway. No more firm or specific information is currently available.

5.3.8 SOIL AND GROUNDWATER DIRECT CONTACT

The potential is relatively low that dermal contact in soil may occur since substantial surface cover exists in the area where contaminants were detected. The depth to groundwater is between 10 and 15 feet below ground surface. The potential is moderate that dermal contact with groundwater may occur.

5.3.9 PROXIMITY OF RESIDENTIAL AREAS

No residential properties are located within 500 feet of the former Kalamazoo MGP site, so the potential for residential exposure is minimal.

5.4 RISK CHARACTERIZATION

The process of risk characterization is an effort to integrate the exposure and health and environmental assessment information to reach conclusions regarding health risks for the site in its present condition. The site prioritization methodology, integrated with chemical constituent information, provides a risk characterization. For the former Kalamazoo MGP, the risk is characterized as low because of the absence of residential areas, presence of substantial surface cover, and past removal of potential contamination sources.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 RISK ANALYSIS FACTORS AND SITE PRIORITIZATION

The rating factor scale levels and the multipliers are based on the Department of Defense and USEPA Site Prioritization models (U.S. Air Force. 1982. U.S. Air Force Installation Restoration Program. Hazard Assessment Rating Methodology (HARM). U.S. Air Force Occupational and Environmental Health Laboratory, Brooks AFB, Texas.) The rating factor scale levels are weighted factors that reflect the likelihood of exposure for a potential receptor and a particular rating factor. The multiplier is also a weighted factor that reflects the significance of a rating factor with respect to exposure of a potential receptor. The rating factors most likely to impact exposure are (1) exposure due to inhalation of contaminants in air, (2) ingestion of contaminants in groundwater due to proximity of the site to drinking water wells, (3) human health and ecological impact due to contaminants entering surface water bodies, and (4) potential multipathway exposure due development of the property. These factors, the scale levels and multipliers are summarized in Table 6.1. The results of the site prioritization for this and other former Consumers Energy MGP sites are summarized in Table 6.2.

6.2 SUMMARY OF RISK FINDINGS

This assessment of the overall likelihood of exposure to contaminants present on the former Kalamazoo MGP site reveals that the risk potential is moderate. The low risk potential is due in large part to the absence of residential areas, and the presence of surface cover which acts as an exposure barrier to dermal contact and air exposure to contaminants. The absence of residential property in the vicinity of the site reduces the risk to the general population.

6.3 FUTURE REMEDIAL ACTIVITIES

Despite the uncertainties caused by the lack of environmental analytical data, no immediate action is recommended at the former Kalamazoo MGP site because of the low likelihood of exposure.

Table 6.1 RISK ANALYSIS FACTORS

Rating Factor	Rating Factor Scale Levels 0	1	2	3	Multiplier
Air Exposure Indoor Air-Residential	No residences within 500 ft of site	1-25 residences within 500 ft of site	>25 residences within 500 ft of site	Residences on and adjacent to site	10
Air Exposure Indoor Air-Commercial/ Industrial	No commercial or industrial structures within 1,000 ft of site	Commercial or industrial structures 500 to 1000 ft from site	Commercial or industrial structures within 500 feet of site	Commercial or industrial structures on or adjacent to site	7
Air Exposure Ambient Air	Complete containment (>95%)	Substantial containment (50-95%)	Partial containment (<50%)	No containment	5
Distance to Nearest Water Well	>1 mile	2,500 ft-1 mile	1,000-2,500 ft	<1,000 ft	10
Distance to Nearest Surface Water	>1 mile	2,500 ft-1 mile	1,000-2,500 ft	<1,000 ft	7
Surface Cover/Runoff	no erosion	slight erosion	moderate erosion	severe erosion	5
Likelihood of Community Development	none	>5 years	2-5 years	0-2 years	7
Dermal Contact - Soil	Complete containment (>95%)	Substantial containment (50-95%)	Partial containment (<50%)	No containment	5
- Ground water	Depth to water > 20 ft	Depth to water 15 - 20 ft	Depth to water 10 - 15 ft	Depth to water <10 ft	5
Residential Areas - population within 1,000 ft of site	0	1-25	26-100	>100	5

Table 6.2 SITE PRIORITIZATION

Site	Overall Score	Air Exposure Indoor-Res	Air Exposure Indoor-Comm/Ind	Air Exposure Ambient	Distance to Nearest Water Well	Distance to Nearest Surface Water	Surface Cover/ Runoff	Likelihood of Community Development	Dermal Contact Soil	Dermal Contact Ground Water	Residential Areas
S. S. Marie	151	20	21	15	10	21	10	14	15	15	10
Hastings	147	30	21	5	30	21	15	0	5	15	5
Marshall	147	30	21	10	20	21	5	0	10	15	15
Grand Ledge	145	30	14	10	30	21	10	0	15	0	15
Alpena	138	30	7	15	10	21	10	0	15	15	15
Charlotte	132	30	7	15	20	0	15	0	15	15	15
St. Johns	126	30	21	15	20	0	0	0	15	15	10
Owosso	118	30	21	15	10	7	0	0	15	15	5
Alma	110	0	21	15	20	14	10	0	15	15	0
Flint-East	106	0	21	5	30	21	0	14	5	10	0
Flint-Court	95	0	21	5	30	14	5	0	10	10	0
Zilwaukee	92	0	21	15	0	21	5	0	15	15	0
Bay City	86	0	21	0	30	21	0	14	0	0	0
Mt. Clemens	85	30	21	5	0	7	5	7	5	0	5
Royal Oak	85	10	21	5	0	0	5	14	10	10	10
Saginaw	82	0	21	0	20	21	5	0	5	10	0
Pontiac	80	0	21	15	0	14	5	0	10	15	0
Manistee	72	0	21	5	10	21	0	0	5	10	0
Lansing	69	0	21	5	0	21	5	7	5	5	0
Kalamazoo	65	0	21	5	10	7	0	7	5	10	0
Jackson	64	10	7	5	0	7	5	0	15	0	15
Ionia	62	0	21	5	10	21	0	0	5	0	0
Plymouth	61	10	21	5	0	0	5	0	5	5	10

Note: Likelihood of Community Development -- This category is based partially on speculation and partly on statements made by current owners.
Direct Contact with Groundwater -- A value of "0" was used for those sites for which no groundwater information was available (Manistee, Mt. Clemens)

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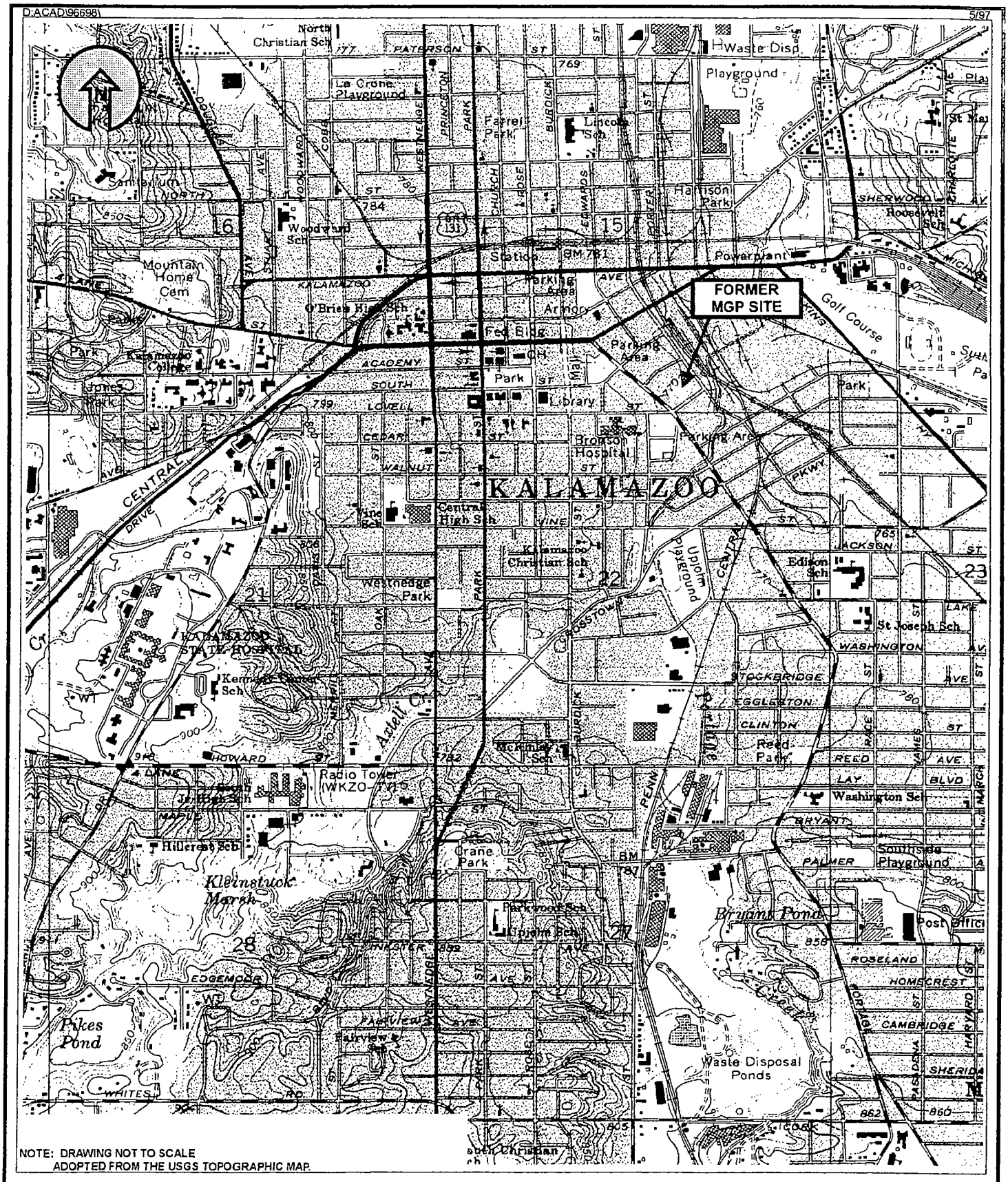

KALAMAZOO SITE
LOCATION MAP
KALAMAZOO, MI

FIGURE 1

Source: ECT, 1997

ECT
Environmental Consulting & Technology, Inc.
220 Bagley Avenue
Suite 600
Detroit, Michigan 48226

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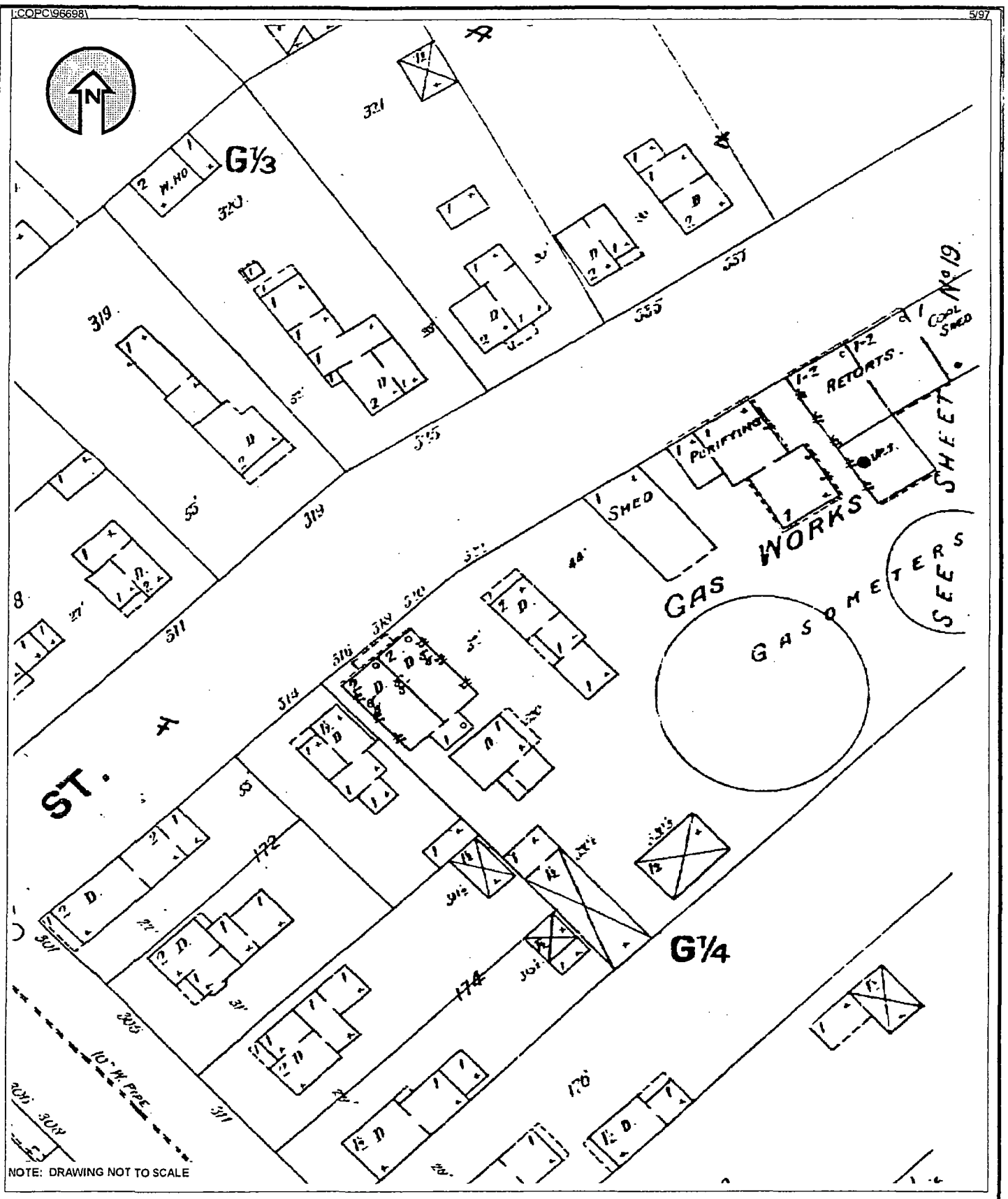

SANBORN MAP, 1891
SPRING STREET
KALAMAZOO, MI

FIGURE 2A
FORMER KALAMAZOO
MGP SITE

Source: ECT, 1997

ECT
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Suite 600
Detroit, Michigan 48226

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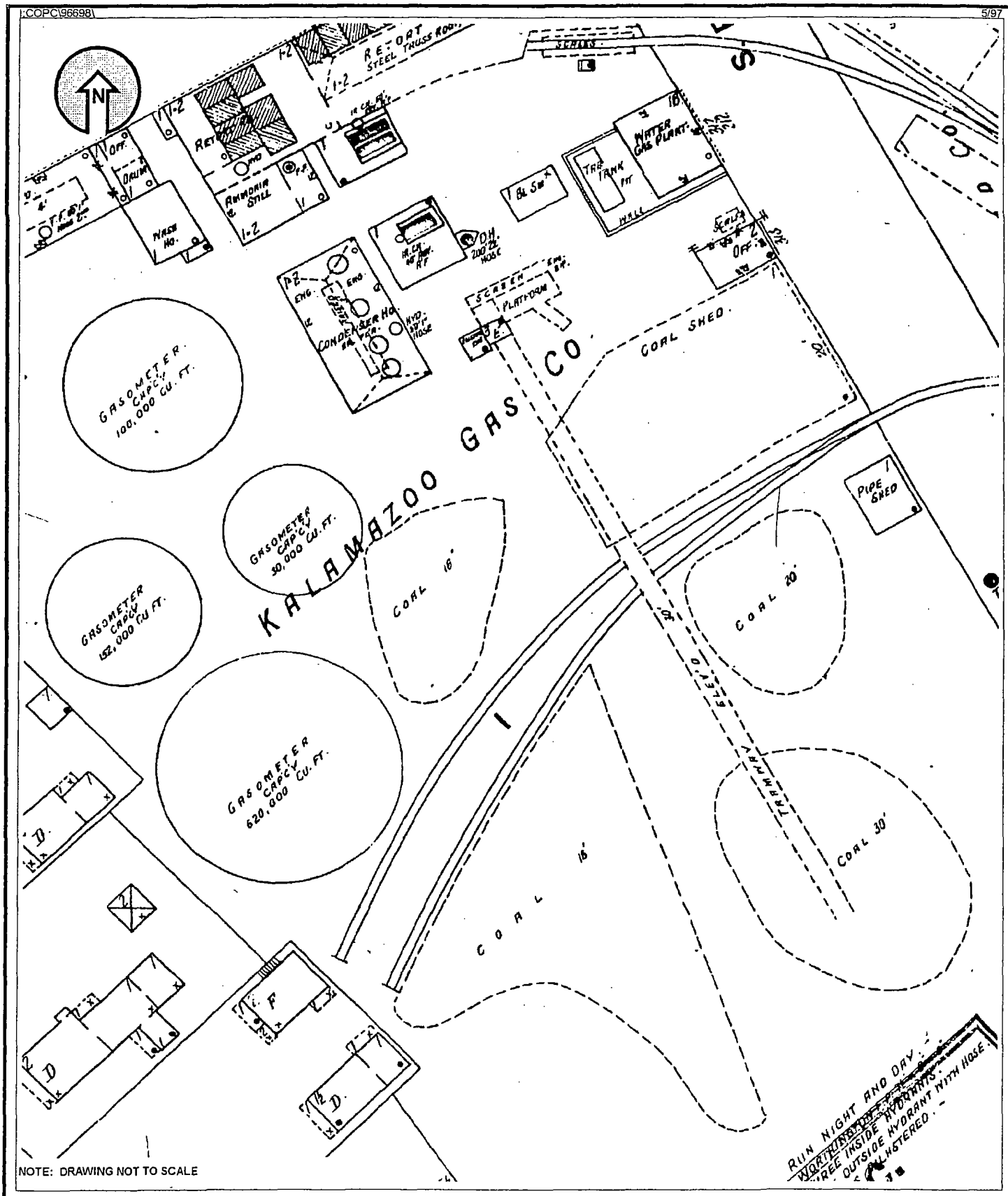
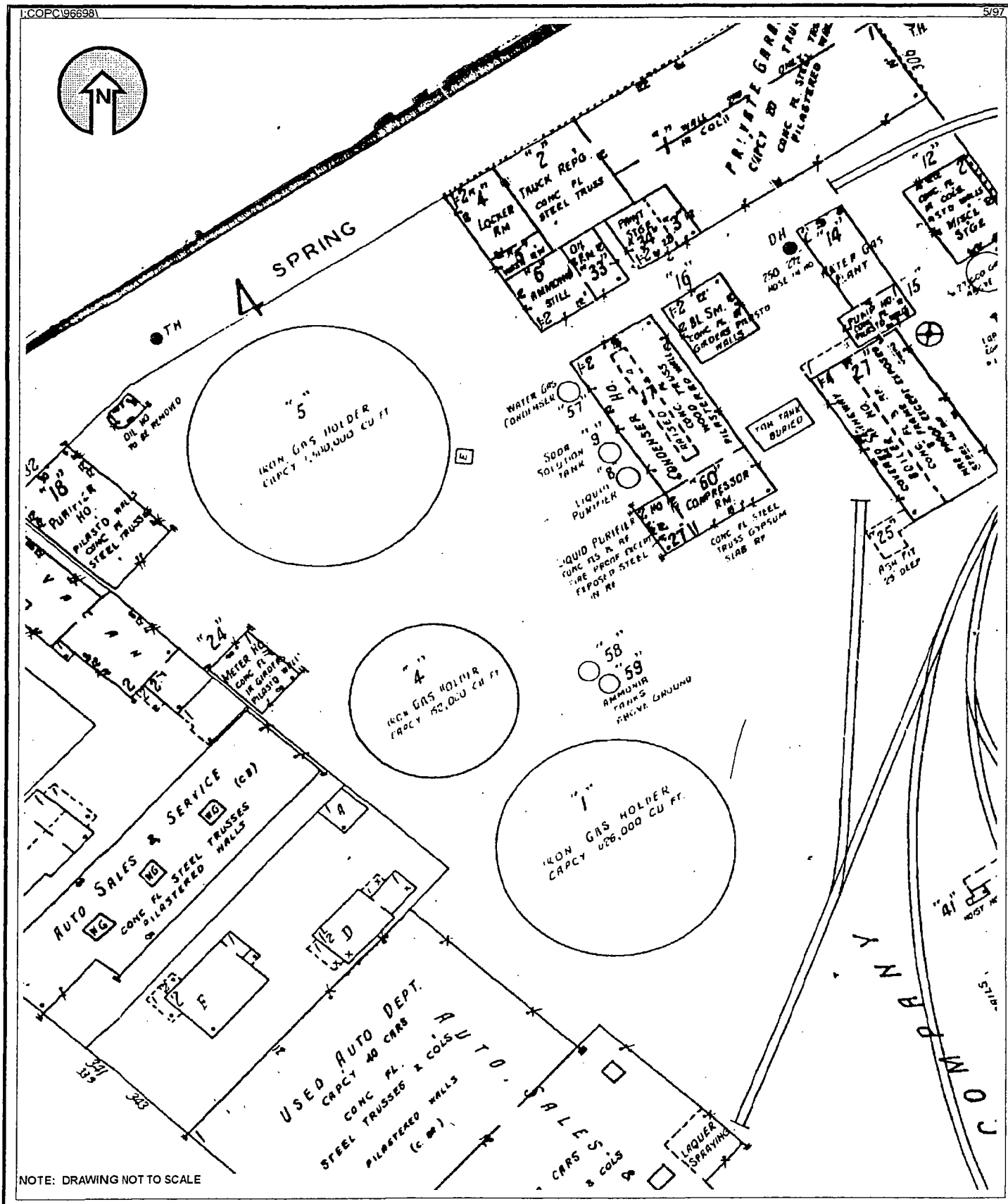


SANBORN MAP, 1908 SPRING STREET KALAMAZOO, MI	FIGURE 2D FORMER KALAMAZOO MGP SITE Source: ECT, 1997	ECT Environmental Consulting & Technology, Inc. 220 Bagley Avenue Suite 600 Detroit, Michigan 48226



SANBORN MAP, 1932
SPRING STREET
KALAMAZOO, MI

FIGURE 2E
FORMER KALAMAZOO
MGP SITE

Source: ECT, 1997

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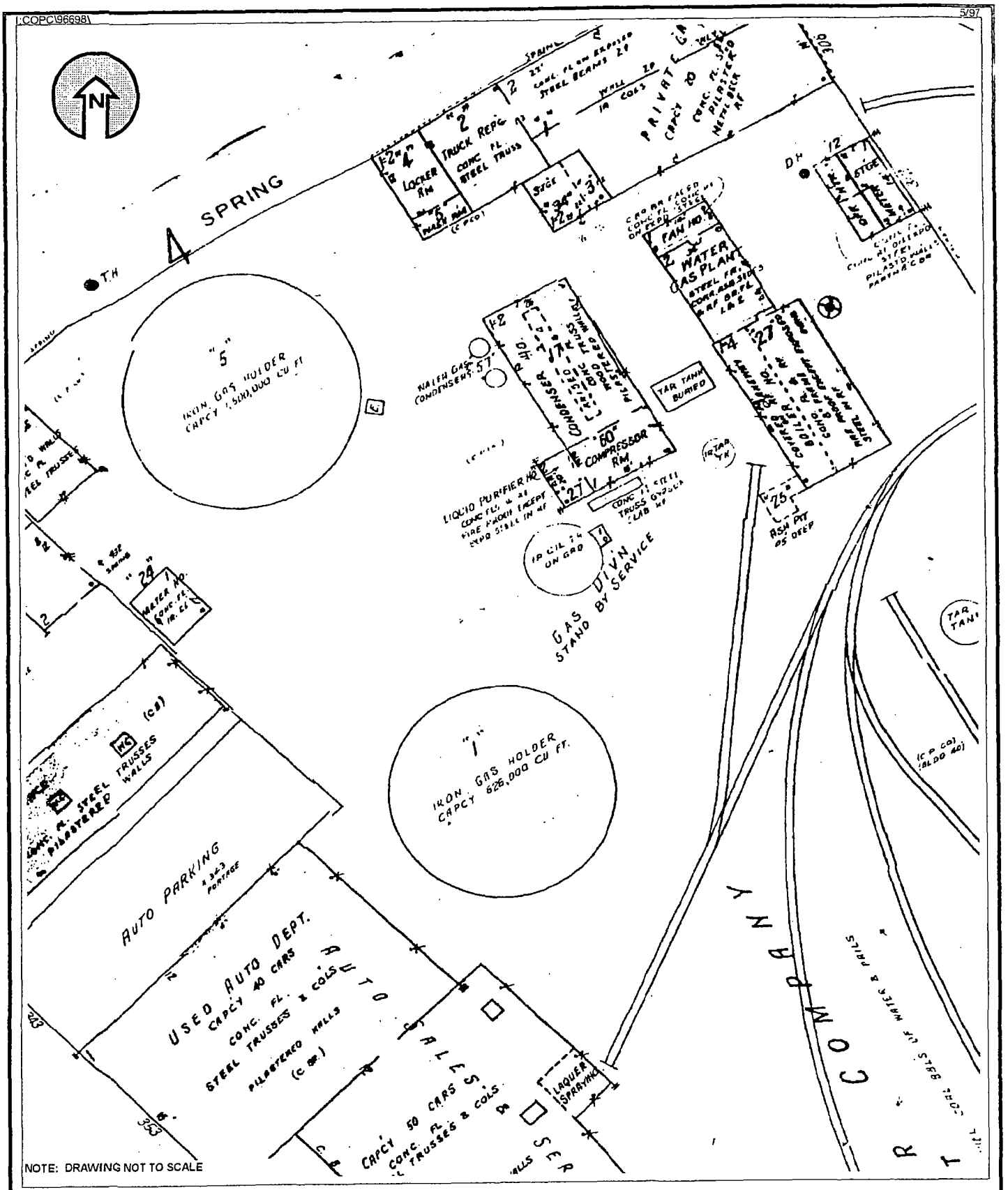
Suite 600
Detroit, Michigan 48226



SANBORN MAP, 1950
SPRING STREET
KALAMAZOO, MI

FIGURE 2F
FORMER KALAMAZOO
MGP SITE

Source: ECT, 1997

ECT
Environmental Consulting & Technology, Inc.
220 Bagley Avenue
Suite 600
Detroit, Michigan 48226

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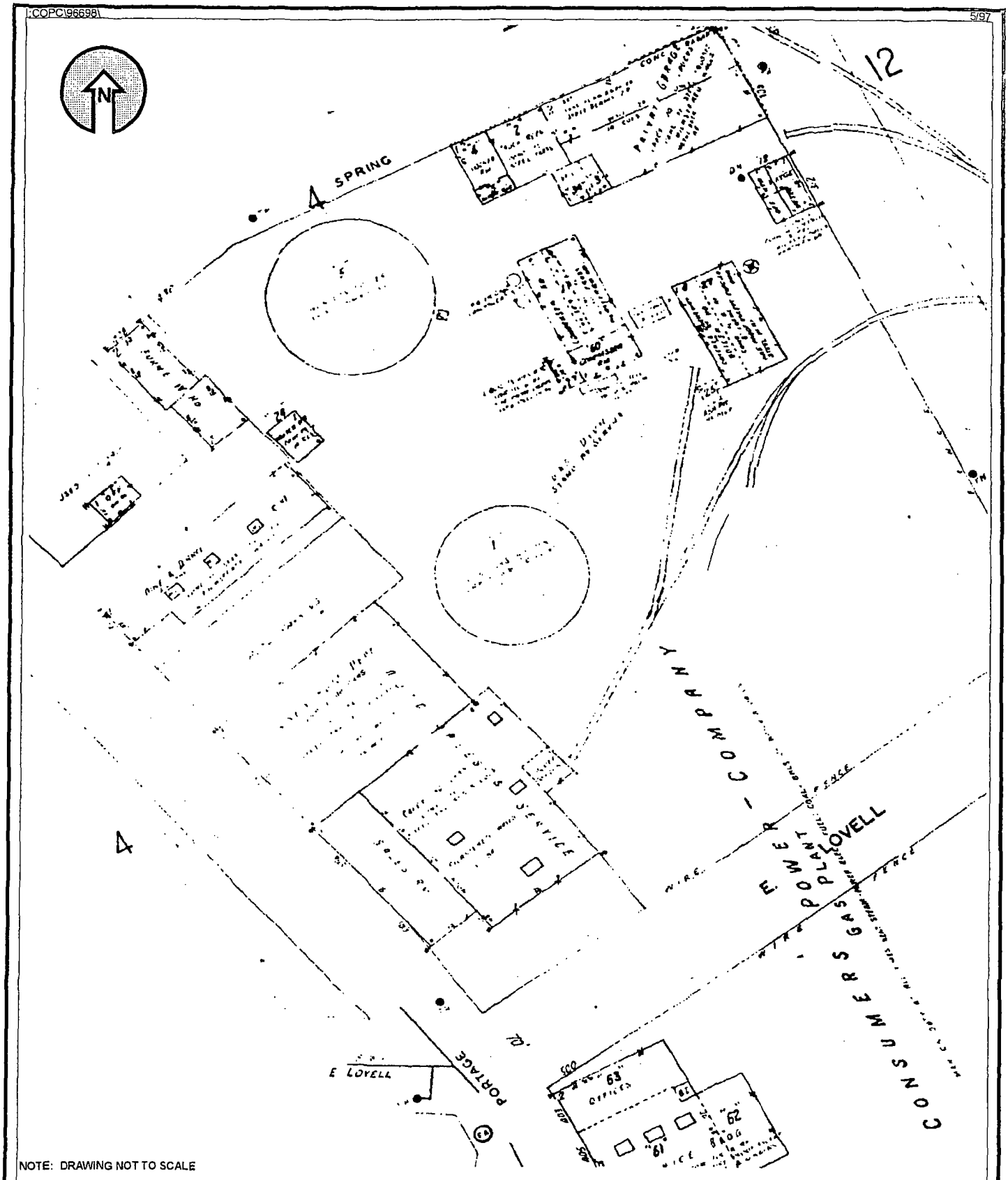
:COPC\96698\ 5/97



NOTE: DRAWING NOT TO SCALE

SANBORN MAP, 1958
SPRING STREET
KALAMAZOO, MI

FIGURE 2G
FORMER KALAMAZOO
MGP SITE

Source: ECT, 1997

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Detroit, Michigan 48226

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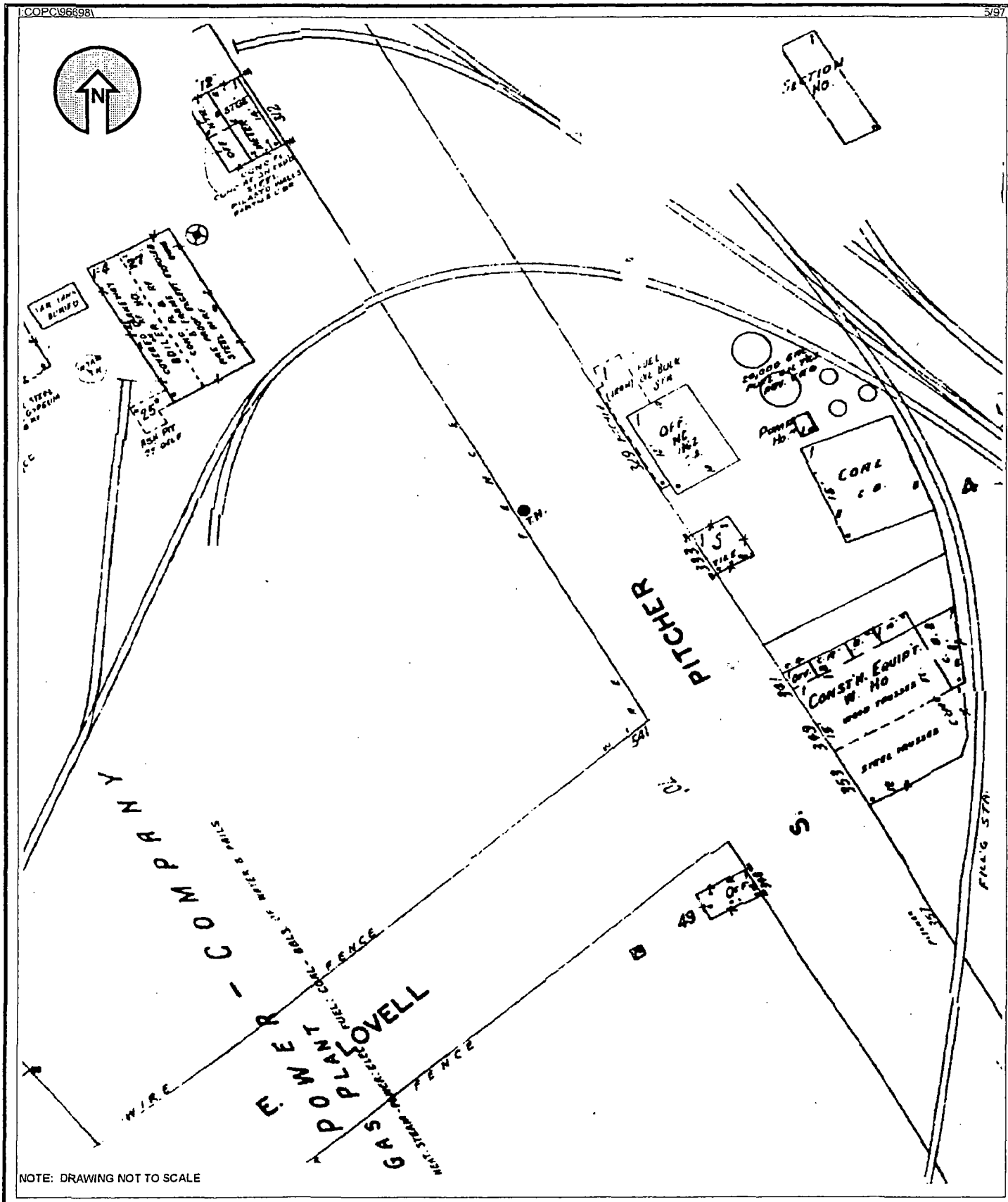
00035



SANBORN MAP, 1965
SPRING STREET
KALAMAZOO, MI

FIGURE 2H
FORMER KALAMAZOO
MGP SITE

Source: ECT, 1997

ECT
Environmental Consulting & Technology, Inc.
220 Bagley Avenue
Suite 600
Detroit, Michigan 48226

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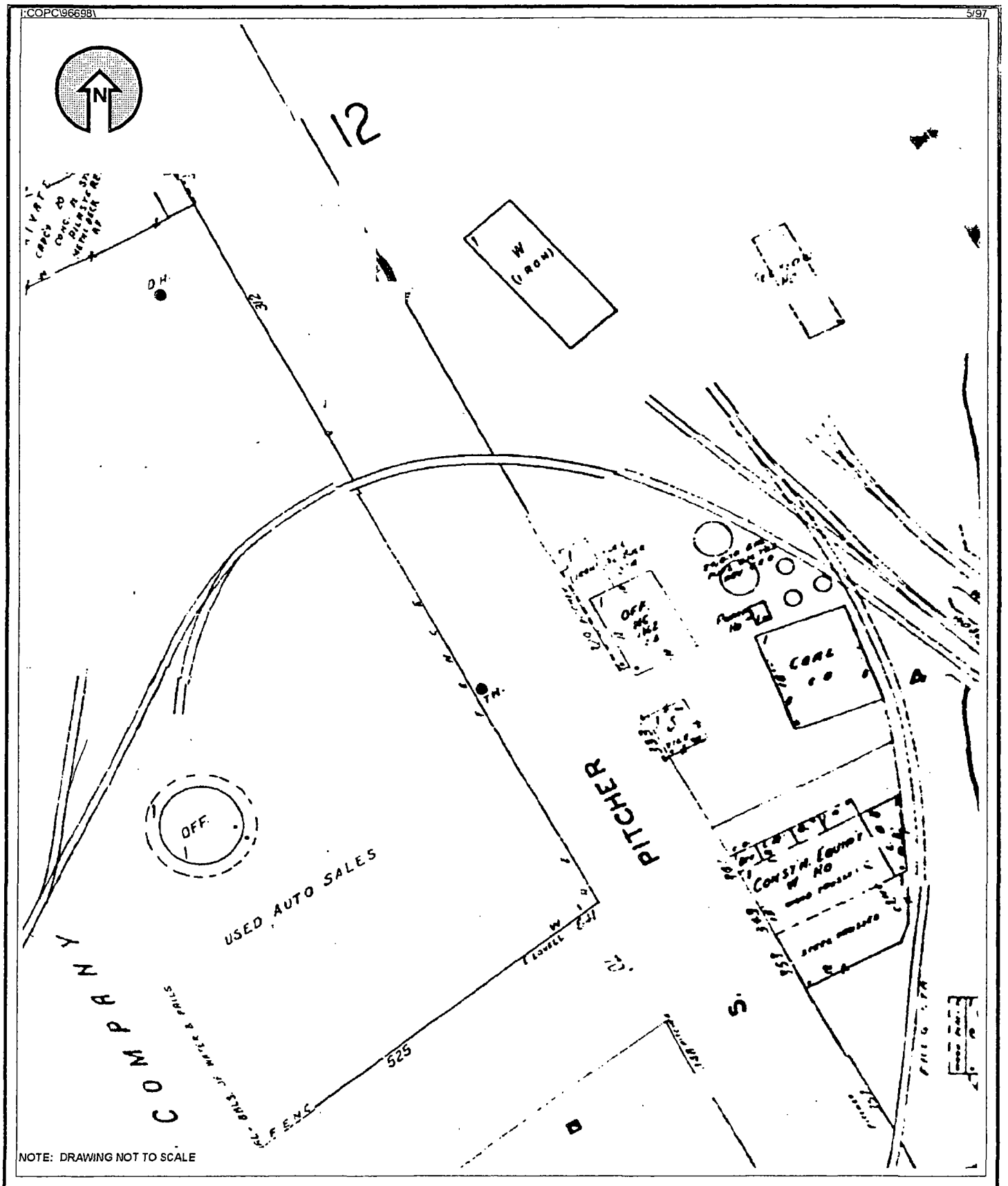

SANBORN MAP, 1972
SPRING STREET
KALAMAZOO, MI

KR059B029379

FIGURE 2I
FORMER KALAMAZOO
MGP SITE

Source: ECT, 1997

ECT
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220 Bagley Avenue
Suite 600
Detroit, Michigan 48226

A

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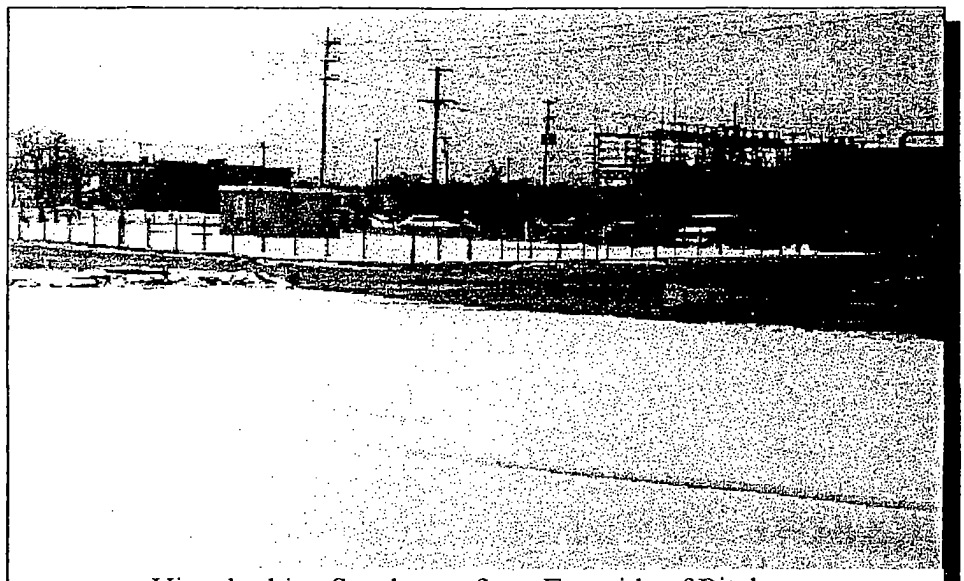
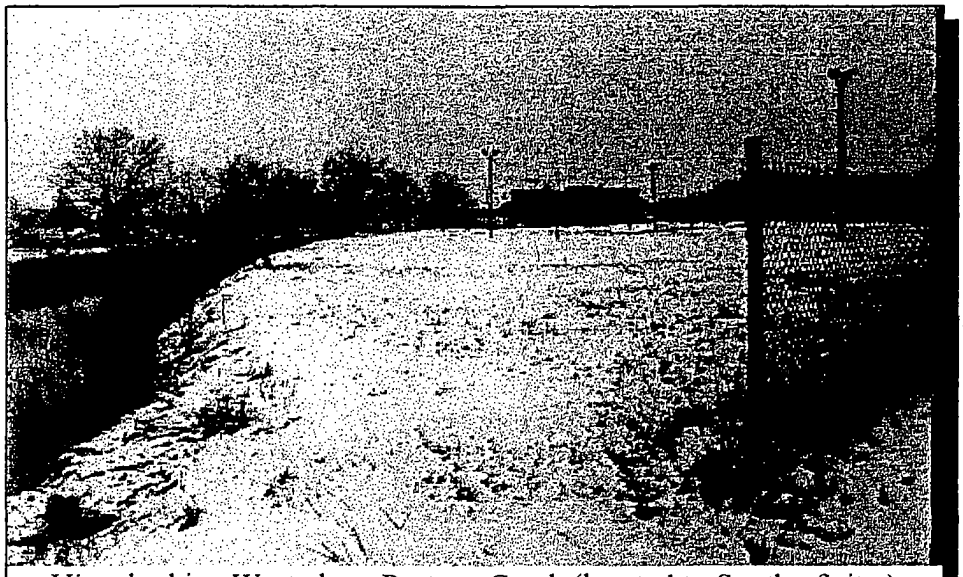
APPENDIX A

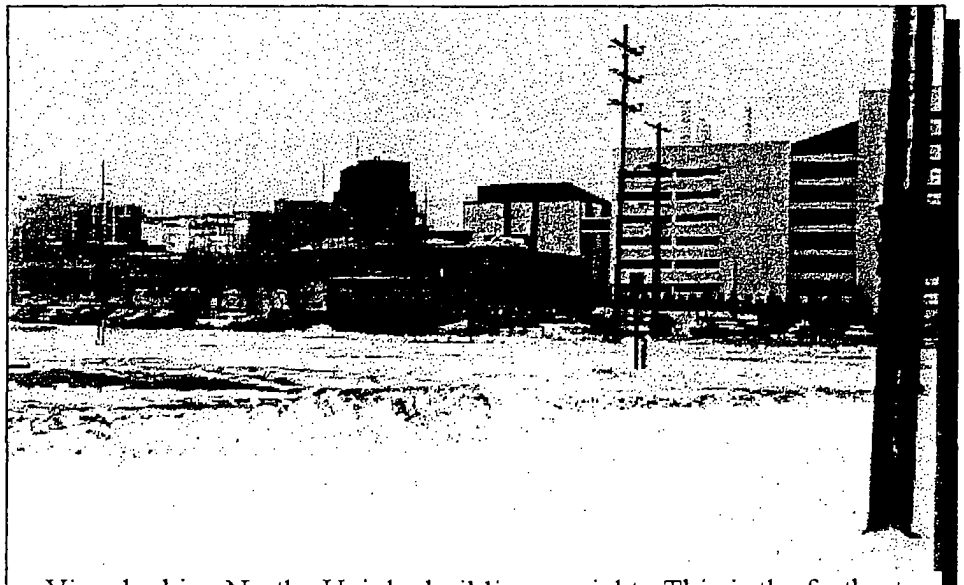
SITE PHOTOGRAPHS



View looking Southwest from East side of Pitcher.

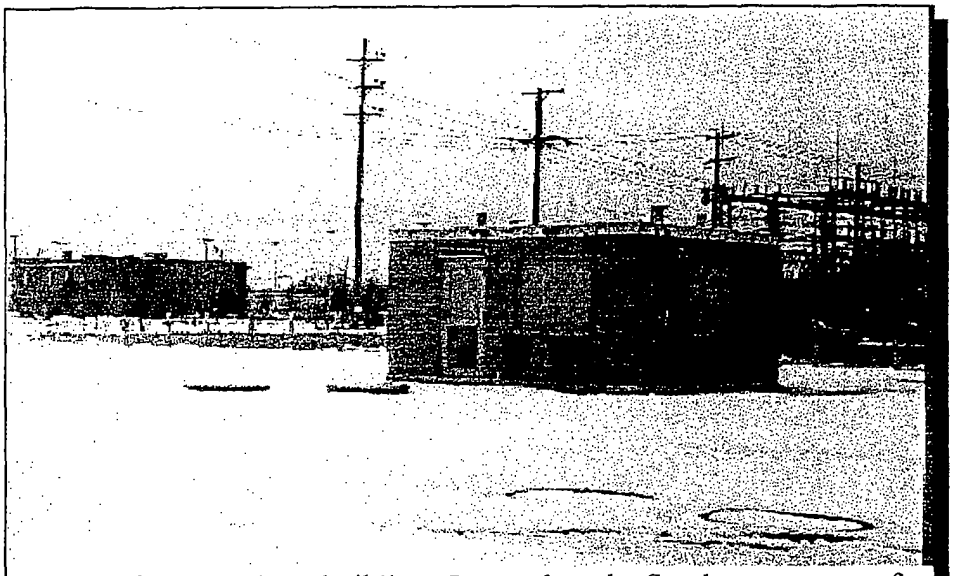


View looking West along Portage Creek (located to South of site.)

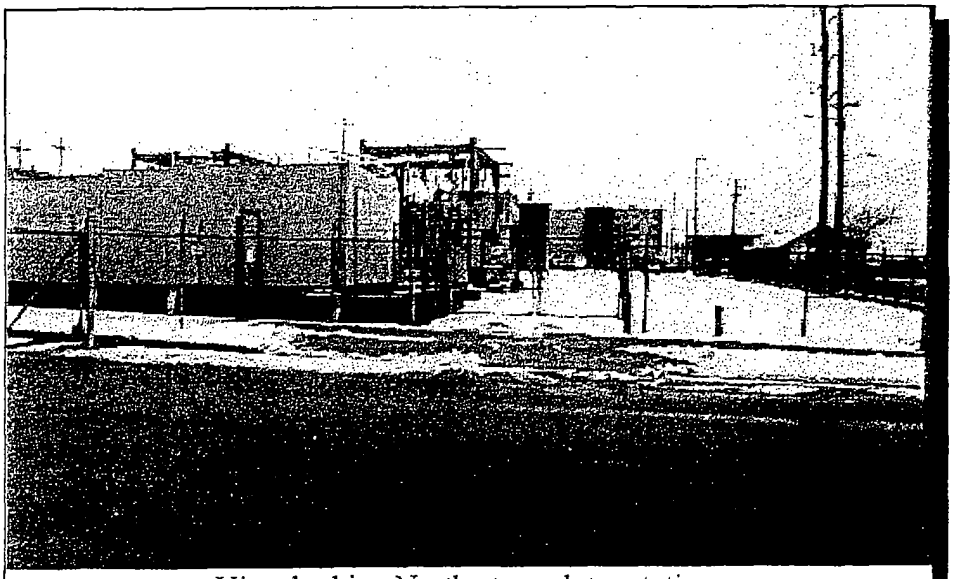


View looking North. Upjohn building on right. This is the furthest extension of the southerly foundary of the former MGP site.

KR059B029382



View of gas regulator building. Located on the Southwest corner of Lovell and Pitcher.



View looking North at regulator station.

KR059B029383

B

KR059B029384

APPENDIX B

ENVIRONMENTAL DATABASE

The EDR-Radius Map
with GeoCheck™

Pitcher+Spring
Pitcher+Spring
Kalamazoo, MI 49007

Inquiry Number: 145896.2s

November 21, 1996

KR059B029386

Environmental
Data
Resources, Inc.

Creators of Toxicheck/®

The Source
For Environmental
Risk Management
Data

3530 Post Road
Southport, Connecticut 06490

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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KR059B029387

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR). The search met the specific requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-94, or custom distances requested by the user.

The address of the subject property for which the search was intended is:

PITCHER+SPRING
KALAMAZOO, MI 49007

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the subject property or within the ASTM E 1527-94 search radius around the subject property for the following Databases:

Delisted NPL:	NPL Deletions
RCRIS-TSD:	Resource Conservation and Recovery Information System
CERC-NFRAP:	Comprehensive Environmental Response, Compensation, and Liability Information System
CORRACTS:	Corrective Action Report
SWF/LF:	Michigan Solid Waste Facilities
AST:	Aboveground Tanks
RAATS:	RCRA Administrative Action Tracking System
HMIRS:	Hazardous Materials Information Reporting System
PADS:	PCB Activity Database System
ERNS:	Emergency Response Notification System
FINDS:	Facility Index System
TRIS:	Toxic Chemical Release Inventory System
NPL Liens:	Federal Superfund Liens
TSCA:	Toxic Substances Control Act
MLTS:	Material Licensing Tracking System
MS NPDES:	Not reported

Unmapped (orphan) sites are not considered in the foregoing analysis.

Search Results:

Search results for the subject property and the search radius, are listed below:

Subject Property:

The subject property was identified in the following government records. For more information on this property see page 9 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
KALAMAZOO GAS LIGHT CO. 300-360 S. PITCHER KALAMAZOO, MI 49007		N/A

KR059B029388

EXECUTIVE SUMMARY

Surrounding Properties:

Elevations have been determined from the USGS 1 degree Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. EDR's definition of a site with an elevation equal to the subject property includes a tolerance of -10 feet. Sites with an elevation equal to or higher than the subject property have been differentiated below from sites with an elevation lower than the subject property (by more than 10 feet). Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

NPL: Also known as Superfund, the National Priority List database is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund program. The source of this database is the U.S. EPA.

A review of the NPL list, as provided by EDR, and dated 06/01/1996 has revealed that there is 1 NPL site within approximately 1 Mile of the subject property.

Equal/Higher Elevation	Address	Map ID	Page
AUTO ION CHEMICALS INC	*74 MILL ST*	*0*	*9*

SHWS: The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already by listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data comes from the Department of Natural Resources' Act 307 Site List on Diskette With Address.

A review of the State Haz. Waste list, as provided by EDR, and dated 09/30/1996 has revealed that there are 8 State Haz. Waste sites within approximately 1 Mile of the subject property.

Equal/Higher Elevation	Address	Map ID	Page
PORTAGE AND SECOND ST AREA KAL	631 SECOND ST	17	20
E.M. SERGEANT E.MICHIGAN AVE.	542 E.MICHIGAN AVE.	E19	20
SPEARFLEX CORPORATION	***241 E. KALAMAZOO AVE***	***21***	***21***
SINCLAIR BULK STOR AMER AGGREG	1000 FOURTH STREET	23	22
STANDARD OIL GAS STA	***502 W MICHIGAN AVE***	***24***	***22***
WASTE OIL STORAGE EAST CROSSTO	***1326 E CROSSTOWN PKWY***	***25***	***22***
ALLIED CHEMICAL CORP IND DEV	511 E PATERSON ST BOX 2798	26	23
PITCHER AND PATTERSON STS	243 EAST PATERSON STREET	27	23

CERCLIS: The Comprehensive Environmental Response, Compensation and Liability Information System contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, persuant to Section 103 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).
CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

A review of the CERCLIS list, as provided by EDR, and dated 03/31/1996 has revealed that there is 1 CERCLIS site within approximately 0.5 Miles of the subject property.

Equal/Higher Elevation	Address	Map ID	Page
SPEARFLEX CORPORATION	*241 E. KALAMAZOO AVE*	*21*	*21*

KR059B029389

EXECUTIVE SUMMARY

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data comes from the Department of Natural Resources' Leaking Underground Storage Tank (LUST) Database.

A review of the LUST list, as provided by EDR, and dated 04/01/1995 has revealed that there are 5 LUST sites within approximately 0.5 Miles of the subject property.

Equal/Higher Elevation	Address	Map ID	Page
THE UPJOHN CO PORTAGE & SOUTH	300 PORTAGE ST	B7	12
HIGHTECH COLLISION	501 S PITCHER ST	D14	19
E. M. SERGEANT E MICHIGAN AVE	542 E MICHIGAN AVE	E18	20
A T & T (W. LOVELL, KALAMAZOO)	133 W LOVELL ST	20	21
CARS-R-US	202 E KALAMAZOO AVE	22	22

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data comes from the Department of Natural Resources' Michigan UST database.

A review of the UST list, as provided by EDR, and dated 05/01/1996 has revealed that there are 7 UST sites within approximately 0.25 Miles of the subject property.

Equal/Higher Elevation	Address	Map ID	Page
HYBELS' PRODUCE CO., INC.	257 S. PITCHER ST.	3	10
EUROPEAN IMPORT SERVICES	357 S. PITCHER ST.	5	11
THE UPJOHN CO	300 PORTAGE RD	B6	12
COLUMBIA EQUITY ONE LIMITED	425 EAST SOUTH ST	8	12
ARVCO CONTAINER CORP	*351 ROCHESTER*	*9*	*13*
THE UPJOHN CO/PORTAGE & LOWELL	301 HENRIETTA ST	C11	17
COLUMBIA EQUITY ONE LIMITED	350 EAST MICHIGAN AVE	16	19

RCRIS: The Resource Conservation and Recovery Act database includes selected information on sites that generate, store, treat, or dispose of hazardous waste as defined by the Act. The source of this database is the U.S. EPA.

A review of the RCRIS-SQG list, as provided by EDR, and dated 07/01/1996 has revealed that there are 5 RCRIS-SQG sites within approximately 0.25 Miles of the subject property.

Equal/Higher Elevation	Address	Map ID	Page
UPJOHN CO THE	*525 E LOVELL*	*4*	*11*
ARVCO CONTAINER CORP	*351 ROCHESTER*	*9*	*13*
BRONSON METHODIST HOSPITAL	*252 E LOVELL ST*	*12*	*18*
HLB ENTERPRISES AAMCO TRANSMIS	*541 PORTAGE ST*	*13*	*18*
HIGH TECH COLLISION SVC	*501 S PITCHER*	*D15*	*19*

RCRIS: The Resource Conservation and Recovery Act database includes selected information on sites that generate, store, treat, or dispose of hazardous waste as defined by the Act. The source of this database is the U.S. EPA.

A review of the RCRIS-LQG list, as provided by EDR, and dated 07/01/1996 has revealed that there is 1 RCRIS-LQG site within approximately 0.25 Miles of the subject property.

Equal/Higher Elevation	Address	Map ID	Page
UPJOHN CO THE	301 HENRIETTA STREET	C10	14

EXECUTIVE SUMMARY

RODS: Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid the cleanup.

A review of the RODS list, as provided by EDR, and dated 03/31/1995 has revealed that there is 1 RODS site within approximately 1 Mile of the subject property.

Equal/Higher Elevation	Address	Map ID	Page
AUTO ION CHEMICALS INC	*74 MILL ST*	*0*	*9*

CONSENT: Major Legal settlements that establish responsibility and standards for cleanup at NPL (superfund) sites. Released periodically by U.S. District Courts after settlement by parties to litigation matters.

A review of the CONSENT list, as provided by EDR, and dated Varies has revealed that there is 1 CONSENT site within approximately 1 Mile of the subject property.

Equal/Higher Elevation	Address	Map ID	Page
AUTO ION CHEMICALS INC	*74 MILL ST*	*0*	*9*

KR059B029391

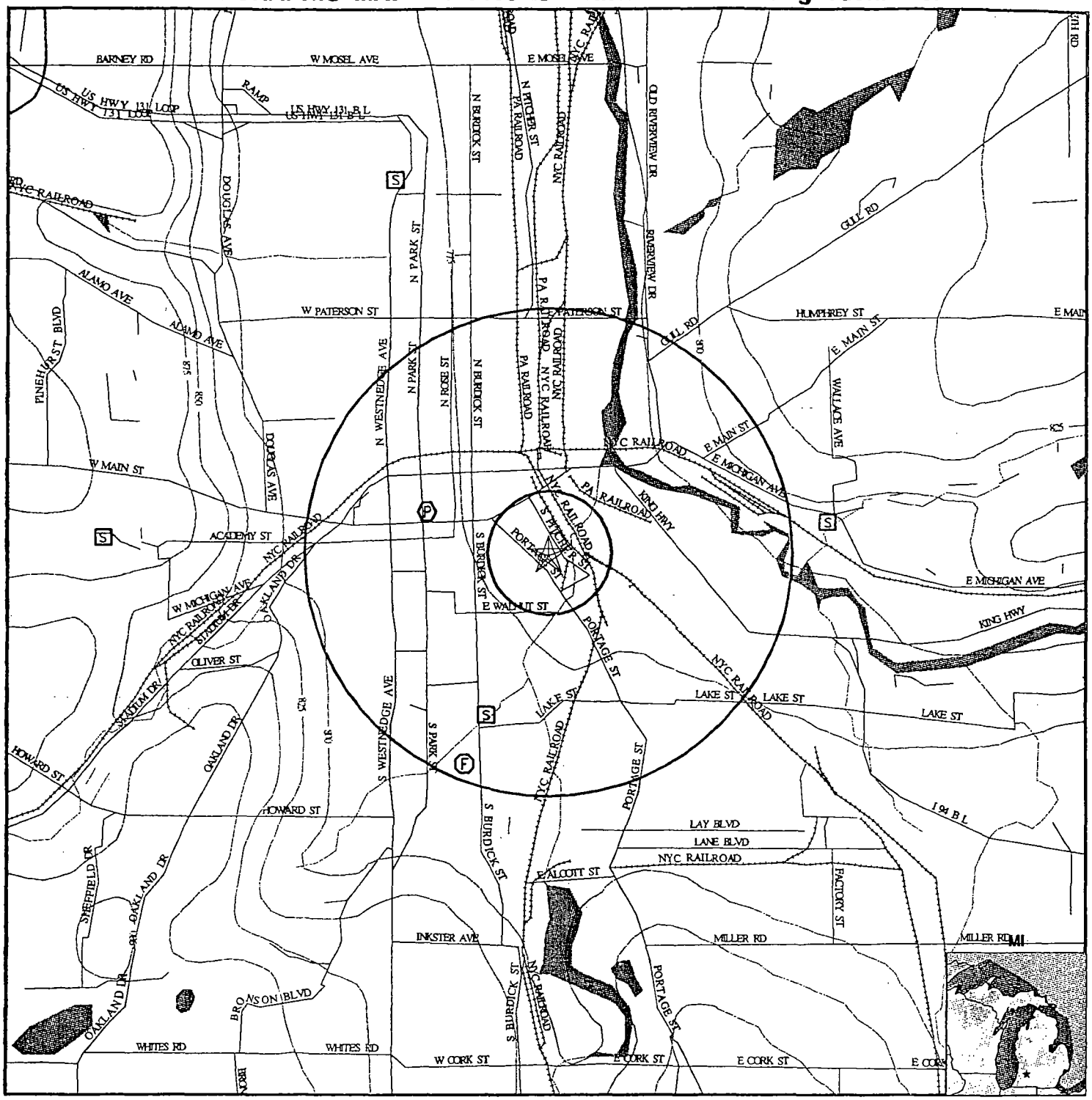
EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
MUNIC WELL COLUMBIA RD	State Haz. Waste
NAZERETH COLLEGE	State Haz. Waste
A P E C AMPERSEE ST LOTS	State Haz. Waste
KALAMAZOO MUNI WELLS #1 CENTRAL	FINDS,CERC-NFRAP,State Haz. Waste
GULL ROAD SITE RIVERVIEW DRIVE	State Haz. Waste
LYONS MACHINE BUILDERS	State Haz. Waste
BANK ST STOCKBRIDGE AREA	State Haz. Waste
KALAMAZOO NO 11 WELLS CITY OF	State Haz. Waste
RES WELLS LAKERIDGE RD	State Haz. Waste
NEWPORT RD & EAST MILHAM RD	State Haz. Waste
PRODUCTION PAINTING CO	State Haz. Waste
FARM BUREAU SVCS FERTILIZER SITE	State Haz. Waste
PITCHER AND PROUTY ST.	State Haz. Waste
PORTAGE CREEK KALAMAZOO RIVER	State Haz. Waste
ARCADIA CREEK CORRIDOR	State Haz. Waste
SPRING ST DOWNTOWN KALAMAZOO	State Haz. Waste
TRAVIS ST COOPER TWP	State Haz. Waste
Q AVE-CROOKED LAKE	State Haz. Waste
LOVERS LANE	State Haz. Waste
OLD COOPER TOWNSHIP	SWF/LF
WEST K L AVE SLF	SWF/LF
SUTHERLAND FIELD	SWF/LF
KALAMAZOO CITY (RIVERSIDE GULF)	SWF/LF
KALAMAZOO CITY-RAVINE RD	SWF/LF
KAV COMPANY SLF	SWF/LF
MCLEIEER OIL, KALAMAZOO	LUST
NEIL POST INC	LUST
FIRESTONE SERVICE CENTER	LUST
NEIL POST INC	RCRIS-SQG,FINDS,UST
#53-8831-111	UST
KALAMAZOO/BATTLE CREEK INTERNATIO	UST
CAREFLITE, INC.	UST
ACERMAN OIL	AST
ALLAN RICHARD MEDICAL	RCRIS-SQG,FINDS
SHELL SVC STA	RCRIS-SQG,FINDS
ECONOMY AUTO BODY	RCRIS-SQG,FINDS

KR059B029392

TOPOGRAPHIC MAP - 145896.2s - Environ. Consulting+Tech. Inc.



Source: US Geological Survey 1-Degree Digital Elevation Model
Compiled 09/15/92

0 1/2 1 2 Miles

N - Major Roads

N - Contour lines (25 foot interval unless otherwise shown)

N - Waterways

◎ - Earthquake epicenter, Richter 5 or greater.

(F)[S] - Closest well according to (F)ederal or (S)tate database in quadrant.

(P) - Closest public water supply well.

● - Indicates oil/gas/related wells

KR059B029393

TARGET PROPERTY:	Pitcher+Spring	CUSTOMER:	Environ. Consulting+Tech. Inc.
ADDRESS:	Pitcher+Spring	CONTACT:	Mark D. Mikesell
CITY/STATE/ZIP:	Kalamazoo MI 49007	INQUIRY #:	145896.2s

GEOCHECK VERSION 2.1
SUMMARY

GEOLOGIC AGE IDENTIFICATION†

Geologic Code:	M1
Era:	Paleozoic
System:	Mississippian
Series:	Osagean and Kinderhookian Series

ROCK STRATIGRAPHIC UNIT†

Category:	Stratified Sequence

GROUNDWATER FLOW INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, including well data collected on nearby properties, regional groundwater flow information (from deep aquifers), or surface topography.‡

General Topographic Gradient: General NE
General Hydrogeologic Gradient: No hydrogeologic data available.

USGS TOPOGRAPHIC MAP ASSOCIATED WITH THIS SITE

Target Property: 2442085-C5 KALAMAZOO, MI

FEDERAL DATABASE WELL INFORMATION

WELL QUADRANT	DISTANCE FROM TP	LITHOLOGY	DEPTH TO WATER TABLE
Southern	1/2 - 1 Mile	Not Reported	Not Reported

STATE WATER WELL INFORMATION

WELL QUADRANT	DISTANCE FROM TP	DEPTH FEET
Northern	1 - 2 Miles	46.0
Eastern	1 - 2 Miles	92.0
Southern	1/2 - 1 Mile	50.0
Western	1 - 2 Miles	99.0

STATE OIL/GAS WELL INFORMATION

PERMIT #	DISTANCE FROM TP

NO WELLS FOUND

PUBLIC WATER SUPPLY SYSTEM INFORMATION (EPA-FRDS)

Searched by Nearest Well.
NOTE: PWS System location is not always the same as well location.

PWS Name:	EASTWOOD LITTLE LEAGUE 5431 FORDHAM KALAMAZOO, MI 49001
Location Relative to TP:	1/2 - 1 Mile West
Well currently has or has had major violation(s):	No

KR059B029394

† Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).
‡ U.S. EPA Ground Water Handbook, Vol I. Ground Water and Contamination, Office of Research and development EPA/625/6-90/016a, Chapter 4, page 78, September 1990.

GEOCHECK VERSION 2.1
SUMMARY

AREA RADON INFORMATION

Zip Code: 49007

Number of sites tested: 5

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	18.100 pCi/L	0%	100%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	5.300 pCi/L	0%	100%	0%

KR059B029395

OVERVIEW MAP - 145896.2s - Environ. Consulting+Tech. Inc.

★ - Indicates TARGET PROPERTY.

▲ - Indicates sites at elevations higher than or equal to the target property.

◆ - Indicates sites at elevations lower than the target property.

- Coal Gasification Sites (if requested)

- National Priority List Sites

- Landfill Sites

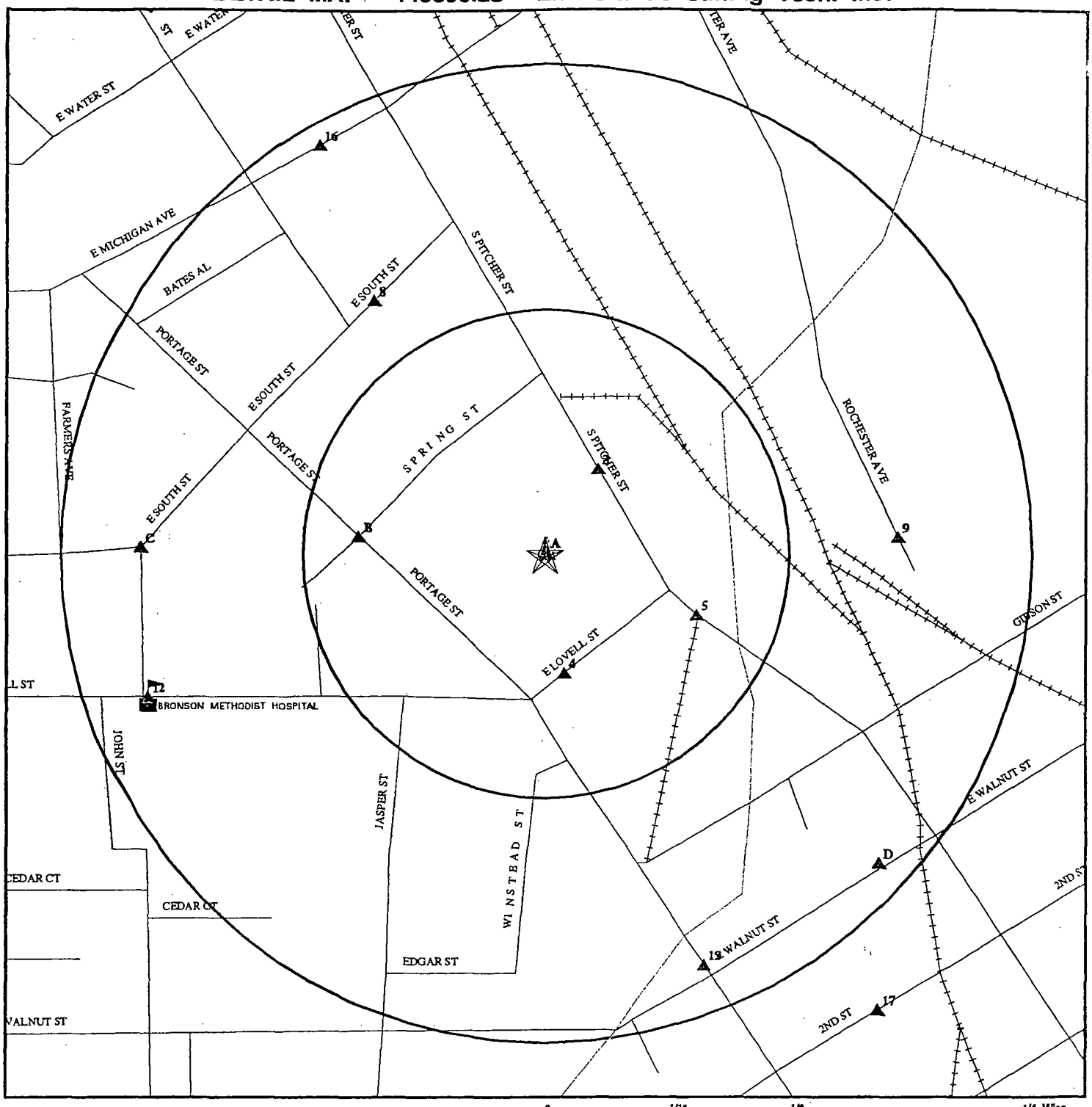
KR059B029396

- Power transmission lines (USGS DLG, 1993)

- Oil & Gas pipelines (USGS DLG, 1993)

TARGET PROPERTY:	Pitcher+Spring	CUSTOMER:	Environ. Consulting+Tech. Inc.
ADDRESS:	Pitcher+Spring	CONTACT:	Mark D. Mikesell
CITY/STATE/ZIP:	Kalamazoo MI 49007	INQUIRY #:	145896.2s

DETAIL MAP - 145896.2s - Environ. Consulting+Tech. Inc.



★ - Indicates TARGET PROPERTY.

▲ - Indicates sites at elevations higher than or equal to the target property.

◆ - Indicates sites at elevations lower than the target property.

- Coal Gasification Sites (if requested)

- Sensitive Receptors

- National Priority List Sites

- Landfill Sites

0 1/16 1/8 1/4 Miles

KR059B029397

- Power transmission lines (USGS DLG, 1993)

- Oil & Gas pipelines (USGS DLG, 1993)

TARGET PROPERTY:	Pitcher+Spring	CUSTOMER:	Environ. Consulting+Tech. Inc.
ADDRESS:	Pitcher+Spring	CONTACT:	Mark D. Mikesell
CITY/STATE/ZIP:	Kalamazoo MI 49007	INQUIRY #:	145896.2s

MAP FINDINGS SUMMARY SHOWING ALL SITES

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
NPL		1.000 *	0	0	0	1	NR	1
Delisted NPL		TP	NR	NR	NR	NR	NR	0
RCRIS-TSD		1.000	0	0	0	0	NR	0
State Haz. Waste		1.000	0	0	3	5	NR	8
CERCLIS		0.500	0	0	1	NR	NR	1
CERC-NFRAP		TP	NR	NR	NR	NR	NR	0
CORRACTS		1.000	0	0	0	0	NR	0
State Landfill		0.500	0	0	0	NR	NR	0
LUST		0.500	1	1	3	NR	NR	5
UST		0.250	3	4	NR	NR	NR	7
AST		0.125	0	NR	NR	NR	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
RCRIS Sm. Quan. Gen.		0.250	1	4	NR	NR	NR	5
RCRIS Lg. Quan. Gen.		0.250	0	1	NR	NR	NR	1
HMIRS		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
ERNS		TP	NR	NR	NR	NR	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
NPL Liens		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
ROD		1.000	0	0	0	1	NR	1
CONSENT		1.000	0	0	0	1	NR	1
Coal Gas	X	1.000	0	0	0	0	NR	0

TP = Target Property

NR = Not Requested at this Search Distance

* Sites may be listed in more than one database

KR059B029398

MAP FINDINGS SUMMARY SHOWING ONLY SITES HIGHER THAN OR THE SAME ELEVATION AS TP

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
NPL		1.000	0	0	0	0	NR	0
Delisted NPL		TP	NR	NR	NR	NR	NR	0
RCRIS-TSD		1.000	0	0	0	0	NR	0
State Haz. Waste		1.000	0	0	3	5	NR	8
CERCLIS		0.500	0	0	1	NR	NR	1
CERC-NFRAP		TP	NR	NR	NR	NR	NR	0
CORRACTS		1.000	0	0	0	0	NR	0
State Landfill		0.500	0	0	0	NR	NR	0
LUST		0.500	1	1	3	NR	NR	5
UST		0.250	3	4	NR	NR	NR	7
AST		0.125	0	NR	NR	NR	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
RCRIS Sm. Quan. Gen.		0.250	1	4	NR	NR	NR	5
RCRIS Lg. Quan. Gen.		0.250	0	1	NR	NR	NR	1
HMIRS		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
ERNS		TP	NR	NR	NR	NR	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
NPL Liens		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
ROD		1.000	0	0	0	0	NR	0
CONSENT		1.000	0	0	0	0	NR	0
Coal Gas	X	1.000	0	0	0	0	NR	0

TP = Target Property

NR = Not Requested at this Search Distance

* Sites may be listed in more than one database

KR059B029399

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number
A1 Target Property	KALAMAZOO GAS LIGHT CO. 300-360 S. PITCHER KALAMAZOO, MI 49007	Coal Gas	G000001393 N/A

COAL GAS SITE DESCRIPTION:
1891, Gas Works is located on the south side of Spring Street and the we st side of S. Pitcher. Site is northeast of Portage. Site continues south of E. Lovell. 1896 called Kalamazoo Gas Light Co. 1908, called Kalamazoo Gas Co,. 19 32, called Consumers Power Co. 1950, same.

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NPL Region	AUTO ION CHEMICALS INC 74 MILL ST KALAMAZOO, MI 49007	CERCLIS FINDS NPL CONSENT ROD	1000325600 MID980794382

CERCLIS Classification Data:

Site Incident Category:	INDUSTRIAL WASTE TREATMENT	Federal Facility:	NO
Ownership Status:	OTHER	NPL Status:	CURRENTLY ON THE FINAL NPL
EPA Notes:	THE SITE IS AN ABANDONED PLATING WASTE TREATMENT FACILITY ADJACENT TO THE KALAMAZOO RIVER. LIQUIDS REMAIN IN THE BASEMENT AND A LAGOON.		

CERCLIS Assessment History:

Assessment:	DISCOVERY	Completed:	01/01/1975
Assessment:	PRELIMINARY ASSESSMENT	Completed:	01/01/1983
Assessment:	SCREENING SITE INSPECTION	Completed:	08/01/1982
Assessment:	HAZARD RANKING DETERMINED	Completed:	08/01/1982
Assessment:	FINAL LISTING ON NPL	Completed:	09/08/1983
Assessment:	COMBINED RI/FS	Completed:	09/27/1989
Assessment:	RECORD OF DECISION	Completed:	09/27/1989
Assessment:	ADMINISTRATIVE RECORD	Completed:	Not reported
Assessment:	COMBINED RI/FS	Completed:	09/23/1994
Assessment:	REMEDIAL COMMUNITY RELATIONS	Completed:	Not reported
Assessment:	ADMINISTRATIVE RECORD	Completed:	Not reported
Assessment:	RECORD OF DECISION	Completed:	09/23/1994
Assessment:	REMEDIAL COMMUNITY RELATIONS	Completed:	Not reported
Assessment:	BASELINE RISK ASSESSMENT	Completed:	Not reported
Assessment:	REMEDIAL COMMUNITY RELATIONS	Completed:	09/30/1989
Assessment:	RMVL INVESTIGATION AT NPL	Completed:	06/19/1992
Assessment:	PROPOSAL TO NPL	Completed:	12/30/1982
Assessment:	RMVL INVESTIGATION AT NPL	Completed:	08/07/1990
Assessment:	REMOVAL ACTION	Completed:	03/15/1985

CERCLIS Site Status:
This site is currently under investigation by the government to assess the extent of further action

CERCLIS Alias Name(s):
AUTO ION CHEMICALS INC

KR059B029400

AUTO ION CHEMICALS INC (Continued) 1000325600

NPL:

ID:	05MI005
Date Listed:	9/08/83 (FINAL)
EPA/ID:	MID980794382
Haz. Rank Score:	32.07
Status:	LISTED ON NPL
Rank:	878
Group:	18
Ownership:	State
Permit:	Not reported
Site Activities:	Surface Impoundment
Site Activities:	Electroplating
Site Activities:	Containers/Drums
Site Activities:	Spill
Site Condition:	Damage of Flora/Fauna
Site Condition:	Contamination of Soil
Waste Type:	Metals

Contaminant:	Media Affected:
CYANIDES (SOLUBLE SALTS), NOS	Surface Water
CHROMIUM, HEXAVALENT	Surface Water
NICKEL CHLORIDE	Surface Water

Distance to nearest Population:	Not reported
Population within a 1 Mile Radius:	Not reported
Population within a 2 Mile Radius:	Not reported
Population within a 4 Mile Radius:	Not reported
Vertical Distance to Aquifer:	21 Feet to 75 Feet
Ground Water Use:	Used as Drinking Water, Alternative Source not Available
Distance to nearest Surface Water:	Not reported

ROD:
Full-text of USEPA Record of Decision(s) is available from EDR.

CONSENT:
Full-text of a consent decree on this site issued by a United States District Court is available from EDR.

Other Pertinent Environmental Activity Identified at Site:
civil judicial and administrative enforcement case against facility.

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3 NNE < 1/8 Higher | HYBELS' PRODUCE CO., INC. 257 S. PITCHER ST. KALAMAZOO, MI 49007 | UST | U000256416 N/A

UST:

Facility ID:	0-014047	Tank ID:	1
Owner:	PENDING OWNER		
	Not reported		
	Not reported		
Product:	Gasoline	Capacity:	10,000
Tank Age:	Unk	Tank Material:	Unknown
Tank Status:	Curr	Piping Material:	Unknown
Piping Type:	Not reported		
Tank Rel Detect:	Not reported	Pipe Rel Detect:	Not reported
Manager:	JAMES L. ARNOLD	Mngr Phone:	(616) 343-1504

KR059B029401

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number
4 South < 1/8 Higher	UPJOHN CO THE 525 E LOVELL KALAMAZOO, MI 49001	RCRIS-SQG FINDS	1000332668 MID981101173

RCRIS:
Owner: UPJOHN CO THE
(312) 555-1212

Contact: RANDAL SENGER
(616) 323-5341

Waste	Quantity	Info Source
D000	.00000 (N)	Notification

(P) = Pounds , (K) = Kilograms , (M) = Metric Tons , (T) = Tons , (N) = Not Reported

5 ESE < 1/8 Higher	EUROPEAN IMPORT SERVICES 357 S. PITCHER ST. KALAMAZOO, MI 49001	UST	U000256475 N/A

UST:

Facility ID:	0-018363	Tank ID:	1
Owner:	EUROPEAN IMPORT SERVICES INC 3718 STADIUM DR. KALAMAZOO, MI 49008		
Product:	Gasoline	Capacity:	2,000
Tank Age:	30	Tank Material:	Unknown
Tank Status:	Remv	Piping Material:	Unknown
Piping Type:	Not reported		
Tank Rel Detect:	Not reported	Pipe Rel Detect:	Not reported
Manager:	TERRY REMINGA	Mngr Phone:	(616) 375-5151

Facility ID:	0-018363	Tank ID:	2
Owner:	EUROPEAN IMPORT SERVICES INC 3718 STADIUM DR. KALAMAZOO, MI 49008		
Product:	Gasoline	Capacity:	2,000
Tank Age:	30	Tank Material:	Unknown
Tank Status:	Remv	Piping Material:	Unknown
Piping Type:	Not reported		
Tank Rel Detect:	Not reported	Pipe Rel Detect:	Not reported
Manager:	TERRY REMINGA	Mngr Phone:	(616) 375-5151

Facility ID:	0-018363	Tank ID:	3
Owner:	EUROPEAN IMPORT SERVICES INC 3718 STADIUM DR. KALAMAZOO, MI 49008		
Product:	Gasoline	Capacity:	2,000
Tank Age:	30	Tank Material:	Unknown
Tank Status:	Remv	Piping Material:	Unknown
Piping Type:	Not reported		
Tank Rel Detect:	Not reported	Pipe Rel Detect:	Not reported
Manager:	TERRY REMINGA	Mngr Phone:	(616) 375-5151

KR059B029402

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

EUROPEAN IMPORT SERVICES (Continued) — U000256475

Facility ID:	0-018363	Tank ID:	4
Owner:	EUROPEAN IMPORT SERVICES INC 3718 STADIUM DR. KALAMAZOO, MI 49008		
Product:	Gasoline	Capacity:	2,000
Tank Age:	30	Tank Material:	Unknown
Tank Status:	Remv	Piping Material:	Unknown
Piping Type:	Not reported		
Tank Rel Detect:	Not reported	Pipe Rel Detect:	Not reported
Manager:	TERRY REMINGA	Mngr Phone:	(616) 375-5151

B6 West < 1/8 Higher — **THE UPJOHN CO, 300 PORTAGE RD, KALAMAZOO, MI 49007** — UST — U000715382, N/A

UST:

Facility ID:	0-035758	Tank ID:	1
Owner:	PHARMACIA & UPJOHN INC 7171 PORTAGE RD KALAMAZOO, MI 49001		
Product:	Gasoline	Capacity:	400
Tank Age:	Unk	Tank Material:	Bare Steel
Tank Status:	Remv	Piping Material:	Unknown
Piping Type:	Not reported		
Tank Rel Detect:	Not reported	Pipe Rel Detect:	Not reported
Manager:	KEVIN M WALSH	Mngr Phone:	(616) 323-6159
Facility ID:	0-035758	Tank ID:	2
Owner:	PHARMACIA & UPJOHN INC 7171 PORTAGE RD KALAMAZOO, MI 49001		
Product:	Used Oil	Capacity:	250
Tank Age:	Unk	Tank Material:	Bare Steel
Tank Status:	Remv	Piping Material:	Unknown
Piping Type:	Not reported		
Tank Rel Detect:	Not reported	Pipe Rel Detect:	Not reported
Manager:	KEVIN M WALSH	Mngr Phone:	(616) 323-6159

B7 West < 1/8 Higher — **THE UPJOHN CO PORTAGE & SOUTH 10/10/91, 300 PORTAGE ST, KALAMAZOO, MI** — LUST — S101601397, N/A

CURRENT LUST STATUS:

Facility ID:	390075	Status:	Not reported

8 NW 1/8-1/4 Higher — **COLUMBIA EQUITY ONE LIMITED, 425 EAST SOUTH ST, KALAMAZOO, MI 49007** — UST — U001147892, N/A

KR059B029403

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number
	COLUMBIA EQUITY ONE LIMITED (Continued)		U001147892

UST:

Facility ID:	0-036452	Tank ID:	1
Owner:	PENDING OWNER Not reported Not reported		
Product:	Gasoline	Capacity:	3,000
Tank Age:	Unk	Tank Material:	Unknown
Tank Status:	Remv	Piping Material:	Unknown
Piping Type:	Not reported		
Tank Rel Detect:	Not reported	Pipe Rel Detect:	Not reported
Manager:	DANIEL L. CARTER	Mngr Phone:	(616) 454-8361
Facility ID:	0-036452	Tank ID:	2
Owner:	PENDING OWNER Not reported Not reported		
Product:	Gasoline	Capacity:	1,000
Tank Age:	Unk	Tank Material:	Unknown
Tank Status:	Remv	Piping Material:	Unknown
Piping Type:	Not reported		
Tank Rel Detect:	Not reported	Pipe Rel Detect:	Not reported
Manager:	DANIEL L. CARTER	Mngr Phone:	(616) 454-8361
Facility ID:	0-036452	Tank ID:	3
Owner:	PENDING OWNER Not reported Not reported		
Product:	Gasoline	Capacity:	1,000
Tank Age:	Unk	Tank Material:	Unknown
Tank Status:	Remv	Piping Material:	Unknown
Piping Type:	Not reported		
Tank Rel Detect:	Not reported	Pipe Rel Detect:	Not reported
Manager:	DANIEL L. CARTER	Mngr Phone:	(616) 454-8361

9 East 1/8-1/4 Higher	ARVCO CONTAINER CORP 351 ROCHESTER KALAMAZOO, MI 49007	RCRIS-SQG FINDS UST	1000175467 MID080345770

RCRIS:

Owner: ARVCO CONTAINER CORP
(312) 555-1212

Contact: RON SAUER
(616) 381-0900

Waste	Quantity	Info Source
D001	.00000 (N)	Notification

(P) = Pounds , (K) = Kilograms , (M) = Metric Tons , (T) = Tons , (N) = Not Reported

KR059B029404

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number
	ARVCO CONTAINER CORP (Continued)		1000175467

UST:

Facility ID:	0-010899	Tank ID:	1
Owner:	ARVCO CONTAINER CORP 351 ROCHESTER AVE KALAMAZOO, MI 49007		
Product:	Diesel	Capacity:	10,000
Tank Age:	21	Tank Material:	Bare Steel
Tank Status:	Clos	Piping Material:	Bare Steel
Piping Type:	Not reported		
Tank Rel Detect:	Not reported	Pipe Rel Detect:	Not reported
Manager:	JAMES G. THOMAS	Mngr Phone:	(616) 381-0900

C10 West 1/8-1/4 Higher	UPJOHN CO THE 301 HENRIETTA STREET KALAMAZOO, MI 49001	RCRIS-LQG	1000332664 MID000821520

RCRIS:

Owner: THE UPJOHN CO
(616) 385-7647

Contact: JAMES STIVER
(616) 385-7647

Waste	Quantity	Info Source	Waste	Quantity	Info Source
D000	.00000 (N)	State Inspection	D000	.00000 (N)	Notification
D001	.00000 (N)	Notification	D002	.00000 (N)	Notification
D003	.00000 (N)	Notification	F002	.00000 (N)	Notification
F003	.00000 (N)	Notification	F004	.00000 (N)	Notification
F005	.00000 (N)	Notification	P001	.00000 (N)	Notification
P002	.00000 (N)	Notification	P003	.00000 (N)	Notification
P004	.00000 (N)	Notification	P005	.00000 (N)	Notification
P006	.00000 (N)	Notification	P007	.00000 (N)	Notification
P008	.00000 (N)	Notification	P009	.00000 (N)	Notification
P010	.00000 (N)	Notification	P011	.00000 (N)	Notification
P012	.00000 (N)	Notification	P013	.00000 (N)	Notification
P014	.00000 (N)	Notification	P016	.00000 (N)	Notification
P017	.00000 (N)	Notification	P018	.00000 (N)	Notification
P019	.00000 (N)	Notification	P020	.00000 (N)	Notification
P021	.00000 (N)	Notification	P022	.00000 (N)	Notification
P023	.00000 (N)	Notification	P024	.00000 (N)	Notification
P025	.00000 (N)	Notification	P026	.00000 (N)	Notification
P027	.00000 (N)	Notification	P028	.00000 (N)	Notification
P029	.00000 (N)	Notification	P030	.00000 (N)	Notification
P031	.00000 (N)	Notification	P032	.00000 (N)	Notification
P033	.00000 (N)	Notification	P034	.00000 (N)	Notification
P035	.00000 (N)	Notification	P036	.00000 (N)	Notification
P038	.00000 (N)	Notification	P039	.00000 (N)	Notification
P040	.00000 (N)	Notification	P041	.00000 (N)	Notification
P042	.00000 (N)	Notification	P043	.00000 (N)	Notification
P044	.00000 (N)	Notification	P045	.00000 (N)	Notification
P046	.00000 (N)	Notification	P047	.00000 (N)	Notification
P048	.00000 (N)	Notification	P049	.00000 (N)	Notification
P050	.00000 (N)	Notification	P051	.00000 (N)	Notification
P052	.00000 (N)	Notification	P053	.00000 (N)	Notification

UPJOHN CO THE (Continued) 1000332664

P054	.00000 (N)	Notification	P055	.00000 (N)	Notification
P056	.00000 (N)	Notification	P057	.00000 (N)	Notification
P058	.00000 (N)	Notification	P059	.00000 (N)	Notification
P060	.00000 (N)	Notification	P061	.00000 (N)	Notification
P062	.00000 (N)	Notification	P063	.00000 (N)	Notification
P064	.00000 (N)	Notification	P065	.00000 (N)	Notification
P066	.00000 (N)	Notification	P067	.00000 (N)	Notification
P068	.00000 (N)	Notification	P069	.00000 (N)	Notification
P070	.00000 (N)	Notification	P071	.00000 (N)	Notification
P072	.00000 (N)	Notification	P073	.00000 (N)	Notification
P074	.00000 (N)	Notification	P075	.00000 (N)	Notification
P076	.00000 (N)	Notification	P077	.00000 (N)	Notification
P078	.00000 (N)	Notification	P079	.00000 (N)	Notification
P080	.00000 (N)	Notification	P081	.00000 (N)	Notification
P082	.00000 (N)	Notification	P083	.00000 (N)	Notification
P084	.00000 (N)	Notification	P085	.00000 (N)	Notification
P086	.00000 (N)	Notification	P087	.00000 (N)	Notification
P088	.00000 (N)	Notification	P089	.00000 (N)	Notification
P090	.00000 (N)	Notification	P091	.00000 (N)	Notification
P092	.00000 (N)	Notification	P093	.00000 (N)	Notification
P094	.00000 (N)	Notification	P095	.00000 (N)	Notification
P096	.00000 (N)	Notification	P097	.00000 (N)	Notification
P098	.00000 (N)	Notification	P099	.00000 (N)	Notification
P100	.00000 (N)	Notification	P101	.00000 (N)	Notification
P102	.00000 (N)	Notification	P103	.00000 (N)	Notification
P104	.00000 (N)	Notification	P105	.00000 (N)	Notification
P106	.00000 (N)	Notification	P107	.00000 (N)	Notification
P108	.00000 (N)	Notification	P109	.00000 (N)	Notification
P110	.00000 (N)	Notification	P111	.00000 (N)	Notification
P112	.00000 (N)	Notification	P113	.00000 (N)	Notification
P114	.00000 (N)	Notification	P115	.00000 (N)	Notification
P116	.00000 (N)	Notification	P117	.00000 (N)	Notification
P118	.00000 (N)	Notification	P119	.00000 (N)	Notification
P120	.00000 (N)	Notification	P121	.00000 (N)	Notification
P122	.00000 (N)	Notification	U001	.00000 (N)	Notification
U002	.00000 (N)	Notification	U003	.00000 (N)	Notification
U004	.00000 (N)	Notification	U005	.00000 (N)	Notification
U007	.00000 (N)	Notification	U008	.00000 (N)	Notification
U009	.00000 (N)	Notification	U010	.00000 (N)	Notification
U011	.00000 (N)	Notification	U012	.00000 (N)	Notification
U013	.00000 (N)	Notification	U014	.00000 (N)	Notification
U015	.00000 (N)	Notification	U016	.00000 (N)	Notification
U017	.00000 (N)	Notification	U018	.00000 (N)	Notification
U019	.00000 (N)	Notification	U020	.00000 (N)	Notification
U021	.00000 (N)	Notification	U022	.00000 (N)	Notification
U023	.00000 (N)	Notification	U024	.00000 (N)	Notification
U025	.00000 (N)	Notification	U026	.00000 (N)	Notification
U027	.00000 (N)	Notification	U028	.00000 (N)	Notification
U029	.00000 (N)	Notification	U030	.00000 (N)	Notification
U031	.00000 (N)	Notification	U032	.00000 (N)	Notification
U033	.00000 (N)	Notification	U034	.00000 (N)	Notification
U035	.00000 (N)	Notification	U036	.00000 (N)	Notification
U037	.00000 (N)	Notification	U039	.00000 (N)	Notification
U040	.00000 (N)	Notification	U041	.00000 (N)	Notification

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Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number
	UPJOHN CO THE (Continued)		1000332664

U042	.00000 (N)	Notification	U043	.00000 (N)	Notification
U044	.00000 (N)	Notification	U045	.00000 (N)	Notification
U048	.00000 (N)	Notification	U049	.00000 (N)	Notification
U050	.00000 (N)	Notification	U051	.00000 (N)	Notification
U052	.00000 (N)	Notification	U053	.00000 (N)	Notification
U055	.00000 (N)	Notification	U056	.00000 (N)	Notification
U057	.00000 (N)	Notification	U058	.00000 (N)	Notification
U060	.00000 (N)	Notification	U061	.00000 (N)	Notification
U063	.00000 (N)	Notification	U064	.00000 (N)	Notification
U065	.00000 (N)	Notification	U066	.00000 (N)	Notification
U067	.00000 (N)	Notification	U068	.00000 (N)	Notification
U069	.00000 (N)	Notification	U070	.00000 (N)	Notification
U071	.00000 (N)	Notification	U072	.00000 (N)	Notification
U073	.00000 (N)	Notification	U074	.00000 (N)	Notification
U075	.00000 (N)	Notification	U076	.00000 (N)	Notification
U077	.00000 (N)	Notification	U078	.00000 (N)	Notification
U079	.00000 (N)	Notification	U080	.00000 (N)	Notification
U081	.00000 (N)	Notification	U082	.00000 (N)	Notification
U083	.00000 (N)	Notification	U084	.00000 (N)	Notification
U085	.00000 (N)	Notification	U086	.00000 (N)	Notification
U087	.00000 (N)	Notification	U088	.00000 (N)	Notification
U089	.00000 (N)	Notification	U090	.00000 (N)	Notification
U091	.00000 (N)	Notification	U092	.00000 (N)	Notification
U093	.00000 (N)	Notification	U094	.00000 (N)	Notification
U095	.00000 (N)	Notification	U096	.00000 (N)	Notification
U097	.00000 (N)	Notification	U098	.00000 (N)	Notification
U099	.00000 (N)	Notification	U100	.00000 (N)	Notification
U101	.00000 (N)	Notification	U102	.00000 (N)	Notification
U103	.00000 (N)	Notification	U104	.00000 (N)	Notification
U105	.00000 (N)	Notification	U106	.00000 (N)	Notification
U107	.00000 (N)	Notification	U108	.00000 (N)	Notification
U109	.00000 (N)	Notification	U110	.00000 (N)	Notification
U111	.00000 (N)	Notification	U112	.00000 (N)	Notification
U113	.00000 (N)	Notification	U114	.00000 (N)	Notification
U115	.00000 (N)	Notification	U116	.00000 (N)	Notification
U117	.00000 (N)	Notification	U118	.00000 (N)	Notification
U119	.00000 (N)	Notification	U120	.00000 (N)	Notification
U121	.00000 (N)	Notification	U122	.00000 (N)	Notification
U123	.00000 (N)	Notification	U124	.00000 (N)	Notification
U125	.00000 (N)	Notification	U126	.00000 (N)	Notification
U127	.00000 (N)	Notification	U128	.00000 (N)	Notification
U129	.00000 (N)	Notification	U130	.00000 (N)	Notification
U131	.00000 (N)	Notification	U132	.00000 (N)	Notification
U133	.00000 (N)	Notification	U134	.00000 (N)	Notification
U135	.00000 (N)	Notification	U137	.00000 (N)	Notification
U138	.00000 (N)	Notification	U139	.00000 (N)	Notification
U140	.00000 (N)	Notification	U141	.00000 (N)	Notification
U144	.00000 (N)	Notification	U145	.00000 (N)	Notification
U146	.00000 (N)	Notification	U147	.00000 (N)	Notification
U148	.00000 (N)	Notification	U149	.00000 (N)	Notification
U151	.00000 (N)	Notification	U152	.00000 (N)	Notification
U153	.00000 (N)	Notification	U154	.00000 (N)	Notification
U156	.00000 (N)	Notification	U157	.00000 (N)	Notification
U158	.00000 (N)	Notification	U159	.00000 (N)	Notification

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UPJOHN CO THE (Continued) 1000332664

U160	.00000 (N)	Notification	U161	.00000 (N)	Notification
U162	.00000 (N)	Notification	U163	.00000 (N)	Notification
U164	.00000 (N)	Notification	U165	.00000 (N)	Notification
U166	.00000 (N)	Notification	U167	.00000 (N)	Notification
U168	.00000 (N)	Notification	U169	.00000 (N)	Notification
U170	.00000 (N)	Notification	U171	.00000 (N)	Notification
U172	.00000 (N)	Notification	U173	.00000 (N)	Notification
U174	.00000 (N)	Notification	U175	.00000 (N)	Notification
U176	.00000 (N)	Notification	U177	.00000 (N)	Notification
U178	.00000 (N)	Notification	U179	.00000 (N)	Notification
U180	.00000 (N)	Notification	U181	.00000 (N)	Notification
U182	.00000 (N)	Notification	U183	.00000 (N)	Notification
U184	.00000 (N)	Notification	U185	.00000 (N)	Notification
U186	.00000 (N)	Notification	U187	.00000 (N)	Notification
U188	.00000 (N)	Notification	U189	.00000 (N)	Notification
U190	.00000 (N)	Notification	U191	.00000 (N)	Notification
U193	.00000 (N)	Notification	U194	.00000 (N)	Notification
U196	.00000 (N)	Notification	U197	.00000 (N)	Notification
U200	.00000 (N)	Notification	U201	.00000 (N)	Notification
U202	.00000 (N)	Notification	U203	.00000 (N)	Notification
U204	.00000 (N)	Notification	U206	.00000 (N)	Notification
U207	.00000 (N)	Notification	U209	.00000 (N)	Notification
U210	.00000 (N)	Notification	U211	.00000 (N)	Notification
U212	.00000 (N)	Notification	U213	.00000 (N)	Notification
U214	.00000 (N)	Notification	U215	.00000 (N)	Notification
U216	.00000 (N)	Notification	U217	.00000 (N)	Notification
U218	.00000 (N)	Notification	U219	.00000 (N)	Notification
U220	.00000 (N)	Notification	U221	.00000 (N)	Notification
U222	.00000 (N)	Notification	U223	.00000 (N)	Notification
U224	.00000 (N)	Notification	U225	.00000 (N)	Notification
U226	.00000 (N)	Notification	U227	.00000 (N)	Notification
U228	.00000 (N)	Notification	U229	.00000 (N)	Notification
U231	.00000 (N)	Notification	U232	.00000 (N)	Notification
U233	.00000 (N)	Notification	U234	.00000 (N)	Notification
U235	.00000 (N)	Notification	U236	.00000 (N)	Notification
U237	.00000 (N)	Notification	U238	.00000 (N)	Notification
U239	.00000 (N)	Notification	U240	.00000 (N)	Notification
U243	.00000 (N)	Notification	U244	.00000 (N)	Notification
U246	.00000 (N)	Notification	P001	453.59900 (N)	Part A
U240	.00000 (N)	Part A	U243	.00000 (N)	Part A
U244	.00000 (N)	Part A	U246	.00000 (N)	Part A

(P) = Pounds , (K) = Kilograms , (M) = Metric Tons , (T) = Tons , (N) = Not Reported

There are 1 compliance/violation record(s) reported at this site:

Evaluation	Date	Violations
COMPLIANCE EVALUATION INSPECTION (CEI)	11-SEP-92	YES

C11
West
1/8-1/4
Higher

THE UPJOHN CO/PORTAGE & LOWELL
301 HENRIETTA ST
KALAMAZOO, MI 49002

UST U003102908
N/A

KR059B029408

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number
	THE UPJOHN CO/PORTAGE & LOWELL (Continued)		U003102908

UST:

Facility ID:	0-013486	Tank ID:	2
Owner:	PHARMACIA & UPJOHN INC (1136-91-1 7000 PORTAGE RD KALAMAZOO 49001		
Product:	Used Oil	Capacity:	1,000
Tank Age:	Unk	Tank Material:	Concrete
Tank Status:	Remv	Piping Material:	Unknown
Piping Type:	Not reported		
Tank Rel Detect:	Not reported	Pipe Rel Detect:	Not reported
Manager:	RUSS DOWNEY	Mngr Phone:	(616) 329-9178

Facility ID:	0-013486	Tank ID:	6230-A
Owner:	PHARMACIA & UPJOHN INC (1136-91-1 7000 PORTAGE RD KALAMAZOO 49001		
Product:	Gasoline	Capacity:	500
Tank Age:	24	Tank Material:	Bare Steel
Tank Status:	Remv	Piping Material:	Unknown
Piping Type:	Not reported		
Tank Rel Detect:	Not reported	Pipe Rel Detect:	Not reported
Manager:	RUSS DOWNEY	Mngr Phone:	(616) 329-9178

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12 WSW 1/8-1/4 Higher	BRONSON METHODIST HOSPITAL 252 E LOVELL ST KALAMAZOO, MI 49007	RCRIS-SQG FINDS MLTS	1000320531 MID072581812

RCRIS:

Owner: BRONSON HEALTHCARE GP
(312) 555-1212

Contact: BRUCE HEUSTIS
(616) 383-7629

Waste	Quantity	Info Source
D000	.00000 (N)	Notification

(P) = Pounds , (K) = Kilograms , (M) = Metric Tons , (T) = Tons , (N) = Not Reported

There are 1 compliance/violation record(s) reported at this site:

Evaluation	Date	Violations
COMPLIANCE EVALUATION INSPECTION (CEI)	10-SEP-93	YES

Other Pertinent Environmental Activity Identified at Site:
facility which is monitored or permitted for air emissions under the Clean Air Act.
civil judicial and administrative enforcement case against facility.

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13 SSE 1/8-1/4 Higher	HLB ENTERPRISES AAMCO TRANSMISSION 541 PORTAGE ST KALAMAZOO, MI 49007	RCRIS-SQG FINDS	1000451871 MID985585629

KR059B029409

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

HLB ENTERPRISES AAMCO TRANSMISSION (Continued) — **1000451871**

RCRIS:
Owner: BOGATSCHOW HELEN
(616) 345-6801

Contact: HELEN BOGATSCHOW
(616) 345-6801

Waste	Quantity	Info Source	Waste	Quantity	Info Source
D039	.00000 (N)	State Inspection	D001	.00000 (N)	Notification

(P) = Pounds , (K) = Kilograms , (M) = Metric Tons , (T) = Tons , (N) = Not Reported

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D14 SE 1/8-1/4 Higher — **HIGHTECH COLLISION**, **501 S PITCHER ST**, **KALAMAZOO, MI** — LUST — **S101601384** / **N/A**

CURRENT LUST STATUS:
Facility ID: 390134 Status: Not reported

D15 SE 1/8-1/4 Higher — **HIGH TECH COLLISION SVC**, **501 S PITCHER**, **KALAMAZOO, MI 49007** — RCRIS-SQG, FINDS — **1000404942** / **MID017178443**

RCRIS:
Owner: STANDISH JR RICHARD D
(616) 383-0414

Contact: FRED WISSER
(616) 343-7479

Waste	Quantity	Info Source	Waste	Quantity	Info Source
D001	.00000 (N)	Notification	F003	.00000 (N)	Notification
F005	.00000 (N)	Notification			

(P) = Pounds , (K) = Kilograms , (M) = Metric Tons , (T) = Tons , (N) = Not Reported

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16 NNW 1/8-1/4 Higher — **COLUMBIA EQUITY ONE LIMITED**, **350 EAST MICHIGAN AVE**, **KALAMAZOO, MI 49007** — UST — **U001147895** / **N/A**

UST:

Facility ID:	0-036456	Tank ID:	1
Owner:	COLUMBIA EQUITY ONE LIMITED 350 EAST MICHIGAN AVE KALAMAZOO, MI 49007		
Product:	UNK	Capacity:	Unknown
Tank Age:	Unk	Tank Material:	Unknown
Tank Status:	Temp	Piping Material:	Unknown
Piping Type:	Not reported		
Tank Rel Detect:	Not reported	Pipe Rel Detect:	Not reported
Manager:	DANIEL L. CARTER	Mngr Phone:	(616) 454-8361

KR059B029410

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

COLUMBIA EQUITY ONE LIMITED (Continued) — **U001147895**

Facility ID:	0-036456	Tank ID:	2
Owner:	COLUMBIA EQUITY ONE LIMITED 350 EAST MICHIGAN AVE KALAMAZOO, MI 49007		
Product:	UNK	Capacity:	Unknown
Tank Age:	Unk	Tank Material:	Unknown
Tank Status:	Temp	Piping Material:	Unknown
Piping Type:	Not reported		
Tank Rel Detect:	Not reported	Pipe Rel Detect:	Not reported
Manager:	DANIEL L. CARTER	Mngr Phone:	(616) 454-8361

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17 SE 1/4-1/2 Higher — **PORTAGE AND SECOND ST AREA KAL**, **631 SECOND ST**, **KALAMAZOO, MI 49007** — **SHWS** — **S100326895** / **N/A**

SHWS:

Facility ID:	390032
Source:	Unknown
Pollutant(s):	TCE, 1,2 DCA, PCE
SAM Score:	21
SAM Score Date:	11/19/1990
Township:	02S
Range:	11W
Section:	22
Quarter:	A
Quarter/Quarter:	B
List Category:	Eval/Interim Resp-PRP/Oth
Change:	Not reported
Change Date:	Not reported

E18 North 1/4-1/2 Higher — **E. M. SERGEANT E MICHIGAN AVE**, **542 E MICHIGAN AVE**, **KALAMAZOO, MI** — **LUST** — **S101601376** / **N/A**

CURRENT LUST STATUS:

Facility ID:	390239	Status:	Not reported

E19 North 1/4-1/2 Higher — **E.M. SERGEANT E.MICHIGAN AVE.**, **542 E.MICHIGAN AVE.**, **KALAMAZOO, MI 49007** — **SHWS** — **S100659920** / **N/A**

KR059B029411

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

E.M. SERGEANT E.MICHIGAN AVE. (Continued) — **S100659920**

SHWS:

Facility ID:	390239
Source:	Petroleum Bulk Stations & Term
Pollutant(s):	BTEX
SAM Score:	35
SAM Score Date:	08/12/1993
Township:	02S
Range:	11W
Section:	15
Quarter:	D
Quarter/Quarter:	B
List Category:	Eval/Interim Resp-PRP/Oth
Change:	Not reported
Change Date:	Not reported

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20 WSW 1/4-1/2 Higher — **A T & T (W. LOVELL, KALAMAZOO)**, **133 W LOVELL ST**, **KALAMAZOO, MI** — LUST — **S100426015** N/A

CURRENT LUST STATUS:
Facility ID: 390322 Status: Not reported

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21 NNW 1/4-1/2 Higher — **SPEARFLEX CORPORATION**, **241 E. KALAMAZOO AVE**, **KALAMAZOO, MI 49003** — CERCLIS, SHWS — **1000476507** MID985601186

CERCLIS Classification Data:

Site Incident Category:	Not reported	Federal Facility:	NO
Ownership Status:	UNKNOWN	NPL Status:	NOT ON NPL
EPA Notes:	PCB CONTAMINATION		

CERCLIS Assessment History:

Assessment:	DISCOVERY	Completed:	12/19/1990
Assessment:	PRELIMINARY ASSESSMENT	Completed:	03/18/1993
Assessment:	SCREENING SITE INSPECTION	Completed:	09/22/1993
Assessment:	REMOVAL ACTION	Completed:	07/30/1993
Assessment:	ADMINISTRATIVE RECORD	Completed:	11/26/1991

CERCLIS Site Status:
This site is currently under investigation by the government to assess the extent of further action

SHWS:

Facility ID:	390068
Source:	Motor Vehicle Parts
Pollutant(s):	Trichloroethylene, Dichloroethylene, PCB
SAM Score:	41
SAM Score Date:	09/27/1991
Township:	02S
Range:	11W
Section:	15
Quarter:	C
Quarter/Quarter:	B
List Category:	Eval/Interim Resp-PRP/Oth
Change:	Not reported
Change Date:	Not reported

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Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number
22 NNW 1/4-1/2 Higher	CARS-R-US 202 E KALAMAZOO AVE KALAMAZOO, MI	LUST	S101600632 N/A

CURRENT LUST STATUS:
Facility ID: 390135 Status: INACTIVE

23 ESE 1/2-1 Higher	SINCLAIR BULK STOR AMER AGGREG 1000 FOURTH STREET KALAMAZOO, MI 49005	SHWS	S100326906 N/A

SHWS:
Facility ID: 390267
Source: Petroleum Bulk Stations & Term
Pollutant(s): BTEX
SAM Score: 32
SAM Score Date: 09/28/1991
Township: 02S
Range: 11W
Section: 23
Quarter: B
Quarter/Quarter: B
List Category: Eval/Interim Resp-PRP/Oth
Change: Not reported
Change Date: Not reported

24 West 1/2-1 Higher	STANDARD OIL GAS STA 502 W MICHIGAN AVE KALAMAZOO, MI 49007	CERC-NFRAP SHWS	1000310457 MID980992903

CERCLIS-NFRAP Classification Data:
Site Incident Category: Not reported
Ownership Status: OTHER
EPA Notes: Not reported
Federal Facility: NO
NPL Status: NOT ON NPL

CERCLIS-NFRAP Assessment History:
Assessment: DISCOVERY Completed: 06/01/84
Assessment: PRELIMINARY ASSESSMENT Completed: 06/10/87

SHWS:
Facility ID: 390045
Source: Gas station
Pollutant(s): Gasoline
SAM Score: 25
SAM Score Date: 09/18/1991
Township: 02S
Range: 11W
Section: 16
Quarter: D
Quarter/Quarter: C
List Category: Eval/Interim Resp-PRP/Oth
Change: Not reported
Change Date: Not reported

25 ESE 1/2-1 Higher	WASTE OIL STORAGE EAST CROSSTOWN 1326 E CROSSTOWN PKWY KALAMAZOO, MI 49008	FINDS CERC-NFRAP SHWS	1000397473 MID981201049

WASTE OIL STORAGE EAST CROSSTOWN (Continued) 1000397473

CERCLIS-NFRAP Classification Data:
Site Incident Category: Not reported
Ownership Status: OTHER
EPA Notes: Not reported
Federal Facility: NO
NPL Status: NOT ON NPL

CERCLIS-NFRAP Assessment History:
Assessment: DISCOVERY — Completed: 06/24/86
Assessment: PRELIMINARY ASSESSMENT — Completed: 06/30/86

SHWS:
Facility ID: 390049
Source: Nonclassifiable Establishments
Pollutant(s): Chloroform, TCE 1,1,1-TCA, 1,1-DCA
SAM Score: 36
SAM Score Date: 01/16/1991
Township: 02S
Range: 11W
Section: 23
Quarter: B
Quarter/Quarter: A
List Category: Eval/Interim Resp - Funds
Change: Not reported
Change Date: Not reported

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26 North 1/2-1 Higher

ALLIED CHEMICAL CORP IND DEV — SHWS — S100326885
511 E PATERSON ST BOX 2798 — N/A
KALAMAZOO, MI 49003

SHWS:
Facility ID: 390003
Source: Chem product mfg
Pollutant(s): Pesticides
SAM Score: 23
SAM Score Date: 08/28/1991
Township: 02S
Range: 11W
Section: 10
Quarter: D
Quarter/Quarter: D
List Category: No Actions Taken
Change: Not reported
Change Date: Not reported

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27 North 1/2-1 Higher

PITCHER AND PATTERSON STS — SHWS — S100326894
243 EAST PATERSON STREET — N/A
KALAMAZOO, MI 49007

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PITCHER AND PATTERSON STS (Continued) S100326894

SHWS:

Facility ID:	390266
Source:	Paper and Allied Products
Pollutant(s):	Arsenic Chromium DCE, Lead Toluene
SAM Score:	34
SAM Score Date:	09/28/1991
Township:	02S
Range:	11W
Section:	10
Quarter:	D
Quarter/Quarter:	C
List Category:	Eval/Interim Resp-PRP/Oth
Change:	Not reported
Change Date:	Not reported

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)	Facility ID
CALHOUN COUNTY	S100068418	MUNIC WELL COLUMBIA RD	NW CORNER HELMER / COLUMBIA	49001	SHWS	
COOPER	S100069686	OLD COOPER TOWNSHIP	OFF "E" AVE	49007	SWF/LF	
KALAMAZOO	S101190827	NAZERETH COLLEGE			SHWS	
KALAMAZOO	S100326884	A P E C AMPERSEE ST LOTS	430, 434, 502 AMPERSEE STREET	49001	SHWS	
KALAMAZOO	1000149583	KALAMAZOO MUNI WELLS #1 CENTRAL	COR OFF STOCKBRIDGE & CROSSTWN	49001	FINDS, CERC-NFRAP, SHWS	
KALAMAZOO	1000530351	ALLAN RICHARD MEDICAL	EDWARDS ST BUSH AND PARSONS	49007	RCRIS-SQG, FINDS	
KALAMAZOO	S100068613	GULL ROAD SITE RIVERVIEW DRIVE	GULL ROAD AND RIVERSIDE DRIVE		SHWS	
KALAMAZOO	A100000525	ACERMAN OIL	126 E. HIGHWAY	49007	AST	
KALAMAZOO	S101190825	LYONS MACHINE BUILDERS	904-910 HOTOP		SHWS	
KALAMAZOO	S100067519	BANK ST STOCKBRIDGE AREA	INTERSECTION BANK / STOCKBRIDGE	49001	SHWS	
KALAMAZOO	S100069674	WEST K L AVE SLF	8606 W KALAMAZOO AVE	49007	SWF/LF	
KALAMAZOO	S100326891	KALAMAZOO NO 11 WELLS CITY OF	432 KENDALL AVE	49007	SHWS	
KALAMAZOO	S100067520	RES WELLS LAKERIDGE RD	7215 LAKERIDGE RD	49001	SHWS	
KALAMAZOO	1000530084	SHELL SVC STA	491 W MICHIGAN AND WESTNEDGE	49007	RCRIS-SQG, FINDS	
KALAMAZOO	1000908966	NEIL POST INC	824 W MICHIGAN AVE	49007	RCRIS-SQG, FINDS, UST	0-014055
KALAMAZOO	U000256421	#53-8831-111	2612 W. MICHIGAN AVE. & HOWARD S	49007	UST	0-021842
KALAMAZOO	S101601387	MCLEIEER OIL, KALAMAZOO	1718 E MICHIGAN AVE # A	49001	LUST	390345
KALAMAZOO	S101601391	NEIL POST INC	824 W MICHIGAN AVE	49007	LUST	390139
KALAMAZOO	S100326893	NEWPORT RD & EAST MILHAM RD	MILHAM ROAD	49001	SHWS	
KALAMAZOO	S100069673	SUTHERLAND FIELD	MILLS STREET / KINGS HWY	49007	SWF/LF	
KALAMAZOO	U003102758	KALAMAZOO/BATTLE CREEK INTERNATIO	NAL AIRPORT 5235 PORTAGE ROAD		UST	0-006615
KALAMAZOO	S100326898	PRODUCTION PAINTING CO	1002 O'WEIL ST	49001	SHWS	
KALAMAZOO	S100344450	KALAMAZOO CITY (RIVERSIDE GULF)	OFF KING HWY	49001	SWF/LF	
KALAMAZOO	S100344451	KALAMAZOO CITY-RAVINE RD	OFF RAVINE RD	49007	SWF/LF	
KALAMAZOO	S100327314	FARM BUREAU SVCS FERTILIZER SITE	OLMSTED ROAD		SHWS	
KALAMAZOO	U000256719	CAREFLITE, INC.	ONE HEALTHCARE PLAZA	49007	UST	0-008696
KALAMAZOO	S100660115	PITCHER AND PROUTY ST.	PITCHER AND PROUTY ST. AREA		SHWS	
KALAMAZOO	S100327316	PORTAGE CREEK KALAMAZOO RIVER	PORTAGE CRK WITHIN CITY LIMITS		SHWS	
KALAMAZOO	S100660113	ARCADIA CREEK CORRIDOR	ROSE AND ELEANOR ST. AREA		SHWS	
KALAMAZOO	S100327317	SPRING ST DOWNTOWN KALAMAZOO	SPRING STREET		SHWS	
KALAMAZOO	S100070364	KAV COMPANY SLF	M-89 TO DOSTER, EAST ON OAK		SWF/LF	
KALAMAZOO	S100326909	TRAVIS ST COOPER TWP	2026 TRAVIS ST	49001	SHWS	
KALAMAZOO	1000318384	ECONOMY AUTO BODY	522 E WALNUT	49007	RCRIS-SQG, FINDS	
KALAMAZOO	S101172420	FIRESTONE SERVICE CENTER	3529 SOUTH WESTNED		LUST	390353
KALAMAZOO COUNTY	S100327495	Q AVE-CROOKED LAKE	Q-AVE		SHWS	
PORTAGE	S100067561	LOVERS LANE	LOVERS LANE / BISHOP RD	49001	SHWS	

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GEOCHECK VERSION 2.1 ADDENDUM
FEDERAL DATABASE WELL INFORMATION

Well Closest to Target Property (Southern Quadrant)

BASIC WELL DATA

Site ID:	421637085350201	Distance from TP:	1/2 - 1 Mile
Site Type:	Single well, other than collector or Ranney type		
Year Constructed:	1947	County:	Alpena
Altitude:	770.00 ft.	State:	Michigan
Well Depth:	197.00 ft.	Topographic Setting:	Not Reported
Depth to Water Table:	Not Reported	Prim. Use of Site:	Test
Date Measured:	Not Reported	Prim. Use of Water:	Unused

LITHOLOGIC DATA

Not Reported

WATER LEVEL VARIABILITY

Not Reported

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GEOCHECK VERSION 2.1
STATE DATABASE WELL INFORMATION

Water Well Information:

Well Within 1 - 2 Miles of Target Property (Northern Quadrant)

Well ID:	39721110001	County:	KALAMAZOO
Owner:	BERT DENHARTIGH		
Address:	2102 N WESTNEDGE KALAMAZOO, MI		
Well Address:	2011 WESTNEDGE AVENUE NORTH		
Well Address is Owner's:	No		
Township Number:	3907	Section Number	10
Tier Number:	02	Range Number:	11
North/South Delineation:	South	East/West Delineation:	West
10 Acre Fraction:	SW	40 Acre Fraction:	SW
180 Acre Fraction:	NW	Coordinate System:	State Plane
X Coordinate:	1660250.72	Y Coordinate:	298072.10
Coordinates Method:	Digitized	Location Verif. Method:	Field
Ground Elev. (feet):	768.00	Elevation Method:	Not Reported
	KALAMAZOO, MI 49007		
Well Depth (feet):	46.0	Tax Parcel Number:	Not Reported
Date Drilled:	07/13/88	Well was new when drilled:	Unknown
Drilling Method:	Cable	Wellhead Completion Type:	Pitless Adapter
Is this well dry:	No	Use:	Domestic Use
Casing Type:	Steel	Casing Method:	Welded/Glued
Casing Diam. (inches):	4.00	Depth of Casing (feet):	36.0
2nd Casing Diameter:	0.00	Depth of 2nd Casing:	0.0
Grouted Hole Diameter:	6.00	Depth of Grouting:	46.0
2nd Grouted Hole Diam.:	0.00	Depth of 2nd Grouting:	0.0
Casing Height at Surface:	1.0	Was Drive Shoe Used:	Yes
Screen Type:	Stainless	Screen Diameter:	3.00
Slot/Gauze:	Slot	Fittings Type:	K-Packer/Lead Packer
Screen Opening Size:	0.010	Screen Length (feet):	9.0
Beginning Depth of Screen set (feet):		37.00	
Ending Depth of Screen set (feet):		46.00	
Length of Blank Above Screen (feet):		1.0	
Static Water Level:	6.00	Is Well Flowing:	No
Pumping Level (feet):	15	Pumping Test Time (hrs):	1.0
Pumping Test Rate (hrs):	100	2nd Pumping Level:	15
2nd Test Pumping Rate:	100	2nd Pumping Test Length:	1.0
Label Angle (degrees):	0.0	Type of Grout:	Neat Cement
End Depth of Grout (feet)	46.0	Beg. Depth of Grout (feet):	0.0
Nearest Contamination Source Type:		Septic Tank or Tile Field	
Distance of nearest Contamination Source (feet):		75	
Direction to the nearest Contamination Source:		SE	
Was Well Disinfected:	Yes	Was Well Plugged:	No
Type of Pump:	Not Reported	Was Pump Installed:	No
Pump Manufacturer:	Not Reported	Pump horsepower:	Not Reported
Drop Pipe Length (feet):	0	Pumping Capacity (gal/min):	0
Driller's Registration #:	0488	Date Data was entered:	11/91
Character Height (feet):	300.0	Character Width (feet):	200.0
Rig Operator Name:	Not Reported		
Driller's Directions:	100' N OF WESTNEDGE FROM DUNKLEY		
Data Source:	Statewide ground water data base format		

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GEOCHECK VERSION 2.1
STATE DATABASE WELL INFORMATION

Water Well Information:

Well Within 1 - 2 Miles of Target Property (Eastern Quadrant)

Well ID:	39721114001	County:	KALAMAZOO
Owner:	BROWN COMPANY		
Address:	SCHIPPERS LANE KALAMAZOO, MI		
Well Address:	SCHIPPERS LANE		
Well Address is Owner's:	Yes		
Township Number:	3907	Section Number	14
Tier Number:	02	Range Number:	11
North/South Delineation:	South	East/West Delineation:	West
10 Acre Fraction:	NW	40 Acre Fraction:	SE
180 Acre Fraction:	SE	Coordinate System:	State Plane
X Coordinate:	1669386.16	Y Coordinate:	290671.83
Coordinates Method:	Digitized	Location Verif. Method:	Field
Ground Elev. (feet):	765.00	Elevation Method:	Not Reported
	KALAMAZOO, MI 49001		
Well Depth (feet):	92.0	Tax Parcel Number:	Not Reported
Date Drilled:	03/07/73	Well was new when drilled:	Unknown
Drilling Method:	Hollow Rod	Wellhead Completion Type:	12" Above Grade
Is this well dry:	No	Use:	Industry
Casing Type:	Plastic	Casing Method:	Welded/Glued
Casing Diam. (inches):	12.00	Depth of Casing (feet):	70.0
2nd Casing Diameter:	0.00	Depth of 2nd Casing:	0.0
Grouted Hole Diameter:	0.00	Depth of Grouting:	0.0
2nd Grouted Hole Diam.:	0.00	Depth of 2nd Grouting:	0.0
Casing Height at Surface	2.0	Was Drive Shoe Used:	No
Screen Type:	Fiberglass	Screen Diameter:	11.50
Slot/Gauze:	Slot	Fittings Type:	Not Reported
Screen Opening Size:	0.050	Screen Length (feet):	20.0
Beginning Depth of Screen set (feet):		72.00	
Ending Depth of Screen set (feet):		92.00	
Length of Blank Above Screen (feet):		0.0	
Static Water Level:	12.00	Is Well Flowing:	No
Pumping Level (feet):	52	Pumping Test Time (hrs):	8.0
Pumping Test Rate (hrs):	1020	2nd Pumping Level:	0
2nd Test Pumping Rate:	0	2nd Pumping Test Length:	0.0
Label Angle (degrees):	180.0	Type of Grout:	Bentonite
End Depth of Grout (feet)	28.0	Beg. Depth of Grout (feet):	0.0
Nearest Contamination Source Type:		Unknown	
Distance of nearest Contamination Source (feet):		0	
Direction to the nearest Contamination Source:		Not Reported	
Was Well Disinfected:	Yes	Was Well Plugged:	Unknown
Type of Pump:	Not Reported	Was Pump Installed:	No
Pump Manufacturer:	Not Reported	Pump horsepower:	Not Reported
Drop Pipe Length (feet):	0	Pumping Capacity (gal/min):	0
Driller's Registration #:	1250	Date Data was entered:	11/91
Character Height (feet):	300.0	Character Width (feet):	200.0
Rig Operator Name:	Not Reported		
Driller's Directions:	255' S OF SCHIPPERS LANE & 45' W OF MICHIGAN		
Data Source:	Statewide ground water data base format		

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GEOCHECK VERSION 2.1
STATE DATABASE WELL INFORMATION

Water Well Information:

Well Within 1/2 - 1 Mile of Target Property (Southern Quadrant)

Well ID:	39721122031	County:	KALAMAZOO
Owner:	WHEELER & BLANEY CO		
Address:	5071 E KILGORE KALAMAZOO, MI		
Well Address:	CROSSTOWN AND BURDICK		
Well Address is Owner's:	No		
Township Number:	3907	Section Number	22
Tier Number:	02	Range Number:	11
North/South Delineation:	South	East/West Delineation:	West
10 Acre Fraction:	NE	40 Acre Fraction:	NE
180 Acre Fraction:	SW	Coordinate System:	State Plane
X Coordinate:	1662047.28	Y Coordinate:	286665.64
Coordinates Method:	Digitized	Location Verif. Method:	Office
Ground Elev. (feet):	772.00	Elevation Method:	Not Reported
	KALAMAZOO, MI 49001		
Well Depth (feet):	50.0	Tax Parcel Number:	Not Reported
Date Drilled:	05/22/90	Well was new when drilled:	NEW
Drilling Method:	Cable	Wellhead Completion Type:	Pitless Adapter
Is this well dry:	No	Use:	Other
Casing Type:	Steel	Casing Method:	Threaded
Casing Diam. (inches):	6.00	Depth of Casing (feet):	30.0
2nd Casing Diameter:	0.00	Depth of 2nd Casing:	0.0
Grouted Hole Diameter:	0.00	Depth of Grouting:	0.0
2nd Grouted Hole Diam.:	0.00	Depth of 2nd Grouting:	0.0
Casing Height at Surface:	1.0	Was Drive Shoe Used:	Yes
Screen Type:	Stainless	Screen Diameter:	6.00
Slot/Gauze:	Slot	Fittings Type:	K-Packer/Lead Packer
Screen Opening Size:	0.010	Screen Length (feet):	20.0
Beginning Depth of Screen set (feet):		30.00	
Ending Depth of Screen set (feet):		50.00	
Length of Blank Above Screen (feet):		0.0	
Static Water Level:	12.00	Is Well Flowing:	No
Pumping Level (feet):	0	Pumping Test Time (hrs):	0.0
Pumping Test Rate (hrs):	0	2nd Pumping Level:	0
2nd Test Pumping Rate:	0	2nd Pumping Test Length:	0.0
Label Angle (degrees):	0.0	Type of Grout:	Bentonite
End Depth of Grout (feet)	25.0	Beg. Depth of Grout (feet):	0.0
Nearest Contamination Source Type:		None	
Distance of nearest Contamination Source (feet):		0	
Direction to the nearest Contamination Source:		Not Reported	
Was Well Disinfected:	Yes	Was Well Plugged:	No
Type of Pump:	Submersible	Was Pump Installed:	Not Reported
Pump Manufacturer:	FLINT & WALLING	Pump horsepower:	5
Drop Pipe Length (feet):	40	Pumping Capacity (gal/min):	85
Driller's Registration #:	0112	Date Data was entered:	11/91
Character Height (feet):	240.0	Character Width (feet):	140.0
Rig Operator Name:	Not Reported		
Driller's Directions:	CORNER OF CROSSTOWN & BURDICK		
Data Source:	Statewide ground water data base format		

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GEOCHECK VERSION 2.1
STATE DATABASE WELL INFORMATION

Water Well Information:

Well Within 1 - 2 Miles of Target Property (Western Quadrant)

Well ID:	39721117001	County:	KALAMAZOO
Owner:	RAYMOND CUTLER		
Address:	1908 W GRAND KALAMAZOO, MI		
Well Address:	GRAND AVENUE WEST		
Well Address is Owner's:	No		
Township Number:	3907	Section Number	17
Tier Number:	02	Range Number:	11
North/South Delineation:	South	East/West Delineation:	West
10 Acre Fraction:	SW	40 Acre Fraction:	SE
180 Acre Fraction:	SE	Coordinate System:	State Plane
X Coordinate:	1653911.47	Y Coordinate:	290571.85
Coordinates Method:	Digitized	Location Verif. Method:	Field
Ground Elev. (feet):	910.00	Elevation Method:	Not Reported
	KALAMAZOO, MI 49007		
Well Depth (feet):	99.0	Tax Parcel Number:	Not Reported
Date Drilled:	08/24/68	Well was new when drilled:	Unknown
Drilling Method:	Jetted	Wellhead Completion Type:	12" Above Grade
Is this well dry:	No	Use:	Domestic Use
Casing Type:	Steel	Casing Method:	Threaded
Casing Diam. (inches):	2.00	Depth of Casing (feet):	0.0
2nd Casing Diameter:	0.00	Depth of 2nd Casing:	0.0
Grouted Hole Diameter:	0.00	Depth of Grouting:	0.0
2nd Grouted Hole Diam.:	0.00	Depth of 2nd Grouting:	0.0
Casing Height at Surface:	1.0	Was Drive Shoe Used:	Yes
Screen Type:	Stainless	Screen Diameter:	1.25
Slot/Gauze:	Slot	Fittings Type:	Other
Screen Opening Size:	0.015	Screen Length (feet):	4.0
Beginning Depth of Screen set (feet):		95.00	
Ending Depth of Screen set (feet):		99.00	
Length of Blank Above Screen (feet):		0.0	
Static Water Level:	79.00	Is Well Flowing:	No
Pumping Level (feet):	0	Pumping Test Time (hrs):	0.0
Pumping Test Rate (hrs):	0	2nd Pumping Level:	0
2nd Test Pumping Rate:	0	2nd Pumping Test Length:	0.0
Label Angle (degrees):	180.0	Type of Grout:	Neat Cement
End Depth of Grout (feet)	0.0	Beg. Depth of Grout (feet):	0.0
Nearest Contamination Source Type:		Septic Tank or Tile Field	
Distance of nearest Contamination Source (feet):		75	
Direction to the nearest Contamination Source:		SE	
Was Well Disinfected:	Unknown	Was Well Plugged:	No
Type of Pump:	Jet	Was Pump Installed:	Not Reported
Pump Manufacturer:	TAIT	Pump horsepower:	1.5
Drop Pipe Length (feet):	90	Pumping Capacity (gal/min):	7
Driller's Registration #:	0577	Date Data was entered:	11/91
Character Height (feet):	300.0	Character Width (feet):	200.0
Rig Operator Name:	Not Reported		
Driller's Directions:	100' N OF W GRAND AVE		
Data Source:	Statewide ground water data base format		

KR059B029421

GEOCHECK VERSION 2.1
PUBLIC WATER SUPPLY SYSTEM INFORMATION

Searched by Nearest Well.

PWS SUMMARY:

PWS ID:	MI3920268	PWS Status:	Active	Distance from TP:	1/2 - 1 Mile
Date Initiated:	Not Reported	Date Deactivated:	Not Reported	Dir relative to TP:	West
PWS Name:	EASTWOOD LITTLE LEAGUE 5431 FORDHAM KALAMAZOO, MI 49001				

Addressee / Facility Type:	Not Reported		
Facility Name:	Not Reported		
Facility Latitude:	42 17 30	Facility Longitude:	085 35 13
City Served:	Not Reported:		
Treatment Class:	Untreated	Population Served:	Under 101 Persons

Well currently has or has had major violation(s): No

KR059B029422

EPA Waste Codes Addendum

Code	Description
D000	NOT DEFINED
D001	IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
D002	A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.
D003	A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.
D039	TETRACHLOROETHYLENE
F002	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2-TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE LISTED IN F001, F004, OR F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
F003	THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
F004	THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: CRESOLS AND CRESYLIC ACID, AND NITROBENZENE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
F005	THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE,

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EPA Waste Codes Addendum

Code	Description
	CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
P001	2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%
P001	WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%
P002	ACETAMIDE, N-(AMINOTHIOXOMETHYL)-
P002	1-ACETYL-2-THIOUREA
P003	ACROLEIN
P003	2-PROPENAL
P004	ALDRIN
P004	1,4,5,8-DIMETHANONAPHTHALENE, 1,2,3,4,10,10-HEXA-CHLORO-1,4,4A,5,8,8A,-HEXAHYDRO-, (1ALPHA,4ALPHA,4ABETA,5ALPHA,8ALPHA,8ABETA)-
P005	ALLYL ALCOHOL
P005	2-PROPEN-1-OL
P006	ALUMINUM PHOSPHIDE (R,T)
P007	5-(AMINOMETHYL)-3-ISOXAZOLOL
P007	3(2H)-ISOXAZOLONE, 5-(AMINOMETHYL)-
P008	4-AMINOPYRIDINE
P008	4-PYRIDINAMINE
P009	AMMONIUM PICRATE (R)
P009	PHENOL, 2,4,6-TRINITRO-, AMMONIUM SALT (R)
P010	ARSENIC ACID H3ASO4
P011	ARSENIC OXIDE AS2O3
P011	ARSENIC PENTOXIDE
P012	ARSENIC OXIDE AS2O3
P012	ARSENIC TRIOXIDE
P013	BARIUM CYANIDE

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EPA Waste Codes Addendum

Code	Description
P014	BENZENETHIOL
P014	THIOPHENOL
P016	DICHLOROMETHYL ETHER
P016	METHANE, OXYBIS[CHLORO-
P017	BROMOACETONE
P017	2-PROPANONE, 1-BROMO-
P018	BRUCINE
P018	STRYCHNIDIN-10-ONE, 2,3-DIMETHOXY-
P019	NOT DEFINED
P020	DINOSEB
P020	PHENOL, 2-(1-METHYLPROPYL)-4,6-DINITRO-
P021	CALCIUM CYANIDE
P021	CALCIUM CYANIDE CA(CN)2
P022	CARBON DISULFIDE
P023	ACETALDEHYDE, CHLORO-
P023	CHLOROACETALDEHYDE
P024	BENZENAMINE, 4-CHLORO-
P024	P-CHLOROANILINE
P025	NOT DEFINED
P026	1-(O-CHLOROPHENYL)THIOUREA
P026	THIOUREA, (2-CHLOROPHENYL)-
P027	3-CHLOROPROPIONITRILE
P027	PROPANENITRILE, 3-CHLORO-
P028	BENZENE, (CHLOROMETHYL)-
P028	BENZYL CHLORIDE
P029	COPPER CYANIDE
P029	COPPER CYANIDE CU(CN)

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EPA Waste Codes Addendum

Code	Description
P030	CYANIDES (SOLUBLE CYANIDE SALTS), NOT OTHERWISE SPECIFIED
P031	CYANOGEN
P031	ETHANEDINITRILE
P032	NOT DEFINED
P033	CYANOGEN CHLORIDE
P033	CYANOGEN CHLORIDE (CN)CI
P034	2-CYCLOHEXYL-4,6-DINITROPHENOL
P034	PHENOL, 2-CYCLOHEXYL-4,6-DINITRO-
P035	NOT DEFINED
P036	ARSONOUS DICHLORIDE, PHENYL-
P036	DICHLOROPHENYLARSINE
P038	ARSINE, DIETHYL-
P038	DIETHYLARSINE
P039	DISULFOTON
P039	PHOSPHORODITHIOIC ACID, O,O-DIETHYL S-[2-(ETHYLTHIO)ETHYL] ESTER
P040	O,O-DIETHY: O-PYRAZINYL PHOSPHOROTHIOATE
P040	PHOSPHOROTHIOIC ACID, O,O-DIETHYL O-PYRAZINYL ESTER
P041	DIETHYL-P-NITROPHENYL PHOSPHATE
P041	PHOSPHORIC ACID, DIETHYL 4-NITROPHENYL ESTER
P042	1,2-BENZENEDIOL, 4-[1-HYDROXY-2-(METHYLAMINO)ETHYL]-, (R)-
P042	EPINEPHRINE
P043	DIISOPROPYTFLUOROPHOSPHATE (DFP)
P043	PHOSPHOROFLUORIDIC ACID, BIS(1-METHYLETHYL) ESTER
P044	DIMETHOATE
P044	PHOSPHORODITHIOIC ACID, O,O-DIMETHYL S-[2-(METHYLAMINO)-2-OXOETHYL] ESTER
P045	2-BUTANONE, 3,3-DIMETHYL-1-(METHYLTHIO)-, O-[METHYLAMINO)CARBONYL] OXIME
P045	THIOFANOX

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EPA Waste Codes Addendum

Code	Description
P046	BENZENEETHANAMINE, ALPHA,ALPHA-DIMETHYL-
P046	ALPHA,ALPHA-DIMETHYLPHENETHYLAMINE
P047	4,6-DINITRO-O-CRESOL, & SALTS
P047	PHENOL, 2-METHYL-4,6-DINITRO-, & SALTS
P048	2,4-DINITROPHENOL
P048	PHENOL, 2,4-DINITRO-
P049	DITHIOBIURET
P049	THIOIMIDODICARBONIC DIAMIDE [(H2N)C(S)]2NH
P050	ENDOSULFAN
P050	6,9-METHANO-2,4,3-BENZODIOXATHIEPIN, 6,7,8,9,10,10-HEXACHLORO-1,5,5A,6,9,9A-HEXAHYDRO- , 3-OXIDE
P051	2,7:3,6-DIMETHANONAPHTH [2,3-B]OXIRENE, 3,4,5,6,9,9-HEXACHLORO-1A,2,2A,3,6,6A,7,7A-OCTAHYDRO-, (1AALPHA,2BETA,2ABETA,3ALPHA,6ALPHA,6ABETA,7BETA, 7AALPHA)-, & METABOLITES
P051	ENDRIN
P051	ENDRIN, & METABOLITES
P052	NOT DEFINED
P053	NOT DEFINED
P054	AZIRIDINE
P054	ETHYLENEIMINE
P055	NOT DEFINED
P056	FLUORINE
P057	ACETAMIDE, 2-FLUORO-
P057	FLUOROACETAMIDE
P058	ACETIC ACID, FLUORO-, SODIUM SALT
P058	FLUOROACETIC ACID, SODIUM SALT
P059	HEPTACHLOR
P059	4,7-METHANO-1H-INDENE, 1,4,5,6,7,8,8-HEPTACHLORO- 3A,4,7,7A-TETRAHYDRO-
P060	1,4,5,8-DIMETHANONAPHTHALENE, 1,2,3,4,10,10-HEXA-

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EPA Waste Codes Addendum

Code	Description
	CHLORO-1,4,4A,5,8,8A-HEXAHYDRO-, (1ALPHA,4ALPHA,4ABETA,5BETA,8BETA,8ABETA)-
P060	ISODRIN
P061	NOT DEFINED
P062	HEXAETHYL TETRAPHOSPHATE
P062	TETRAPHOSPHORIC ACID, HEXAETHYL ESTER
P063	HYDROCYANIC ACID
P063	HYDROGEN CYANIDE
P064	METHANE, ISOCYANATO-
P064	METHYL ISOCYANATE
P065	FULMINIC ACID, MERCURY(2+) SALT (R,T)
P065	MERCURY FULMINATE (R,T)
P066	ETHANIMIDOTHIOIC ACID, N-[[(METHYLAMINO)CARBONYL]OXY]-, METHYL ESTER
P066	METHOMYL
P067	AZIRIDINE, 2-METHYL-
P067	1,2-PROPYLENIMINE
P068	HYDRAZINE, METHYL-
P068	METHYL HYDRAZINE
P069	2-METHYLLACTONITRILE
P069	PROPANENITRILE, 2-HYDROXY-2-METHYL-
P070	ALDICARB
P070	PROPANAL, 2-METHYL-2-(METHYLTHIO)-, O-[(METHYLAMINO)CARBONYL]OXIME
P071	METHYL PARATHION
P071	PHOSPHOROTHIOIC ACID, O,O,DIMETHYL O-(4-NITROPHENYL) ESTER
P072	ALPHA-NAPHTHYLTHIOUREA
P072	THIOUREA, 1-NAPHTHALENYL-
P073	NICKEL CARBONYL
P073	NICKEL CARBONYL NI(CO)4, (T-4)-

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EPA Waste Codes Addendum

Code	Description
P074	NICKEL CYANIDE
P074	NICKEL CYNAIDE NI(CN)2
P075	NICOTINE, & SALTS
P075	PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-, (S)-, & SALTS
P076	NITRIC OXIDE
P076	NITROGEN OXIDE NO
P077	BENZENAMINE, 4-NITRO-
P077	P-NITROANILINE
P078	NITROGEN DIOXIDE
P078	NITROGEN OXIDE NO2
P079	NOT DEFINED
P080	NOT DEFINED
P081	NITROGLYCERINE (R)
P081	1,2,3-PROPANETRIOL, TRINITRATE (R)
P082	METHANAMINE, N-METHYL-N-NITROSO-
P082	N-NITROSODIMETHYLAMINE
P083	NOT DEFINED
P084	N-NITROSOMETHYLVINYLAMINE
P084	VINYLAMINE, N-METHYL-N-NITROSO-
P085	DIPHOSPHORAMIDE, OCTAMETHYL-
P085	OCTAMETHYLPYROPHOSPHORAMIDE
P086	NOT DEFINED
P087	OSMIUM OXIDE OSO4, (T-4)-
P087	OSMIUM TETROXIDE
P088	ENDOTHALL
P088	7-OXABICYCLO[2.2.1]HEPTANE-2,3-DICARBOXYLIC ACID
P089	PARATHION

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EPA Waste Codes Addendum

Code	Description
P089	PHOSPHOROTHIOIC ACID, O,O-DIETHYL O-(4-NITROPHENYL) ESTER
P090	NOT DEFINED
P091	NOT DEFINED
P092	MERCURY, (ACETATO-O)PHENYL-
P092	PHENYLMERCURY ACETATE
P093	PHENYLTHIOUREA
P093	THIOUREA, PHENYL-
P094	PHORATE
P094	PHOSPHORODITHIOIC ACID, O,O-DIETHYL S-[(ETHYLTHIO)METHYL] ESTER
P095	CARBONIC DICHLORIDE
P095	PHOSGENE
P096	HYDROGEN PHOSPHIDE
P096	PHOSPHINE
P097	FAMPHUR
P097	PHOSPHOROTHIOIC ACID, O-[4-[(DIMETHYLAMINO)SULFONYL]PHENYL] O,O-DIMETHYL ESTER
P098	POTASSIUM CYANIDE
P098	POTASSIUM CYANIDE K(CN)
P099	ARGENTATE(1-), BIS(CYANO-C)-, POTASSIUM
P099	POTASSIUM SILVER CYANIDE
P100	NOT DEFINED
P101	ETHYL CYANIDE
P101	PROPANENITRILE
P102	PROPARGYL ALCOHOL
P102	2-PROPYN-1-OL
P103	SELENOUREA
P104	SILVER CYANIDE
P104	SILVER CYANIDE AG(CN)

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EPA Waste Codes Addendum

Code	Description
P105	SODIUM AZIDE
P106	SODIUM CYANIDE
P106	SODIUM CYANIDE NA(CN)
P107	NOT DEFINED
P108	STRYCHNIDIN-10-ONE, & SALTS
P108	STRYCHNINE, & SALTS
P109	TETRAETHYLDITHIOPYROPHOSPHATE
P109	THIODIPHOSPHORIC ACID, TETRAETHYL ESTER
P110	PLUMBANE, TETRAETHYL-
P110	TETRAETHYL LEAD
P111	DIPHOSPHORIC ACID, TETRAETHYL ESTER
P111	TETRAETHYL PYROPHOSPHATE
P112	METHANE, TETRANITRO- (R)
P112	TETRANITROMETHANE (R)
P113	THALLIC OXIDE
P113	THALLIUM OXIDE TL2O3
P114	SELENIOUS ACID, DITHALLIUM(1+) SALT
P114	THALLIUM(L) SELENITE
P115	SULFURIC ACID, DITHALLIUM(1+) SALT
P115	THALLIUM(L) SULFATE
P116	HYDRAZINECARBOTHIOAMIDE
P116	THIOSEMICARBAZIDE
P117	NOT DEFINED
P118	METHANETHIOL, TRICHLORO-
P118	TRICHLOROMETHANETHIOL
P119	AMMONIUM VANADATE
P119	VANADIC ACID, AMMONIUM SALT

EPA Waste Codes Addendum

Code	Description
P120	VANADIUM OXIDE V2O5
P120	VANADIUM PENTOXIDE
P121	ZINC CYANIDE
P121	ZINC CYANIDE ZN(CN)2
P122	ZINC PHOSPHIDE ZN3P2, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 10% (R,T)
U001	ACETALDEHYDE (I)
U001	ETHANAL (I)
U002	ACETONE (I)
U002	2-PROPANONE (I)
U003	ACETONITRILE (I,T)
U004	ACETOPHENONE
U004	ETHANONE, 1-PHENYL-
U005	ACETAMIDE, N-9H-FLUOREN-2-YL-
U005	2-ACETYLAMINOFLUORENE
U007	ACRYLAMIDE
U007	2-PROPENAMIDE
U008	ACRYLIC ACID (I)
U008	2-PROPENOIC ACID (I)
U009	ACRYLONITRILE
U009	2-PROPENENITRILE
U010	AZIRINO[2',3':3,4]PYRROLO[1,2-A]INDOLE-4,7-DIONE, 6-AMINO-8-[[(AMINOCARBONYL)OXY]METHYL]-1,1A,2,8,8A,8B-HEXAHYDRO-8A-METHOXY-5-METHYL-, [1AS-(1AALPHA, 8BETA,8AALPHA,8BALPHA)]-
U010	MITOMYCIN C
U011	AMITROLE
U011	1H-1,2,4-TRIAZOL-3-AMINE
U012	ANILINE (I,T)

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EPA Waste Codes Addendum

Code	Description
U012	BENZENAMINE (I,T)
U013	NOT DEFINED
U014	AURAMINE
U014	BENZENAMINE, 4,4'-CARBONIMIDOYLBIS[N,N-DIMETHYL-
U015	AZASERINE
U015	L-SERINE, DIAZOACETATE (ESTER)
U016	BENZ[C]ACRIDINE
U017	BENZAL CHLORIDE
U017	BENZENE, (DICHLOROMETHYL)-
U018	BENZ[A]ANTHRACENE
U019	BENZENE (I,T)
U020	BENZENESULFONIC ACID CHLORIDE (C,R)
U020	BENZENESULFONYL CHLORIDE (C,R)
U021	BENZIDINE
U021	[1,1'-BIPHENYL]-4,4'-DIAMINE
U022	BENZO[A]PYRENE
U023	BENZENE, (TRICHLOROMETHYL)-
U023	BENZOTRICHLORIDE (C,R,T)
U024	DICHLOROMETHOXY ETHANE
U024	ETHANE, 1,1'-[METHYLENEBIS(OXY)]BIS[2-CHLORO-
U025	DICHLOROETHYL ETHER
U025	ETHANE, 1,1'-OXYBIS[2-CHLORO-
U026	CHLORNAPHAZIN
U026	NAPHTHALENAMINE, N,N'-BIS(2-CHLOROETHYL)-
U027	DICHLOROISOPROPYL ETHER
U027	PROPANE, 2,2'-OXYBIS[2-CHLORO-
U028	1,2-BENZENEDICARBOXYLIC ACID, BIS(2-ETHYLHEXYL) ESTER

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EPA Waste Codes Addendum

Code	Description
U028	DIETHYLHEXYL PHTHALATE
U029	METHANE, BROMO-
U029	METHYL BROMIDE
U030	BENZENE, 1-BROMO-4-PHENOXY-
U030	4-BROMOPHENYL PHENYL ETHER
U031	1-BUTANOL (I)
U031	N-BUTYL ALCOHOL (I)
U032	CALCIUM CHROMATE
U032	CHROMIC ACID H2CRO4, CALCIUM SALT
U033	CARBONIC DIFLUORIDE
U033	CARBON OXYFLUORIDE (R,T)
U034	ACETALDEHYDE, TRICHLORO-
U034	CHLORAL
U035	BENZENEBUTANOIC ACID, 4-[BIS(2-CHLOROETHYL)AMINO]-
U035	CHLORAMBUCIL
U036	CHLORDANE, ALPHA & GAMMA ISOMERS
U036	4,7-METHANO-1H-INDENE, 1,2,4,5,6,7,8,8-OCTACHLORO-2,3,3A,4,7,7A-HEXAHYDRO-
U037	BENZENE, CHLORO-
U037	CHLOROBENZENE
U039	P-CHLORO-M-CRESOL
U039	PHENOL, 4-CHLORO-3-METHYL-
U040	NOT DEFINED
U041	EPICHLOROHYDRIN
U041	OXIRANE, (CHLOROMETHYL)-
U042	2-CHLOROETHYL VINYL ETHER
U042	ETHENE, (2-CHLOROETHOXY)-
U043	ETHENE, CHLORO-

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EPA Waste Codes Addendum

Code	Description
U043	VINYL CHLORIDE
U044	CHLOROFORM
U044	METHANE, TRICHLORO-
U045	METHANE, CHLORO- (I, T)
U045	METHYL CHLORIDE (I,T)
U048	O-CHLOROPHENOL
U048	PHENOL, 2-CHLORO-
U049	BENZENAMINE, 4-CHLORO-2-METHYL-, HYDROCHLORIDE
U049	4-CHLORO-O-TOLUIDINE, HYDROCHLORIDE
U050	CHRYSENE
U051	CREOSOTE
U052	CRESOL (CRESYLIC ACID)
U052	PHENOL, METHYL-
U053	2-BUTENAL
U053	CROTONALDEHYDE
U055	BENZENE, (1-METHYLETHYL)- (I)
U055	CUMENE (I)
U056	BENZENE, HEXAHYDRO- (I)
U056	CYCLOHEXANE (I)
U057	CYCLOHEXANONE (I)
U058	CYCLOPHOSPHAMIDE
U058	2H-1,3,2-OXAZAPHOSPHORIN-2-AMINE, N,N-BIS(2-CHLOROETHYL)TETRAHYDRO-, 2-OXIDE
U060	BENZENE, 1,1'-(2,2-DICHLOROETHYLIDENE)BIS[4-CHLORO-
U060	DDD
U061	BENZENE, 1,1'-(2,2,2-TRICHLOROETHYLIDENE)BIS[4-CHLORO-
U061	DDT
U063	DIBENZ[A,H]ANTHRACENE

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EPA Waste Codes Addendum

Code	Description
U064	BENZO[RST]PENTAPHENE
U064	DIBENZO[A,I]PYRENE
U065	NOT DEFINED
U066	1,2-DIBROMO-3-CHLOROPROPANE
U066	PROPANE, 1,2-DIBROMO-3-CHLORO-
U067	ETHANE, 1,2-DIBROMO-
U067	ETHYLENE DIBROMIDE
U068	METHANE, DIBROMO-
U068	METHYLENE BROMIDE
U069	1,2-BENZENEDICARBOXYLIC ACID, DIBUTYL ESTER
U069	DIBUTYL PHTHALATE
U070	BENZENE, 1,2-DICHLORO-
U070	O-DICHLOROBENZENE
U071	BENZENE, 1,3-DICHLORO-
U071	M-DICHLOROBENZENE
U072	BENZENE, 1,4-DICHLORO-
U072	P-DICHLOROBENZENE
U073	[1,1'-BIPHENYL]-4,4'-DIAMINE, 3,3'-DICHLORO-
U073	3,3'-DICHLOROBENZIDINE
U074	2-BUTENE, 1,4-DICHLORO- (I,T)
U074	1,4-DICHLORO-2-BUTENE (I,T)
U075	DICHLORODIFLUOROMETHANE
U075	METHANE, DICHLORODIFLUORO-
U076	ETHANE, 1,1-DICHLORO-
U076	ETHYLIDENE DICHLORIDE
U077	ETHANE, 1,2-DICHLORO-
U077	ETHYLENE DICHLORIDE

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EPA Waste Codes Addendum

Code	Description
U078	1,1-DICHLOROETHYLENE
U078	ETHENE, 1,1-DICHLORO-
U079	1,2-DICHLOROETHYLENE
U079	ETHENE, 1,2-DICHLORO-, (E)-
U080	METHANE, DICHLORO-
U080	METHYLENE CHLORIDE
U081	2,4-DICHLOROPHENOL
U081	PHENOL, 2,4-DICHLORO-
U082	2,6-DICHLOROPHENOL
U082	PHENOL, 2,6-DICHLORO-
U083	PROPANE, 1,2-DICHLORO-
U083	PROPYLENE DICHLORIDE
U084	1,3-DICHLOROPROPENE
U084	1-PROPENE, 1,3-DICHLORO-
U085	2,2'-BIOXIRANE
U085	1,2:3,4-DIEPOXYBUTANE (I,T)
U086	N,N'-DIETHYLHYDRAZINE
U086	HYDRAZINE, 1,2-DIETHYL-
U087	O,O-DIETHYL S-METHYL DITHIOPHOSPHATE
U087	PHOSPHORODITHIOIC ACID, O,O-DIETHYL S-METHYL ESTER
U088	1,2-BENZENEDICARBOXYLIC ACID, DIETHYL ESTER
U088	DIETHYL PHTHALATE
U089	DIETHYLSTILBESTEROL
U089	PHENOL, 4,4'-(1,2-DIETHYL-1,2-ETHENEDIYL)BIS-, (E)-
U090	1,3-BENZODIOXOLE, 5-PROPYL-
U090	DIHYDROSAFROLE
U091	[1,1'-BIPHENYL]-4,4'-DIAMINE, 3,3'-DIMETHOXY-

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EPA Waste Codes Addendum

Code	Description
U091	3,3'-DIMETHOXYBENZIDINE
U092	DIMETHYLAMINE (I)
U092	METHANAMINE, N-METHYL- (I)
U093	BENZENAMINE, N,N-DIMETHYL-4-(PHENYLAZO)-
U093	P-DIMETHYLAMINOAZOBENZENE
U094	BENZ[A]ANTHRACENE, 7,12-DIMETHYL-
U094	7,12-DIMETHYLBENZ[A]ANTHRACENE
U095	[1,1'-BIPHENYL]-4,4'-DIAMINE, 3,3'-DIMETHYL-
U095	3,3'-DIMETHYLBENZIDINE
U096	ALPHA,ALPHA-DIMETHYLBENZYLHYDROPEROXIDE (R)
U096	HYDROPEROXIDE, 1-METHYL-1-PHENYLETHYL- (R)
U097	CARBAMIC CHLORIDE, DIMETHYL-
U097	DIMETHYLCARBAMOYL CHLORIDE
U098	1,1-DIMETHYLHYDRAZINE
U098	HYDRAZINE, 1,1-DIMETHYL-
U099	1,2-DIMETHYLHYDRAZINE
U099	HYDRAZINE, 1,2-DIMETHYL-
U100	NOT DEFINED
U101	2,4-DIMETHYLPHENOL
U101	PHENOL, 2,4-DIMETHYL-
U102	1,2-BENZENEDICARBOXYLIC ACID, DIMETHYL ESTER
U102	DIMETHYL PHTHALATE
U103	DIMETHYL SULFATE
U103	SULFURIC ACID, DIMETHYL ESTER
U104	NOT DEFINED
U105	BENZENE, 1-METHYL-2,4-DINITRO-
U105	2,4-DINITROTOLUENE

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EPA Waste Codes Addendum

Code	Description
U106	BENZENE, 2-METHYL-1,3-DINITRO-
U106	2,6-DINITROTOLUENE
U107	1,2-BENZENEDICARBOXYLIC ACID, DIOCTYL ESTER
U107	DI-N-OCTYL PHTHALATE
U108	1,4-DIETHYLENEOXIDE
U108	1,4-DIOXANE
U109	1,2-DIPHENYLHYDRAZINE
U109	HYDRAZINE, 1,2-DIPHENYL-
U110	DIPROPYLAMINE (I)
U110	1-PROPANAMINE, N-PROPYL- (I)
U111	DI-N-PROPYLNITROSAMINE
U111	1-PROPANAMINE, N-NITROSO-N-PROPYL-
U112	ACETIC ACID ETHYL ESTER (I)
U112	ETHYL ACETATE (I)
U113	ETHYL ACRYLATE (I)
U113	2-PROPENOIC ACID, ETHYL ESTER (I)
U114	CARBAMODITHIOIC ACID, 1,2-ETHANEDIYLBIS-, SALTS & ESTERS
U114	ETHYLENEBISDITHIOCARBAMIC ACID, SALTS & ESTERS
U115	ETHYLENE OXIDE (I,T)
U115	OXIRANE (I,T)
U116	ETHYLENETHIOUREA
U116	2-IMIDAZOLIDINETHIONE
U117	ETHANE, 1,1'-OXYBIS-(I)
U117	ETHYL ETHER (I)
U118	ETHYL METHACRYLATE
U118	2-PROPENOIC ACID, 2-METHYL-, ETHYL ESTER
U119	ETHYL METHANESULFONATE

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EPA Waste Codes Addendum

Code	Description
U119	METHANESULFONIC ACID, ETHYL ESTER
U120	FLUORANTHENE
U121	METHANE, TRICHLOROFLUORO-
U121	TRICHLOROMONOFLUOROMETHANE
U122	FORMALDEHYDE
U123	FORMIC ACID (C,T)
U124	FURAN (I)
U124	FURFURAN (I)
U125	2-FURANCARBOXALDEHYDE (I)
U125	FURFURAL (I)
U126	GLYCIDYLALDEHYDE
U126	OXIRANECARBOXYALDEHYDE
U127	BENZENE, HEXACHLORO-
U127	HEXACHLOROBENZENE
U128	1,3-BUTADIENE, 1,1,2,3,4,4-HEXACHLORO-
U128	HEXACHLOROBUTADIENE
U129	CYCLOHEXANE, 1,2,3,4,5,6-HEXACHLORO-, (1ALPHA,2ALPHA,3BETA,4ALPHA,5ALPHA,6BETA)-
U129	LINDANE
U130	1,3-CYCLOPENTADIENE, 1,2,3,4,5,5-HEXACHLORO-
U130	HEXACHLOROCYCLOPENTADIENE
U131	ETHANE, HEXACHLORO-
U131	HEXACHLOROETHANE
U132	HEXACHLOROPHENE
U132	PHENOL, 2,2'-METHYLENEBIS[3,4,6-TRICHLORO-
U133	HYDRAZINE (R,T)
U134	HYDROFLUORIC ACID (C,T)
U134	HYDROGEN FLUORIDE (C,T)

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EPA Waste Codes Addendum

Code	Description
U135	HYDROGEN SULFIDE
U135	HYDROGEN SULFIDE H2S
U137	INDENO[1,2,3-CD]PYRENE
U138	METHANE, IODO-
U138	METHYL IODIDE
U139	NOT DEFINED
U140	ISOBUTYL ALCOHOL (I,T)
U140	1-PROPANOL, 2-METHYL- (I,T)
U141	1,3-BENZODIOXOLE, 5-(1-PROPENYL)-
U141	ISOSAFROLE
U144	ACETIC ACID, LEAD(2+) SALT
U144	LEAD ACETATE
U145	LEAD PHOSPHATE
U145	PHOSPHORIC ACID, LEAD(2+) SALT (2:3)
U146	LEAD, BIS(ACETATO-O)TETRAHYDROXYTRI-
U146	LEAD SUBACETATE
U147	2,5-FURANDIONE
U147	MALEIC ANHYDRIDE
U148	MALEIC HYDRAZIDE
U148	3,6-PYRIDAZINEDIONE, 1,2-DIHYDRO-
U149	MALONONITRILE
U149	PROPANEDINITRILE
U151	MERCURY
U152	METHACRYLONITRILE (I, T)
U152	2-PROPENENITRILE, 2-METHYL- (I,T)
U153	METHANETHIOL (I, T)
U153	THIOMETHANOL (I,T)

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EPA Waste Codes Addendum

Code	Description
U154	METHANOL (I)
U154	METHYL ALCOHOL (I)
U156	CARBONOCHLORIDIC ACID, METHYL ESTER (I,T)
U156	METHYL CHLOROCARBONATE (I,T)
U157	BENZ[J]ACEANTHRYLENE, 1,2-DIHYDRO-3-METHYL-
U157	3-METHYLCHOLANTHRENE
U158	BENZENAMINE, 4,4'-METHYLENEBIS[2-CHLORO-
U158	4,4'-METHYLENEBIS(2-CHLOROANILINE)
U159	2-BUTANONE (I,T)
U159	METHYL ETHYL KETONE (MEK) (I,T)
U160	2-BUTANONE, PEROXIDE (R,T)
U160	METHYL ETHYL KETONE PEROXIDE (R,T)
U161	METHYL ISOBUTYL KETONE (I)
U161	4-METHYL-2-PENTANONE (I)
U161	PENTANOL, 4-METHYL-
U162	METHYL METHACRYLATE (I,T)
U162	2-PROPENOIC ACID, 2-METHYL-, METHYL ESTER (I,T)
U163	GUANIDINE, N-METHYL-N'-NITRO-N-NITROSO-
U163	MNNG
U164	METHYLTHIOURACIL
U164	4(1H)-PYRIMIDINONE, 2,3-DIHYDRO-6-METHYL-2-THIOXO-
U165	NAPHTHALENE
U166	1,4-NAPHTHALENEDIONE
U166	1,4-NAPHTHOQUINONE
U167	1-NAPHTHALENAMINE
U167	ALPHA-NAPHTHYLAMINE
U168	2-NAPHTHALENAMINE

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EPA Waste Codes Addendum

Code	Description
U168	BETA-NAPHTHYLAMINE
U169	BENZENE, NITRO-
U169	NITROBENZENE (I,T)
U170	P-NITROPHENOL
U170	PHENOL, 4-NITRO-
U171	2-NITROPROPANE (I,T)
U171	PROPANE, 2-NITRO- (I,T)
U172	1-BUTANAMINE, N-BUTYL-N-NITROSO-
U172	N-NITROSODI-N-BUTYLAMINE
U173	ETHANOL, 2,2'-(NITROSOIMINO)BIS-
U173	N-NITROSODIETHANOLAMINE
U174	ETHANAMINE, N-ETHYL-N-NITROSO-
U174	N-NITROSODIETHYLAMINE
U175	NOT DEFINED
U176	N-NITROSO-N-ETHYLUREA
U176	UREA, N-ETHYL-N-NITROSO-
U177	N-NITROSO-N-METHYLUREA
U177	UREA, N-METHYL-N-NITROSO-
U178	CARBAMIC ACID, METHYLNITROSO-, ETHYL ESTER
U178	N-NITROSO-N-METHYLURETHANE
U179	N-NITROSOPIPERIDINE
U179	PIPERIDINE, 1-NITROSO-
U180	N-NITROSOPYRROLIDINE
U180	PYRROLIDINE, 1-NITROSO-
U181	BENZENAMINE, 2-METHYL-5-NITRO-
U181	5-NITRO-O-TOLUIDINE
U182	PARALDEHYDE

EPA Waste Codes Addendum

Code	Description
U182	1,3,5-TRIOXANE, 2,4,6-TRIMETHYL-
U183	BENZENE, PENTACHLORO-
U183	PENTACHLOROBENZENE
U184	ETHANE, PENTACHLORO-
U184	PENTACHLOROETHANE
U185	BENZENE, PENTACHLORONITRO-
U185	PENTACHLORONITROBENZENE (PCNB)
U186	1-METHYLBUTADIENE (I)
U186	1,3-PENTADIENE (I)
U187	ACETAMIDE, N-(4-ETHOXYPHENYL)-
U187	PHENACETIN
U188	PHENOL
U189	PHOSPHORUS SULFIDE (R)
U189	SULFUR PHOSPHIDE (R)
U190	1,3-ISOBENZOFURANDIONE
U190	PHTHALIC ANHYDRIDE
U191	2-PICOLINE
U191	PYRIDINE, 2-METHYL-
U193	1,2-OXATHIOLANE, 2,2-DIOXIDE
U193	1,3-PROPANE SULTONE
U194	1-PROPANAMINE (I,T)
U194	N-PROPYLAMINE (I,T)
U196	PYRIDINE
U197	P-BENZOQUINONE
U197	2,5-CYCLOHEXADIENE-1,4-DIONE
U200	RESERPINE
U200	YOHIMBAN-16-CARBOXYLIC ACID,

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EPA Waste Codes Addendum

Code	Description
	11,17-DIMETHOXY-18-[(3,4,5-TRIMETHOXYBENZOYL)OXY] -, METHYL ESTER, (3BETA, 16BETA, 17ALPHA, 18BETA, 20ALPHA).
U201	1,3-BENZENEDIOL
U201	RESORCINOL
U202	1,2-BENZISOTHIAZOL-3(2H)-ONE, 1,1-DIOXIDE, & SALTS
U202	SACCHARIN, & SALTS
U203	1,3-BENZODIOXOLE, 5-(2-PROPENYL)-
U203	SAFROLE
U204	SELENIOUS ACID
U204	SELENIUM DIOXIDE
U206	GLUCOPYRANOSE, 2-DEOXY-2-(3-METHYL-3-NITROSOUREIDO)-, D-
U206	D-GLUCOSE, 2-DEOXY-2-[[(METHYLNITROSOAMINO)- CARBONYL]AMINO]-
U206	STREPTOZOTOCIN
U207	BENZENE, 1,2,4,5-TETRACHLORO-
U207	1,2,4,5-TETRACHLOROBENZENE
U209	ETHANE, 1,1,2,2-TETRACHLORO-
U209	1,1,2,2-TETRACHLOROETHANE
U210	ETHENE, TETRACHLORO-
U210	TETRACHLOROETHYLENE
U211	CARBON TETRACHLORIDE
U211	METHANE, TETRACHLORO-
U212	NOT DEFINED
U213	FURAN, TETRAHYDRO-(I)
U213	TETRAHYDROFURAN (I)
U214	ACETIC ACID, THALLIUM(1+) SALT
U214	THALLIUM(I) ACETATE
U215	CARBONIC ACID, DITHALLIUM(1+) SALT
U215	THALLIUM(I) CARBONATE

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EPA Waste Codes Addendum

Code	Description
U216	THALLIUM(I) CHLORIDE
U216	THALLIUM CHLORIDE TLCL
U217	NITRIC ACID, THALLIUM(1+) SALT
U217	THALLIUM(I) NITRATE
U218	ETHANETHIOAMIDE
U218	THIOACETAMIDE
U219	THIOUREA
U220	BENZENE, METHYL-
U220	TOLUENE
U221	BENZENEDIAMINE, AR-METHYL-
U221	TOLUENEDIAMINE
U222	BENZENAMINE, 2-METHYL-, HYDROCHLORIDE
U222	O-TOLUIDINE HYDROCHLORIDE
U223	BENZENE, 1,3-DIISOCYANATOMETHYL- (R,T)
U223	TOLUENE DIISOCYANATE (R,T)
U224	NOT DEFINED
U225	BROMOFORM
U225	METHANE, TRIBROMO-
U226	ETHANE, 1,1,1-TRICHLORO-
U226	METHYL CHLOROFORM
U227	ETHANE, 1,1,2-TRICHLORO-
U227	1,1,2-TRICHLOROETHANE
U228	ETHENE, TRICHLORO-
U228	TRICHLOROETHYLENE
U229	NOT DEFINED
U231	NOT DEFINED
U232	NOT DEFINED

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EPA Waste Codes Addendum

Code	Description
U233	NOT DEFINED
U234	BENZENE, 1,3,5-TRINITRO-
U234	1,3,5-TRINITROBENZENE (R,T)
U235	1-PROPANOL, 2,3-DIBROMO-, PHOSPHATE (3:1)
U235	TRIS(2,3-DIBROMOPROPYL) PHOSPHATE
U236	2,7-NAPHTHALENEDISULFONIC ACID, 3,3'-[(3,3'-DIMETHYL[1,1'-BIPHENYL]-4,4'-DIYL)BIS(AZO)BIS[5-AMINO-4-HYDROXY]-, TETRASODIUM SALT
U236	TRYPAN BLUE
U237	2,4-(1H,3H)-PYRIMIDINEDIONE, 5-[BIS(2-CHLOROETHYL)AMINO]-
U237	URACIL MUSTARD
U238	CARBAMIC ACID, ETHYL ESTER
U238	ETHYL CARBAMATE (URETHANE)
U239	BENZENE, DIMETHYL- (I,T)
U239	XYLENE (I)
U240	ACETIC ACID, (2,4-DICHLOROPHENOXY)-, SALTS & ESTERS
U240	2,4-D, SALTS & ESTERS
U243	HEXACHLOROPROPENE
U243	1-PROPENE, 1,1,2,3,3,3-HEXACHLORO-
U244	THIOPEROXYDICARBONIC DIAMIDE [(H2N)C(S)]2S2, TETRAMETHYL-
U244	THIRAM
U246	CYANOGEN BROMIDE (CN)BR

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Elapsed ASTM days: Provides confirmation that this EDR report meets or exceeds the 90-day updating requirement of the ASTM standard.

FEDERAL ASTM RECORDS:

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System
Source: EPA/NTIS
Telephone: 703-603-8904
CERCLIS: CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 03/31/96
Date Made Active at EDR: 06/03/96
Database Release Frequency: Monthly
Date of Data Arrival at EDR: 04/23/96
Elapsed ASTM days: 41
Date of Last EDR Contact: 10/10/96

ERNS: Emergency Response Notification System
Source: EPA/NTIS
Telephone: 202-260-2342
ERNS: Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/30/96
Date Made Active at EDR: 11/05/96
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 08/19/96
Elapsed ASTM days: 78
Date of Last EDR Contact: 08/12/96

NPL: National Priority List
Source: EPA
Telephone: 703-603-8852
NPL: National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, it is EDR's policy to plot NPL sites greater than approximately 300 acres in size as areas (polygons). A polygon boundary is based upon EPA's defined Area of Impact (AOI) for the particular NPL site. The AOI may be the boundaries of the property, the boundaries as determined by the extent of plume migration, or other such boundaries as defined by EPA. Sites smaller in size are point-geocoded at the site's address.

Date of Government Version: 06/01/96
Date Made Active at EDR: 07/17/96
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 06/25/96
Elapsed ASTM days: 22
Date of Last EDR Contact: 06/19/96

RCRIS: Resource Conservation and Recovery Information System
Source: EPA/NTIS
Telephone: 703-308-7907
RCRIS: Resource Conservation and Recovery Information System. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Date of Government Version: 07/01/96
Date Made Active at EDR: 10/09/96
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 08/07/96
Elapsed ASTM days: 63
Date of Last EDR Contact: 06/05/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FEDERAL NON-ASTM RECORDS:

CONSENT: Superfund (CERCLA) Consent Decrees
Source: EPA Regional Offices
Telephone: Varies
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: Varies
Database Release Frequency: Varies
Date of Last EDR Contact: Varies
Date of Next Scheduled EDR Contact: 09/01/95

CORRACTS: Corrective Action Report
Source: EPA
Telephone: 703-308-7907
CORRACTS: CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 04/10/95
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 09/27/96
Date of Next Scheduled EDR Contact: 12/16/96

FINDS: Facility Index System
Source: EPA/NTIS
Telephone: 800-908-2493
FINDS: Facility Index System. FINDS contains both facility information and "pointers" to other sources that contain more detail. These include: RCRIS, PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]), CERCLIS, DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), FRDS (Federal Reporting Data System), SIA (Surface Impoundments), CICIS (TSCA Chemicals in Commerce Information System), PADS, RCRA-J (medical waste transporters/disposers), TRIS and TSCA.

Date of Government Version: 09/30/95
Database Release Frequency: Quarterly
Date of Last EDR Contact: 10/07/96
Date of Next Scheduled EDR Contact: 01/06/97

HMIRS: Hazardous Materials Information Reporting System
Source: U.S. Department of Transportation
Telephone: 202-366-4555
HMIRS: Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/95
Database Release Frequency: Annually
Date of Last EDR Contact: 07/29/96
Date of Next Scheduled EDR Contact: 10/28/96

MLTS: Material Licensing Tracking System
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 02/13/96
Database Release Frequency: Quarterly
Date of Last EDR Contact: 10/15/96
Date of Next Scheduled EDR Contact: 01/13/97

NPL LIENS: Federal Superfund Liens
Source: EPA
Telephone: 205-564-4267
NPL LIENS: Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/91
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 09/10/96
Date of Next Scheduled EDR Contact: 11/25/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PADS: PCB Activity Database System
Source: EPA
Telephone: 202-260-3992
PADS: PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/14/94
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 08/21/96
Date of Next Scheduled EDR Contact: 11/18/96

RAATS: RCRA Administrative Action Tracking System
Source: EPA
Telephone: 202-564-4104
RAATS: RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA.

Date of Government Version: 04/17/95
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

ROD: Records Of Decision
Source: NTIS
Telephone: 703-416-0703
Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 03/31/95
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 06/07/96
Date of Next Scheduled EDR Contact: 12/02/96

TRIS: Toxic Chemical Release Inventory System
Source: EPA/NTIS
Telephone: 202-260-2320
TRIS: Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/92
Database Release Frequency: Annually
Date of Last EDR Contact: 09/11/96
Date of Next Scheduled EDR Contact: 09/30/96

TSCA: Toxic Substances Control Act
Source: EPA/NTIS
Telephone: 202-260-1444
TSCA: Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site. USEPA has no current plan to update and/or re-issue this database.

Date of Government Version: 01/31/95
Database Release Frequency: Annually
Date of Last EDR Contact: 09/16/96
Date of Next Scheduled EDR Contact: 12/16/96

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

STATE OF MICHIGAN ASTM RECORDS:

LUST: Leaking Underground Storage Tank Sites
Source: Department of Natural Resources
Telephone: 517-373-4425
LUST: Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 04/01/95
Date Made Active at EDR: 10/25/95
Database Release Frequency: Annually
Date of Data Arrival at EDR: 10/04/95
Elapsed ASTM days: 21
Date of Last EDR Contact: 10/21/96

SHWS: Act 307 Site List on Diskette With Address
Source: Department of Natural Resources
Telephone: 517-373-9540
SHWS: State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 09/30/96
Date Made Active at EDR: 10/30/96
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 10/07/96
Elapsed ASTM days: 23
Date of Last EDR Contact: 09/05/96

SWF/LF: Michigan Solid Waste Facilities
Source: Department of Natural Resources
Telephone: 517-335-4035
SWF/LF: Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Section 2004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 07/01/96
Date Made Active at EDR: 10/04/96
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 09/30/96
Elapsed ASTM days: 4
Date of Last EDR Contact: 10/21/96

UST: Michigan UST
Source: Department of State Police
Telephone: 517-335-7272
UST: Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 05/01/96
Date Made Active at EDR: 07/01/96
Database Release Frequency: Annually
Date of Data Arrival at EDR: 06/05/96
Elapsed ASTM days: 26
Date of Last EDR Contact: 08/21/96

STATE OF MICHIGAN NON-ASTM RECORDS:

AST: Aboveground Tanks
Source: Michigan State Police
Telephone: 517-322-1681
AST: Registered Aboveground Storage Tanks.

Date of Government Version: 05/15/96
Database Release Frequency: Annually
Date of Last EDR Contact: 07/29/96
Date of Next Scheduled EDR Contact: 10/28/96

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Historical and Other Database(s)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Former Manufactured Gas (Coal Gas) Sites: The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. ©Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative.

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DELISTED NPL: Delisted NPL Sites
Source: EPA
Telephone: 703-603-8769
DELISTED NPL: The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

NFRAP: No Further Remedial Action Planned
Source: EPA/NTIS
Telephone: 703-416-0702
NFRAP: As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

FRDS: Federal Reporting Data System
Source: EPA/Office of Drinking Water
Telephone: 202-260-2805
FRDS provides information regarding public water supplies and their compliance with monitoring requirements, maximum contaminant levels (MCL's), and other requirements of the Safe Drinking Water Act of 1986.

Area Radon Information: The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

Oil/Gas Pipelines/Electrical Transmission Lines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines and electrical transmission lines.

Sensitive Receptors: There are individuals who, due to their fragile immune systems, are deemed to be especially sensitive to environmental discharges. These typically include the elderly, the sick, and children. While the exact location of these sensitive receptors cannot be determined, EDR indicates those facilities, such as schools, hospitals, day care centers, and nursing homes, where sensitive receptors are likely to be located.

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

USGS Water Wells: In November 1971 the United States Geological Survey (USGS) implemented a national water resource information tracking system. This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on more than 900,000 wells, springs, and other sources of groundwater.

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1994 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Water Dams: National Inventory of Dams
Source: Federal Emergency Management Agency
Telephone: 202-646-2801
WATER DAMS: National computer database of more than 74,000 dams maintained by the Federal Emergency Management Agency.

Michigan Public and Private Water Wells
Source: Michigan Department of Natural Resources
Locations of verified municipal and private water well sites compiled from Michigan Department of Public Health, Water Well and Pump Records. Available in the following MI counties: Calhoun, Eaton, Genesee, Ingham, Jackson, Kalamazoo, Kent, Midland, Muskegon, Oakland, Ottawaw, Saginaw, St. Clair, Washtenaw.

Michigan Oil and Gas Wells
Source: Michigan Department of Natural Resources
Locations of oil and gas wells are compiled from permit records on file at the Geological Survey Division (GSD), Michigan Department of Natural Resources.

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APPENDIX C

TITLE INFORMATION

KALAMAZOO (Continued)

Kalamazoo; thence Easterly along said Southerly line to the Southwest corner of Spring and Pitcher Streets; thence Southeasterly along the Westerly line of Pitcher Street to a point which is about 364.2 feet Southeasterly from the Southwest corner of Spring and Pitcher Streets; thence Southwesterly along a line that is an extension of a line 5 rods and 2 feet Southerly from and parallel with the Northerly line of Lot 180 of the Plat of Kalamazoo to a point 155 feet Easterly along said line from the Easterly line of Portage Street; thence Northerly parallel with the Easterly line of said Portage Street 5 rods and 2 feet to the Northerly line of said Lot 180; thence Southwesterly on the line between Lots 178 and 180 15 feet; thence Northerly parallel with the Easterly line of Portage Street 5 rods and 12 feet to a point 12 feet Northerly of and parallel with the Southerly line of Lot 176 of the Plat of Kalamazoo that is 140 feet Northeasterly along said line from the Easterly line of Portage Street; thence Northeasterly parallel with the Southerly line of said Lot 176 to the place of beginning.Parcel 3. Also all that part of the following described land lying Northwesterly of the Northwesterly line of that part of Lovell Street lying between Portage and Pitcher Streets: Commencing 130.3 feet Northeasterly from a point in the Easterly line of Portage Street which is 25.15 feet Northwesterly from a point where the North line of that part of Lovell Street lying Westerly of Portage Street prolonged intersects the Easterly line of Portage Street: thence Northeasterly in the same course to a point in the Westerly line of Pitcher Street which is 504.4 feet Southeasterly from the Southwest corner of Spring and Pitcher Streets: thence Northwesterly along the Westerly line of Pitcher Street 140.2 feet to the Southerly line of the premises last above described: thence Southwesterly along the line of said premises described above and the line of land now or formerly owned by James F. Farnam, being an extension of a line 5 rods and 2 feet Southerly of and parallel with the North line of Lot 180 of the Plat of Kalamazoo 356 feet to the Northeasterly corner of a parcel of land now or formerly owned by C. H. Dutton, being 132 feet more or less from the Easterly line of Portage Street, and thence Southeasterly in a straight line 103.6 feet to the place of beginning.

Parcel 4. Also beginning on the Easterly line of Portage Street at its intersection with the Southerly line of that part of Lovell Street lying between Portage and Pitcher Streets; running thence North 49° 12' 30" East along the Southerly line of Lovell Street 148.27 feet; continuing thence along the Southerly line of said Lovell Street North 47° 53' 30" East 206.54 feet; thence South 31° 36' 30" East 175.03 feet; thence South 57° 48' 40" West 348.42 feet to the Easterly line of Portage Street; thence North 32° 06' West along said Easterly line of Portage Street 117.25 feet to the place of beginning.

DATE	INSTRUMENT	GRANTOR(S)	GRANTEE(S)
1-28-55	Quit Claim Deed	Consumers Power Co	City of Kalamazoo
09-17-63	Quit Claim Deed	City of Kalamazoo	Consumers Power Co
9-10-65	Quit Claim Deed	Consumers Power Co	The UpJohn Co
09-15-65	Warranty Deed	The UpJohn Co	Three Brothers Realty Co
12-08-82	Warranty Deed	Three Brothers	Vincent T Early Trustee
2-08-82	Quit Claim Deed	DeNooyer Brothers Inc	Vincent T Early Trustee
12-08-82	Quit Claim Deed	Vincent T Early Trustee	The UpJohn Co

ECT
Environmental Consulting & Technology, Inc.

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Detroit, Michigan 48226
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EXHIBIT MGP-4

INTERIM REPORT OF REMEDIAL INVESTIGATION

CONSUMERS ENERGY COMPANY
KALAMAZOO MGP SITE
KALAMAZOO, MICHIGAN

VOLUME I

DECEMBER 28, 1999
SME PROJECT NO. KE31823

KR059B029459

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December 28, 1999

Mr. Robert G. Neumann, P.E.
Environmental & Technical Services Department
Consumers Energy Company
1945 W. Parnall Road, Rm. P-22-520
Jackson, Michigan 49201

Re: Interim Report of Remedial Investigation
Kalamazoo MGP
Consumers Energy Company
Kalamazoo, Michigan
SME Project No. KE31823

Dear Mr. Neumann:

Please find enclosed the "Interim Report of Remedial Investigation," dated December 28, 1999 for the above referenced site. This report documents the activities performed, as well as presents results, conclusions and recommendations based on field activities conducted at the site by SME in January, February, March, April, June, July and October, 1999.

If you have any questions or comments regarding this report please call.

Sincerely,

SOIL AND MATERIALS ENGINEERS, INC.

Patrick G. Barrese, CPG
Project Geologist

Cheryl A. Kehres-Dietrich, CGWP
Manager - Environmental Services

Enclosures: Interim Report of Remedial Investigation (1 Original and 11 Copies)

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EXECUTIVE SUMMARY

SME conducted a remedial investigation at Consumers Energy Company's (Consumers Energy's) Kalamazoo former manufactured gas plant (MGP). The Kalamazoo MGP is located in the City of Kalamazoo, Kalamazoo County, Michigan.

The objective of the remedial investigation activities was to characterize potential exposure pathways for the indoor air, groundwater, surface and subsurface soils, and surface water exposure pathways.

Field activities for the remedial investigation were conducted in January, February, March, April, June, July, September and October, 1999. The remedial investigation activities consisted of advancing 37 soil probes and 14 hand augers, as well as installing 12 shallow and 3 deep monitoring wells. Additionally, soil vapor samples were collected at 5 locations. Soil and groundwater samples were evaluated for BTEX, PNAs, cyanide (total, amenable and/or free) and the 10 Michigan Metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc). Soil vapor samples were evaluated for BTEX only. Ninety-one soil samples, 43 groundwater samples and 5 soil vapor samples were submitted for laboratory analysis.

The results of the remedial investigation have indicated the following:

Surface and Subsurface Soil

1. No coal tar has been encountered in surface and subsurface soil in the area south of Lovell Street.

2. Coal tar was encountered at two locations in the area of the site north of Lovell Street. The first location was within the current coal storage area south of Building No. 214 where the coal tar was encountered over depth intervals ranging from 0.5 to 1.25 feet BG. This area was not part of the excavation activities performed by P&U in the vicinity of HA1. The lateral extent of the coal tar impact at this location appears to be limited to the coal storage area. The second location where coal tar was encountered was on the east side of Building No. 214 where the coal tar extended over the depth interval of approximately 9 to 12 feet. The lateral extent of the coal tar impact in this area appears to be limited to the east side of Building No. 214. The source of the coal tar at both locations appears to be associated with releases from former MGP production components, storage structures or transfer lines. The tar well for the former MGP operations had been located in the area that is now the south side of Building No. 214.

3. BTEX, PNA, metal and cyanide concentrations for surface and subsurface soil samples collected from the portion of the site south of Lovell Street did not exceed Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, Groundwater Contact Protection, Direct Contact, Ambient Air Inhalation and Soil Saturation.

4. BTEX, PNA, metal and cyanide concentrations for surface and subsurface soil samples collected from the portion of the site north of Lovell Street did not exceed Part 201 Commercial II Cleanup Criteria for Groundwater Contact Protection and Ambient Air Inhalation.

5. BTEX, PNAs, metals and/or cyanide were detected in surface and subsurface soil at concentrations exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water Protection and GSI Protection at various sampling locations north and south of Lovell Street. However, the Drinking Water and GSI exposure pathways do not appear to be an issue for impact to surface and subsurface soil south of Lovell Street. This conclusion is based on concentrations of BTEX, PNAs, metals and amenable cyanide for groundwater samples collected from monitoring wells located south of Lovell Street, which have been less than the MDLs or Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI for two consecutive sampling events. Similarly, the Drinking Water and GSI exposure pathways may not be an issue for arsenic, copper, lead, mercury, and zinc impact to surface and subsurface soil north of Lovell Street. This conclusion is based on analytical results for groundwater samples collected from monitoring wells located north of Lovell Street, which have been either less than the MDLs or Part 201 Commercial II Cleanup Criteria for two consecutive sampling events for arsenic, copper, lead, mercury, and zinc.

6. On the east side of Building No. 214, at IA-7A, benzene and xylene(s) concentrations also exceeded Part 201 Commercial II Cleanup Criteria for Indoor Air Inhalation, Direct Contact and/or Soil Saturation. However, the Indoor Inhalation Pathway at Building No. 214 does not appear to be an issue based on analytical results for soil vapor samples collected at locations adjacent to Building No. 214. The soil vapor results indicated concentrations of benzene and xylene(s), as well as toluene and ethylbenzene, were significantly less than the calculated Soil Gas Concentration Protective of Unacceptable Indoor Air Inhalation Health Risks.

Groundwater

1. BTEX, PNA and cyanide impact to groundwater at concentrations exceeding Part 201 Commercial II Cleanup Criteria have not been identified at sampling locations south of Lovell Street.

2. Dissolved barium impact to groundwater at a concentration exceeding Part 201 Commercial II Cleanup Criteria for GSI Protection was identified for a groundwater sample collected from a temporary well set at soil probe IA-11 in January, 1999. Comparatively, dissolved barium, as well as other dissolved metal constituents, were not detected at concentrations exceeding Part 201 Commercial II Cleanup Criteria for groundwater samples collected from monitoring wells located in this area (MW-3, P-4 and MW-4) for two consecutive sampling events.

3. Groundwater flow for the northern portion of the site, where former MGP production components, storage structures and transfer lines were principally located appears to be to the southeast. This interpretation is based on two groundwater level gauging events conducted in February and June, 1999, respectively. Groundwater flow appears to be consistent with site topography.

4. BTEX, PNA, metals and cyanide concentrations for groundwater samples collected at locations north of Lovell Street did not exceed Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, Groundwater Contact, Flammability/Explosivity, Acute Inhalation and Water Solubility.

5. BTEX and/or PNA impact to groundwater was identified at sampling locations north of Lovell Street at concentrations exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI. BTEX and PNA impact to groundwater in this area appears to be delineated to the north and south, however, the extent of impact does not appear to be delineated to the east-southeast. Additionally, the vertical extent of BTEX and/or PNA impact at well pairs MW101/MW101D and MW104/MW104D does not appear to have been delineated. Groundwater impact appears to be migrating south-southeast, which is consistent with the interpreted direction of groundwater flow. The interpreted lateral extent of groundwater impact also suggests that the storm sewers located beneath Pitcher and Lovell Streets may be a potential migration pathway for groundwater impact at the water table.

6. Based on the prevalence of dissolved naphthalene in groundwater, which is a constituent of MGP residues, the source of the groundwater impact identified in the area north of Lovell Street appears to be associated with releases from former MGP production components, storage structures, or transfer lines. Potential contributions from off-site sources located west of the site are not currently evident based on a review of the report "Environmental Site Assessment/ Former MGP Site/Kalamazoo, Michigan," dated May, 1997 prepared by ECT. This report did not identify potential source areas to the west of the site based on ECT's review of state and federal data bases.

7. Dissolved barium, selenium, amenable and/or free cyanide impact to groundwater was identified at several sampling locations north of Lovell Street at concentrations exceeding Part 201 Commercial II Cleanup Criteria for GSI only. Dissolved barium was detected at several sampling locations east of Pitcher Street at concentrations exceeding the Part 201 Commercial II Cleanup Criterion for GSI, therefore the GSI exposure pathway for barium will require additional evaluation. Amenable or free cyanide impact to groundwater at concentrations exceeding Part 201 Commercial II Cleanup Criteria have not been identified in groundwater samples collected from downgradient, off-site locations, therefore it has not been confirmed that the GSI exposure pathway is an issue for the area north of Lovell Street.

The summary presented above is general in nature and should not be considered apart from the entire text of the report with all the qualifications and considerations mentioned therein. Details of our findings are discussed in the following sections and in the appendices of this report.

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1. INTRODUCTION

This document presents the results of a remedial investigation conducted at Consumers Energy Company's (Consumers Energy's) Kalamazoo former manufactured gas plant (MGP). The Kalamazoo MGP is located between Pitcher Street and Portage Street at Lovell Street in the City of Kalamazoo, Kalamazoo County, Michigan. Figure 1 of Appendix A shows a site location diagram. Remedial investigation activities were conducted at the site in January, February, March, April, June, July, September and October of 1999.

A "Part 201, Section 7a and 14(1)(g) Plan," dated June 3, 1997 for the Kalamazoo MGP site was previously submitted to the Michigan Department of Environmental Quality - Environmental Response Division (MDEQ-ERD), Plainwell District Office.

For remedial investigation activities conducted in January, February, March and April, 1999, a work plan dated November 16, 1998 was developed utilizing a risk-based approach for the remedial investigation, consistent with the Consumers Energy June 3, 1997 "Part 201, Section 7a and 14(1)(g) Plan." The November 16, 1998 work plan was approved in a correspondence from the MDEQ-ERD to Consumers Energy dated December 7, 1998.

Based on the results of the initial remedial investigation activities, additional remedial investigation activities were conducted at the site in June and July, 1999. Consumers Energy's intention to implement the additional remedial investigation activities as an amendment to the November 16, 1998 work plan was communicated to the MDEQ-ERD in a correspondence dated May 28, 1999.

Remedial activities conducted at the site in September, 1999, were conducted by Pharmacia & Upjohn, Inc. (P&U), the current site owner, to deal with potential employee exposure issues. The remedial activities conducted in September, 1999 are described under Section 4.2 of this report.

2. SITE BACKGROUND

2.1 Former MGP Operations

Gas was manufactured at this MGP from 1856 to 1956. The property was owned by Consumers Energy from 1917 to 1965. Several railroad spurs serviced the site. Structures associated with MGP production, i.e. gas holders, tar well(s), water gas plant, coke ovens, gas purifiers etc., appeared to have occupied the northern half of the site; while coal and/or coke were stockpiled on the southern half of the site. Figure 2 of Appendix A shows the layout of the former MGP operations in 1937.

2.2 Current Site Description

The site covers approximately 7.8 acres in area and is located on five individually described contiguous parcels of property in the City of Kalamazoo, Michigan. As previously stated, the site is located between Pitcher Street and Portage Street near east Lovell Street and what was once known as Spring Street. The approximate southern quarter of the site is currently owned and operated by Consumers Energy. Within this area, a natural gas regulator station is located near the intersection of Lovell Street and Pitcher Street and an electrical substation is located near the intersection of Lovell Street and Portage Street. The remainder of the site, with the exception of that area inclusive of Lovell Street, is owned and operated by P&U. Within this area there is currently 1 building (Building No. 300) and a power plant (Building No. 214) with associated parking and sidewalks. A second building, Building No. 152, had been located at the southeast corner of Lovell Street and Portage Street, within the area owned and operated by P&U, during the implementation of remedial investigation activities. However, in October, 1999, Building No. 152 was demolished in conjunction with a planned upgrade of the parking lot located on the south side of Lovell Street. Figure 3 of Appendix A shows the current site features.

For the portion of the site located north of Lovell Street, a closed fence and 24-hour security personnel limits accessibility by the general public. The portion of the site located south of Lovell Street is generally accessible to the public with the exception of Consumers Energy's natural gas regulator building and electrical substation.

A review of a City of Kalamazoo zoning map indicates the site is zoned for Light Manufacturing. Properties adjacent to the site to the north, south and west also appear to be zoned for Light Manufacturing. The adjacent property to the east, across Pitcher Street, appears to be zoned for General Manufacturing.

With respect to Part 201 land use categories presented in the MDEQ's Interim Environmental Response Division Operation Memorandum #18: Part 201 Generic Cleanup Criteria Tables, dated August 31, 1998, the appropriate land use category appears to be Commercial Subcategory II (Commercial II). This land use designation is primarily based on the consideration that access to the public is reliably restricted for the majority of site, i.e. presence of fence and 24-hour security.

The site is served by municipal water. However, a review of water well and pump records at the Kalamazoo County Environmental Health Office (KCEHO) identified 7 domestic wells, 5 dewatering wells, 25 test/monitoring wells and 16 public supply wells located within a one-mile radius of the site. The test/monitoring wells and public supply wells are associated with the City of Kalamazoo Central Well Field, which is generally

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located within the vicinity of the intersection of Crosstown Parkway and Stockbridge Avenue. The Central Well Field is located about 3,200 feet south-southwest of the site, in the inferred upgradient direction. Water well and pump records at the KCEHO did not identify the presence of any wells on properties in the inferred downgradient direction of the site, between the site and the Kalamazoo River.

The nearest surface water body is Portage Creek which is located east of the site at distances ranging from approximately 100 feet at the south end of the site to approximately 300 feet at the north end of the site. Portage Creek generally flows from south to north and discharges to the Kalamazoo River located approximately 0.5 miles northeast of the site.

3. HISTORIC SITE INVESTIGATIONS

The Chemistry and Material Services Department (C&MSD) of Consumers Energy performed a limited environmental investigation in January, 1996 in order to determine if environmental contamination of the subsurface was present in an area at the southeast corner of the former Kalamazoo MGP site in the vicinity of the gas regulator station. The investigation was necessary because of the then proposed construction of the Portage to Pitcher Street Connector by the City of Kalamazoo. Three probes were advanced in the area that approximately coincides with the intersection of Pitcher Street and the Portage Pitcher Connector. Each probe was advanced to a depth of 7 feet below grade (BG). Select soil samples were submitted for laboratory analysis of benzene, toluene, ethylbenzene and xylene(s) (BTEX); polynuclear aromatic hydrocarbons (PNAs); cyanide (total and amenable) and the 10 Michigan Metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc). BTEX, PNA and the 10 Michigan Metals concentrations were either less than the method detection limits (MDLs) or less than the Part 201 Commercial Subcategory II (Commercial II) Cleanup Criteria. Cyanide concentrations were less than the MDLs. Groundwater was not encountered during C&MSD's limited investigation.

Environmental Consulting and Technology (ECT) conducted a preliminary environmental site assessment (ESA) of the site in May, 1997. No intrusive investigation activities were conducted as part of the preliminary ESA. The results of ECT's preliminary ESA were documented in a report "Environmental Site Assessment/ Former MGP Site/Kalamazoo, Michigan," dated May, 1997. A copy of the report was included with Consumers Energy's June 3, 1997 "Part 201, Section 7a and 14(1)(g) Plan."

4. PATHWAY REMEDIAL INVESTIGATION

The following sections present the objectives and procedures for the remedial investigation conducted at the site.

4.1 Objective

The objective of the remedial investigation activities was to characterize potential exposure pathways. This investigation has evaluated exposure and risk characterization for the following four pathways:

- Indoor Air
- Groundwater
- Surface and Subsurface Soils
- Surface Water

With respect to the indoor air pathway, the objective of the remedial investigation was to collect data to evaluate the potential for volatilization of MGP constituents from the subsurface soils and groundwater at the site.

With respect to the groundwater pathway, the objective of the remedial investigation was to collect data to evaluate potential exposure pathways for groundwater with respect to drinking water and non-ingestion, direct contact and utility worker contact.

For the surface and subsurface soil direct contact pathway, the objective of the remedial investigation was to collect and evaluate data for evaluation of direct contact exposure pathways and leaching to groundwater.

Lastly, for the surface water pathway, the objective of the remedial investigation was to collect data for the evaluation of potential MGP-related impacts to Portage Creek.

4.2 Procedures

The scope of work for the remedial investigation activities is presented below in order of occurrence. Figure 4 of Appendix A shows the locations of soil probes, soil borings, soil vapor sampling points and monitoring wells.

1. Advanced 12 building perimeter soil probes, IA-1 through IA-12. IA-2, IA-3, IA-4, IA-6, IA-7 and IA-9 through IA-12 were advanced on January 18 and 19, 1999. Because of subsurface utility concerns, IA-1, IA-5 and IA-8 were initially advanced manually using a hand auger on February 3, 1999. IA-1 and IA-8 were completed to their termination depths with a direct push coring device on February 22, 1999. IA-5 could not be advanced beyond the hand augured depth due to the presence of a subsurface obstruction.

   The purpose of the soil probes was to evaluate the indoor air inhalation pathway. The soil probes were located adjacent to Building Nos. 152 and 300, Building No. 214 (the power plant) and the Consumers Energy gas regulator station.

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2. Installed 8 monitoring wells, MW-1 through MW-4 and P-1 through P-4. MW-1 through MW-4, P-2, P-3 and P-4 were installed on February 1 and 3, 1999. Because of subsurface utility concerns, the soil boring for P-1 was initially advanced manually using a hand auger on February 3, 1999. Installation of P-1 was conducted on February 22, 1999 at the location of the initial hand auger.

   The purpose of the monitoring wells was to determine general site groundwater flow direction and quality.

3. Evaluated the use of groundwater on and off site and the proximity of drinking water wells off site.

4. Collected groundwater samples from existing monitoring wells MW-1 through MW-4, P-2, P-3 and P-4 on February 8, 1999. Groundwater samples were collected from P-1 on February 25 and 27, 1999, as well as March 1, 1999. The multiple sample dates for P-1 was due to insufficient recharge after well purging.

5. Conducted slug tests at MW-1, MW-2 and P-2 on April 7, 1999 to evaluate aquifer hydraulic conductivity.

6. Conducted an elevation survey at each soil probe and monitoring well advanced and installed, respectively, in January and February, 1999. At each monitoring well, the mean sea level elevations for both top-of-casing and ground level were determined.

7. Advanced 10 soil probes, SP101 through SP109 and IA-7A, on June 3, 1999. Because of subsurface utility concerns, SP101, SP102 and SP103 were advanced manually using a hand auger.

   The purpose of SP101, SP102 and SP103 was to evaluate the lateral extent of BTEX and PNA impact to soil identified at IA-1, IA-2, IA-5 and IA-7 in the vicinity of Building No. 214 (Power Plant).

   The purpose of SP104, SP105 and SP106 was to evaluate the lateral extent of BTEX and PNA impact to soil identified at MW-2 and P-3.

   The purpose of SP107, SP108 and SP109 was to evaluate if BTEX and PNA impact to groundwater identified at P-2 has migrated off-site toward Portage Creek.

   The purpose of IA-7A was to confirm the levels of BTEX and PNAs within the subsurface at IA-7, on the east side of Building No. 214.

8. Advanced 15 soil probes, SP110 through SP125, on June 4, 1999.

   The purpose of the soil probes was to evaluate the surface and subsurface soil direct contact pathway for the portion of the site south of Lovell Street.

9. Advanced 1 pilot soil boring, PB-201, on June 15, 1999.

   The purpose of the boring was to characterize soil conditions within the unsaturated and saturated zones, as well as to determine the depth to bedrock in the vicinity of the site.

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A soil sample collected from PB-201 was submitted for laboratory analysis of TOC.

10. Installed 7 monitoring wells, MW101, MW101D, MW102, MW103, MW104, MW104D and P-2D on June 16, 17 and 18, 1999. Because of subsurface utility concerns, the soil borings for MW102 and MW103 were initially advanced manually using a hand auger.

    The purpose of the monitoring wells was to further evaluate site groundwater flow direction and the extent of groundwater impact.

    The Stearns Drilling Company (Stearns) installed monitoring wells MW105 and MW105D in September, 1996 for the American Hydrogeology Corporation (AHC). Figure 4 of Appendix A shows the location of MW105 and MW105D. AHC's designations for the monitoring wells were MW-10s and MW-10d. The monitoring wells were installed for P&U to evaluate potential groundwater impact from a former UST system that had been located northwest of the former MGP site.

11. Collected groundwater samples from MW-1 through MW-4, P-1 through P-4, MW101, MW101D, MW102, MW103, MW104, MW104D and P-2D on June 22 and 23, 1999.

12. Conducted a slug test at MW-104D on July 1, 1999 to evaluate aquifer hydraulic conductivity.

13. Conducted soil vapor sampling at 5 locations, SV-1 through SV-5, on July 20, 1999.

    The purpose of the soil vapor sampling at SV-1 through SV-4 was to evaluate potential indoor inhalation exposure issues at Building No. 214 (Power Plant); while the purpose of soil vapor sampling at SV-5 was to evaluate potential indoor inhalation issues at Building No. 300.

14. Advanced 14 hand augers, HA1 through HA14 on July 26, 1999. Figure 5 of Appendix A shows the hand auger locations.

    The purpose of the hand augers was to visually evaluate the extent of coal tar identified in the coal storage area south of Building No. 214.

15. Conducted an elevation survey at each soil probe and monitoring well location advanced and installed, respectively, during June, 1999. At each monitoring well, the mean sea level elevations for both top-of-casing and ground level were determined.

16. Observed the limited excavation of coal tar and coal tar impacted material within the coal storage area south of Building No. 214 on September 22, 1999. P&U conducted the limited excavation. The purpose of the excavation activities was to remove near-surface coal tar that could potentially come in contact with P&U personnel during coal storage activities planned for the upcoming winter. Figure 5 of Appendix A shows the approximate location of the excavated areas.

17. Observed the demolition of Building No. 152 by P&U conducted in October, 1999. During demolition activities, a sump was encountered on the east side of the building. The sump is believed to have been associated with the floor drains in the garage area of Building No. 152. Soil at the base of the sump appeared to be impacted, therefore the sump and surrounding soil were excavated. Soil samples were subsequently collected by P&U personnel from the resulting excavation. The soil samples consisted of 4 side wall, labeled X1 through X4, and 2 floor, labeled X5 and X6. Figure 6 of Appendix A shows the locations of the excavation soil samples. The soil samples were submitted for laboratory analysis of volatile organic carbons (VOCs), PNAs, arsenic, cadmium, chromium (total), lead, silver and cyanide (total). These parameters were based on characteristics of the material excavated from the sump.

Soil probe services were provided by Brye Environmental Soil Testing (BEST) of Okemos, Michigan. For monitoring wells installed in February, 1999, drilling and associated well installation services were provided by BEST and the Great Lakes Drilling Company of Allegan, Michigan. For monitoring wells installed in June, 1999, drilling and associated well installation services were provided by Stearns of Dutton, Michigan. Soil vapor sampling services, as well as laboratory analysis of soil vapor samples, was provided by Fibertec Environmental Services (Fibertec) of Holt, Michigan. Surveying services were provided by Brave Controls & Engineering of Kalamazoo, Michigan. With the exception of the excavation soil samples collected by P&U personnel from the former sump area in former Building No. 152, laboratory analytical services for soil and groundwater samples were provided by Consumers Energy's Chemistry Section - Technical Services Department of Jackson, Michigan. Analytical services for the excavation soil samples collected by P&U personnel from the sump area were provided by KAR Laboratories, Inc. of Kalamazoo, Michigan.

4.2.1 Soil Probes

Soil probes were advanced with an ATV-mounted, pneumatically driven, direct-push coring device. Soil samples were collected continuously from grade to the termination depth of the soil probes, which ranged from approximately 2.5 feet to 16 feet BG. The maximum depth of the hand augers conducted at the site in July, 1999, HA1 through HA14, was two feet.

As previously stated, several soil probes, IA-1, IA-5, IA-8, SP101, SP102 and SP103, were either initially or completely advanced manually using a hand auger because of the potential presence of subsurface utilities. IA-1 and IA-8 were subsequently completed to their termination depths using the direct-push coring device. However, at IA-5, a subsurface obstruction was encountered at a depth of approximately 2.5 feet BG and the probe was

terminated. SP101, SP102 and SP103 were completed to their respective termination depths using a hand auger.

Soil samples from the direct-push coring device were collected using a 48-inch long, 2-inch outside diameter (OD) Geoprobe ® Macro Sampler lined with a disposable acetate liner. With the exception of soil samples collected for BTEX analysis, soil samples were collected from the acetate liner by cutting open the liner with a utility knife and transferring the soil to pre-cleaned jars provided by the analytical laboratory using a disposable plastic or stainless steel putty knife. Soil samples collected for BTEX analysis were obtained in accordance with EPA VOC sediment sampling Method 5035 using a disposable encore ® sampling device.

Soil samples collected during hand augering were collected as grab samples from the cutting head. Otherwise soil sampling procedures were consistent with those used with the direct-push coring device.

Soil samples collected from the soil probes were physically classified and recorded on probe logs by the SME field staff. Copies of soil probe logs are presented in Appendix B.

A total of 1 to 3 soil samples from each soil probe were submitted for laboratory analysis of BTEX, PNAs, cyanide (total, amenable and/or free) and the 10 Michigan Metals. However, for the hand augers conducted in July, 1999, only soil samples collected from HA1 were submitted for laboratory analysis of the previously described MGP chemical parameters. The selection of soil samples to be submitted for laboratory analysis was based on sample depth, as well as soil characteristics, i.e soil type, odors, staining, etc. The analytical methods, method detection limits (MDLs) and containers for the indicated analytical parameters are listed below.

Analytical Parameter	EPA Method Number	Method Detection Limits	Container w/ Preservative
BTEX	8021	50	2 oz. glass /Methanol
PNAs	8270	330	16 oz. glass/NP
Cyanide, total	9010	200	16 oz. glass/NP
Cyanide, amenable	9010	500	16 oz. glass/NP
Cyanide, free	ASTM-D4282-95	400	16 oz. glass/NP

Notes:
(1) MDLs are presented in parts per billion (ppb or micrograms per kilogram (ug/kg)).
(2) NP = No preservative.

Analytical Parameter	EPA Method Number	Method Detection Limits	Container w/ Preservative
Arsenic	7061	100	16 oz. glass/NP
Barium	7081	1,000	16 oz. glass/NP
Cadmium	7131	50	16 oz. glass/NP
Chromium(total)	7191	2,500	16 oz. glass/NP
Copper	7211	1,000	16 oz. glass/NP
Lead	7421	1,000	16 oz. glass/NP
Mercury	7470	100	16 oz. glass/NP
Selenium	7741	500	16 oz. glass/NP
Silver	7761	500	16 oz. glass/NP
Zinc	7950	1,000	16 oz. glass/NP

Notes:
(1) MDLs are presented in parts per billion (ppb or micrograms per kilogram (ug/kg)).
(2) NP = No preservative.

Selected soil samples collected from IA-12 and SP108 were submitted for laboratory analysis of total organic carbon (TOC). TOC was evaluated using the Lloyd Kahn Method as presented in "Method for Determination of Total Organic Carbon in Sediment, Lloyd Kahn Method," USEPA, Region II, July, 1986.

Groundwater samples were collected from IA-1, IA-2, IA-4, IA-6 through IA-12 and SP102 through SP109. Groundwater samples were collected using either a 0.5-inch inside diameter (ID) or 1-inch ID temporary well driven into the saturated zone at the water table surface. The screen for the 0.5-inch ID temporary well was two feet in length, while the screen for the 1-inch ID temporary well was five feet in length. Both screens had a slot size of 0.010 inches. Groundwater samples were obtained from the screened area by pumping the groundwater through 0.25-inch ID polyethylene tubing using a peristaltic pump. Approximately three casing volumes were purged from the temporary well prior to sampling.

Groundwater samples were submitted for laboratory analysis of BTEX, PNAs, cyanide (total, amenable and/or free) and the 10 Michigan Metals. Groundwater samples collected for PNAs and cyanide were collected in a laboratory supplied container directly from the effluent end of the pump tubing. Groundwater samples collected for the 10 Michigan Metals were collected in a laboratory supplied container directly from the effluent end of the pump tubing after passing through a 0.45 micron filter. Groundwater samples collected for BTEX analysis were collected by crimping the polyethylene tubing at grade and withdrawing the tubing from the temporary well. The groundwater sample was then gravity

drained from the influent end of the pump tubing into the appropriate container to minimize negative pressure effects from the peristaltic pump. The analytical methods, MDLs and containers for the indicated analytical parameters are listed below.

Analytical Parameter	EPA Method Number	Method Detection Limits	Container w/ Preservative
BTEX	8021	1	40 ml VOA/HCl
PNAs	8270	5	1 L glass amber/ /NP
Cyanide, total	9010	5	250 ml glass amber/NaOH
Cyanide, amenable	9010	20	250 ml glass amber/NaOH
Cyanide, free	ASTM-D4282-95	10	250 ml glass amber/NaOH
Arsenic	7061	5	250 ml plastic/HNO3
Barium	7081	200	250 ml plastic/HNO3
Cadmium	7131	0.5	250 ml plastic/HNO3
Chromium(total)	7191	50	250 ml plastic/HNO3
Copper	7211	25	250 ml plastic/HNO3
Lead	7421	3	250 ml plastic/HNO3
Mercury	7470	0.2	250 ml plastic/HNO3
Selenium	7741	5.0	250 ml plastic/HNO3
Silver	7761	0.5	250 ml plastic/HNO3
Zinc	7950	20	250 ml plastic/HNO3

Notes:

(1) MDLs are presented in parts per billion (ppb or micrograms per Liter (ug/L)).

For both soil and groundwater samples, pre-cleaned containers and preservatives were supplied by the analytical laboratory. After sample collection, the containerized samples were kept cool, i.e. refrigerated, until delivery to the analytical laboratory. Chain of custody procedures documenting the sample handling sequence was followed by the SME field staff.

Soil cuttings generated from the soil probes were returned to the corresponding soil probe hole after sampling activities were completed. The remaining space in the soil probe holes was then backfilled with bentonite chips. Acetate liners and any excess soil cuttings that could not be returned to the soil probe holes were containerized in labeled, Michigan Department of Transportation (MDOT) approved, 55-gallon drums. Purged groundwater obtained from the soil probe temporary wells was also containerized in labeled, MDOT approved, 55-gallon drums. A detailed description of decontamination and waste disposal procedures is presented in Sections 4.2.9 and 4.2.10, respectively.

4.2.2 Random Surface Sampling

Random surface soil sampling was conducted at the site to evaluate for potential exposure with respect to the Direct Contact pathway. The collection of surface soil samples was limited to the area within the former MGP property line. The surface samples were collected using methods previously discussed in Section 4.2.1. The selection of surface soil sample locations was based on the application of the MDEQ's "Verification of Soil Remediation Guidance Document," (VSR), April, 1994, Revision 1. Specifically, in order to determine sample locations the site was gridded using the "large site" formula presented in the VSR document. The area within the property boundary of the former MGP site was calculated to approximately be 7.8 acres. Using the "large-site" formula, a grid interval of approximately 43 feet was calculated, which resulted in 137 grid elements. Each grid element was then numbered, beginning in the northwest corner of the site. In areas where enclosed buildings are present, as well as the area currently inclusive of Lovell Street, grid elements were skipped and not numbered. For determining the appropriate number of sample locations, the number of grid elements was multiplied by 25 percent, which resulted in a total of 34 locations to be sampled.

The specific 34 locations to be sampled were initially determined using a computerized random number generator. However, actual implementation of the surface sampling at the site was modified by collecting surface soil samples at each soil probe and soil boring advanced within unique grid elements. Additionally, supplemental surface and subsurface soil samples were collected at locations south of Lovell Street in order to provide P&U with additional data necessary to evaluate potential "due care" issues associated with the planned upgrade of the existing parking lot.

To date, surface samples have been collected at 41 locations corresponding to the following soil probe and soil boring locations, IA-1 through IA-12, SP101 through SP106, SP110 through SP125, MW-1 through MW-4, P-1 through P-4 and HA1. Figure 6 of Appendix A shows the locations where surface samples have been collected to date with respect to the VSR sampling grid. Surface samples were submitted for laboratory analysis of BTEX, PNAs, cyanide (total, amenable and/or free) and the 10 Michigan Metals.

4.2.3 Soil Vapor Sampling

Benzene and xylene(s) were detected in soil sample IA-7A S2 collected at a depth of approximately 11 to 12 feet BG, at concentrations exceeding the Part 201 Commercial II Volatilization to Indoor Air Inhalation Criteria. IA-7A was located adjacent to the east side of Building No. 214 (the power plant). Because of this detection, soil vapor sampling was

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subsequently conducted at four locations, SV-1 through SV-4, around the perimeter of Building No. 214, to evaluate if soil vapor within the vadose zone is impacted with BTEX at concentrations that could represent a potential health risk to P&U personnel working inside the building on an 8-hour a day basis. A soil vapor sample, SV-5, was also collected adjacent to Building No. 300 to evaluate potential soil vapor impact within the vadose zone that could represent a potential health risk to P&U personnel. SV-1, SV-3, SV-4 and SV-5 were collected at locations approximately coinciding with soil probe/soil borings, IA-7A, P-1, IA-8 and IA-1, respectively. SV-2 was collected at a location approximately 20 feet south of IA-7A.

Soil probes for soil vapor sampling were performed with a direct push drill rig. Soil vapor samples were collected through 0.25-inch ID polyethylene tubing within the direct push drilling rods, equipped with a 2-foot long slotted screen, by applying a vacuum using a vacuum pump. Air flow was monitored using a mass/volume controller. The sampling intervals for the soil vapor probes were selected by considering the estimated depth to the capillary fringe. The sampling interval for SV-1 through SV-4 was 6 to 8 feet BG, the sampling interval for SV-5 was 8 to 10 feet BG. Prior to collecting the samples, a minimum of 5 rod volumes of vapor was purged from the subsurface. Soil vapor samples at each location were collected into 2 tenax tubes and submitted to an analytical laboratory for BTEX analysis by EPA Method 8260 with a MDL of 0.010 mg/m^3. Both the purge and sampling flow rates were approximately 10 milliliters per minute.

Analytical results for soil vapor samples were compared to the Soil Gas Concentrations Protective of Unacceptable Indoor Air Inhalation Pathway. The soil gas criteria were calculated using the method described in Attachment C of the MDEQ document "Part 201 Generic Groundwater and Soil Volatilization to Indoor Air Inhalation Criteria: Technical Support Document," dated August 31, 1998. The calculation of the soil gas criteria is discussed further in Section 6.3.

4.2.4 Monitoring Well Installation

Soil borings for MW-1 through MW-4, P-2, P-2D, P-3, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, as well as pilot boring PB-201, were advanced with a truck-mounted drill rig using 4.25-inch ID hollow stem augers. As previously stated, the soil borings for P-1, MW102 and MW103 were initially advanced manually using a hand-auger because of the potential presence of subsurface utilities. The soil boring for P-1 was subsequently completed with an ATV-mounted drill rig using 3-inch ID hollow stem augers; while the soil borings for MW102 and MW103 were subsequently completed with a truck-

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mounted drill rig using 4.25-inch ID hollow stem augers. Soil samples collected from MW-1 through MW-4, P-2, P-2D, P-3, P-4, MW101D, MW102, MW103, as well as pilot boring PB-201 were obtained using a 24-inch long split-barrel sampler that was driven into undisturbed soil ahead of the augers. Soil borings corresponding to MW101, MW104 and MW104D were blind drilled because subsurface conditions had already been characterized at their respective locations at adjacent soil probe(s) or soil borings. Soil samples collected from P-1, MW102 and MW103 using the hand auger were collected as grab samples from the hand auger bucket. Soil samples at each well location were collected continuously from grade to the termination depth of the borings, which ranged from approximately 8 feet to 130 feet BG.

With the exception of P-2D, MW101, MW101D, MW104 and MW104D and PB-201, a total of 1 to 3 soil samples from each soil boring were submitted for laboratory analysis of BTEX, PNAs, cyanide and the 10 Michigan Metals. As previously stated soil samples were not collected from MW101, MW104 and MW104D because subsurface conditions had been characterized at adjacent soil probe(s) or soil borings. Soil samples collected from P-2D, MW101D and PB-201 were not submitted for laboratory analysis of BTEX, PNAs, cyanide and the 10 Michigan Metals because soil samples from adjacent soil probes or soil borings had already been submitted for laboratory testing. Methods for the collection, classification, and selection of samples for laboratory analysis were consistent with those methods previously described in Section 4.2.1 for soil samples collected from soil probes. The only variation from Section 4.2.1 is that acetate liners were not used for soil sampling. Analytical methods, MDLs and containerization of soil samples collected from soil borings were also consistent with those previously described in Section 4.2.1 for soil samples collected from soil probes.

Selected soil samples collected from MW-3, P-4, MW101D, MW102, MW103 and P-2D were submitted for laboratory analysis of TOC. As previously stated, TOC was evaluated using the Lloyd Kahn Method as presented in "Method for Determination of Total Organic Carbon in Sediment, Lloyd Kahn Method," USEPA, Region II, July, 1986.

Each monitoring well was constructed with a 5-foot long, 2-inch ID, schedule 40 PVC well screen and 2-inch ID, schedule 40 PVC riser pipe. The well screens have a slot size of 0.010 inch. For monitoring wells with well screens set at the water table surface (MW-1 through MW-4, P-1 through P-4, MW101 through MW104) an attempt was made to set each well screen with approximately 3 feet of screen set below the depth where groundwater was encountered during drilling. For monitoring wells with well screens set at depth below the water table (P-2D, MW101D and MW104D) final screen depths were based on depth and estimated vertical extent of impact. The annular space surrounding the well

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screens for each monitoring well was packed with washed silica sand to a level approximately 2 feet above the top of the screens. For monitoring wells with well screens set at the water table surface (MW-1 through MW-4, P-1 through P-4, MW101 through MW104) a hydrated bentonite pellet seal was above the sand pack to approximately 1 foot BG because the top of the sand pack was within 5 feet of grade. For monitoring wells with well screens set at depth below the water table (P-2D, MW101D and MW104D) a hydrated bentonite pellet seal approximately 1 to 2 feet in thickness was set above the sand pack; while the remaining annular space was backfilled with a cement/bentonite grout to approximately 1 foot BG. Each monitoring well was completed at grade with a water-tight, traffic-rated, flush-mount well guard installed in concrete. Each well casing was capped with a water tight, locking lid at the completion of well construction activities.

Monitoring wells were developed by intermittent surging of the screened interval with a surge block followed by pumping of the screened interval with a down-hole pump. The wells were developed until a minimum of 6 casing volumes of water had been removed and/or the development water was judged to be sufficiently clear.

The final completion depths for the monitoring wells, as well as the associated sand packs and seals were documented by the SME field staff. The condition of the well development water, i.e odors, turbidity, etc., as well as final volume were also documented by the SME field staff.

Soil cuttings generated from the soil borings and groundwater generated from well development activities were containerized in appropriately labeled, MDOT approved, 55-gallon drums. A detailed description of decontamination and waste disposal procedures is presented in Sections 4.2.9 and 4.2.10, respectively.

4.2.5 Soil Probe and Monitoring Well Surveying

Ground surface elevations for soil probes, as well as ground surface and top-of-casing elevations for monitoring wells were surveyed relative to mean sea level with an accuracy of +/-0.01 feet.

4.2.6 Monitoring Well Sampling

Prior to conducting monitoring well purging and sampling, well caps at each monitoring well were removed to allow the water level within the well casing to equilibrate with respect to atmospheric pressure for a minimum of 15 minutes. After equilibration occurred, the depth to water and total well depth were gauged referenced to the top-of-casing using an electronic water level meter incremented to 0.01 feet.

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After gauging the depth to water and total well depth, each well was purged using a variable flow rate, portable peristaltic pump with 3/8-inch ID silicone tubing, or equivalent, at a low pumping rate of 100 to 400 milliliters per minute (ml/min), until a minimum of 3 casing volumes was purged and the discharged groundwater appeared to be relatively sediment free. For monitoring wells with well screens set at the water table surface (MW-1 through MW-4, P-1 through P-4, MW101 through MW105) purging consisted of slowly lowering the pump intake to a level approximately half-way between the water level surface and the bottom of the well. For monitoring wells with well screens set at depth below the water table (P-2D, MW101D, MW104D and MW105D) purging consisted of slowly lowering the pump intake to a level approximately one foot below the water level surface where one-casing volume was purged, then the pump intake was lowered to the center of the screened interval and purging was continued until a minimum of 2 more casing volumes had been purged and the discharged groundwater appeared to be relatively sediment free.

After purging was completed, groundwater samples were collected at the same flow rate for the following parameters in the order presented: PNAs, 10 Michigan Metals, cyanide and BTEX. PNAs and cyanide samples were pumped directly from the pump outlet into the appropriate container. Metals samples were field filtered prior to containerization by inserting a 0.45 micron filter into the pump outlet. Groundwater samples were collected for BTEX analysis by crimping the silicone tubing at grade and withdrawing the tubing from the well. The groundwater sample was then gravity drained from the influent end of the pump tubing into the appropriate container to minimize negative pressure effects from the peristaltic pump. Analytical methods, MDLs and sample containers were consistent with those previously presented under Section 4.2.1 for groundwater samples collected from soil probes.

As previously stated for the February, 1999 groundwater sampling of P-1, multiple purging events were conducted because of insufficient groundwater recharge to the well casing. Cyanide (total and amenable) and BTEX were collected on February 25, 1999. PNAs were collected on February 27, 1999. Metals were collected on March 1, 1999.

Also for the June, 1999, groundwater sampling of P-1, groundwater samples for PNAs, the 10 Michigan Metals and cyanide were not collected due to insufficient recharge after purging.

As a quality assurance/quality control measure a duplicate groundwater sample from P-2 was submitted to the analytical laboratory for BTEX analysis. In addition, equipment blanks from the probe for the electronic water level meter and silicon sample tubing were submitted to the analytical laboratory for BTEX analysis.

For groundwater samples, pre-cleaned containers with appropriate preservatives were supplied by the analytical laboratory. After sample collection, the containerized samples were kept cool, i.e. refrigerated, until delivery to the analytical laboratory. Chain of custody procedures documenting the sample handling sequence were followed by the SME field staff.

Depths to groundwater, total well depths, purge volumes, field descriptions of purge water condition (i.e. color, odors, etc.) and other relevant information were documented by the SME field staff.

Purge water from monitoring well sampling activities was containerized in labeled MDOT approved 55-gallon drums. A detailed description of decontamination and waste disposal procedures is presented in Sections 4.2.9 and 4.2.10, respectively.

4.2.7 Porosity Testing

Selected soil samples were collected from P-2D and MW101D and evaluated for the physical parameters, specific gravity, moisture content and unit dry weight, in order to calculate a porosity value for aquifer materials. For P-2D, soil sample S16, collected at a depth of approximately 36 to 37.5 feet BG, was analyzed; while for MW101D, soil samples S3 and S16, collected at depths of 13.5 to 15 feet BG and 46 to 47.5 feet BG, respectively, were analyzed. The formula used to calculate porosity was as follows:

$$n = e/(1 + e) \qquad e = ((G_s \times \gamma_w)/\gamma_d) - 1$$

where,

n = porosity
e = void ratio
G_s = specific gravity
γ_w = unit weight of water (pounds per cubic foot) = 62.4
γ_d = unit dry weight (pounds per cubic foot)

4.2.8 Slug Testing

Slug tests were conducted at MW-1, MW-2 and P-2 on April 8, 1999 and at MW104D on July 1, 1999 to evaluate aquifer hydraulic conductivity. The slug tests were performed utilizing a stainless-steel slug with a displacement volume equivalent to approximately 0.32 gallons, a pressure transducer and an electronic data logger.

Prior to beginning the slug test at each well, the static water level within the monitoring well was recorded with an electronic water level meter. The pressure transducer was then lowered to the bottom of the monitoring well and groundwater measurements were taken until the groundwater level had stabilized to the initial level. After the groundwater

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level had stabilized, the slug was rapidly lowered into the monitoring well until it was completely submerged. As the slug was lowered into the monitoring well, the data logger recorded changes in the water level. After the groundwater level had stabilized, the slug was rapidly removed from the monitoring well and the data logger again began recording changes in the water level.

The data recorded on the data logger was analyzed using the Bouwer and Rice method for an unconfined aquifer with AQTESOLV, a computer software program developed by Geraghty & Miller, Inc.

4.2.9 Decontamination

Downhole soil probe and drilling tools, i.e augers, drill-rod, probe-rods, etc., were decontaminated with a high pressure/temperature wash prior to conducting each soil probe and soil boring. Downhole and reusable soil sampling equipment, i.e. Macro Samplers, split-barrel samplers, stainless steel putty knives, were decontaminated with a laboratory grade detergent and rinsed with distilled water prior to each sampling event. Downhole and reusable groundwater sampling equipment, i.e. temporary well screens, water level meter, were decontaminated with a laboratory grade detergent and rinsed with distilled water prior to each sampling event. For groundwater sampling, new polyethylene or silicone tubing, as well as new groundwater filter elements were used at each sampling location, i.e. soil probes or monitoring wells.

Monitoring well materials were either pre-cleaned and wrapped in plastic from the manufacturer or cleaned on-site with a high pressure/temperature wash.

Waste water generated from decontamination activities was containerized in labeled MDOT approved 55-gallon drums. A more detailed description of waste disposal procedures is presented under Section 4.2.10.

4.2.10 Solid and Liquid Disposal

As previously stated, residual soil and acetate liners generated from soil probe activities; soil cuttings generated during soil boring activities; groundwater generated during soil probe sampling, well development and monitoring well sampling activities, and wash water generated during the decontamination of soil and groundwater sampling equipment were containerized in labeled, MDOT approved 55-gallon drums and stored on-site pending waste characterization by Consumers Energy.

The MDOT approved 55-gallon drums were provided by SME's subcontractors. Drum labels were provided by Consumers Energy. The drum labels were marked using a water-proof, indelible pen with the following information:

- Contents: Type of material, i.e. soil cuttings, acetate liners, purge water and/or decon water.
- Origin of Materials: Source of material, i.e. IA-1 through IA-5.
- Address: 1945 W. Parnall Road/Jackson, MI
- Contact: Bob Neumann
- SME Project No.: KE31823
- Date: Date material was placed in drum.

Consumers Energy has disposed of the solid and liquid wastes generated during the remedial investigation activities at licensed disposal facilities.

5. GEOLOGY/HYDROGEOLOGY

5.1 Soil Stratigraphy

With respect to local topographic features, the site is located within the Kalamazoo River Valley. Unconsolidated sediments within the Kalamazoo River Valley range in thickness from about 50 to 100 feet and generally consist of interbedded sands and silts. The deposition of the unconsolidated sediments can be primarily attributed to alluvial processes, i.e. stream and river action. The underlying bedrock unit is the Coldwater Shale. A more detailed presentation of site stratigraphy is presented below.

Asphalt concrete was encountered at the surface at IA-1, IA-2, IA-3, IA-5, IA-10, SP104, SP105, SP106, SP110, SP111, SP113, SP114, SP115, SP117, SP118, SP119, SP120, SP122, SP123, SP125, MW-2, P-3, P-4, MW101, MW101D and MW103. At the remaining soil probe and boring locations, the surficial materials consisted of sand or gravel fill, except at IA-4, IA-9 and SP103. At IA-4 and IA-9 topsoil was encountered at the surface. At SP103 woodchips were encountered at the surface. In addition, at SP112 three inches of asphalt concrete was encountered beneath surficial gravelly sand fill. At SP121, two inches of gravel fill was encountered over asphalt concrete, base material and six inches of cement concrete.

Below surficial material, the soil stratigraphy at the site is characterized as follows:

Stratum A: Fill. Fill consisting predominantly of sand was encountered beneath the surficial materials at each soil probe and soil boring location, except at IA-11. The sand fill varied in grain size and contained various amounts of silt, clay and gravel. The fill contained organics, wood pieces, coal, concrete pieces, slag, cinders, brick pieces and limestone pieces at various location. At SP124 the fill also contained roots, plastic and metal pieces. At SP102 a layer of coal pieces was encountered from a depth of about 0.75 feet to 1.5 feet. At SP105 and SP106, a layer of predominantly coke cinders was encountered from a depth of about 1 foot to 5 feet. In addition, coal tar was observed in the fill at IA-7/IA-7A. The fill extended to depths varying from 2 feet at IA-4, MW103, SP116, and SP121 to 15 feet at IA-2. The following soil probes and borings were terminated in the fill: IA-2, IA-3, IA-5, IA-6, IA-7/IA-7A, SP101 through SP104, SP110 through SP125, P-1, and MW104. At IA-11, the only fill encountered was surficial gravelly sand, which was encountered to a depth of 0.5 feet.

Stratum B: Fibrous Peat. Fibrous peat was encountered at 17 locations. The peat was encountered beneath the fill of Stratum A at IA-9, IA-10, SP108, PB201, MW-2, MW-3, P-2, P-2D, P-3, and MW104D. At IA-12, SP105, SP106, SP107, SP109, MW-4 and P-4, the peat was overlain by natural sand and silt layers that were encountered beneath the fill of Stratum A. The peat ranged in thickness from about 0.2 feet to 5 feet. Occasional root pieces and sand partings were encountered within the peat. IA-9, IA-10, IA-12, SP105, SP107, SP108, SP109, MW-2, MW-4, P-2, P-3 and P-4 were terminated in the peat layer at depths ranging from 8 feet to 12 feet. At the remaining locations where peat was encountered, the peat extended to depths ranging from 7 to 12 feet. At P-2D, the peat was indicated to be underlain by fill, therefore, the peat at P-2D (and P-2, adjacent to P-2D) may not be native. Instead, the peat may have been placed in the area of P-2D.

Stratum C: Native Sands and Silts. Natural sand and/or silt layers were encountered either beneath the fill of Stratum A or the fibrous peat of Stratum B at IA-1, IA-4, IA-8, IA-11, MW-1, MW-3, SP106, MW101, MW101D, P-2D, MW102, MW103, MW104D and PB201. The natural sand layers were assorted in grain size and contained variable amounts of silt and a trace of gravel and clay at various locations. The natural silt layers included clayey silt and sandy silt with sand seams and partings at various locations. IA-1, IA-4, IA-8, IA-11, MW-1, MW-3, SP106, MW101, MW101D, P-2D, MW102, MW103 and MW104D terminated in the natural sands or silts of Stratum C. These borings were advanced to depths ranging from 8 feet to 47.5 feet. At PB201, Stratum C was encountered to a depth of 81 feet.

Stratum D: Native Clayey Sand, Sandy Clay, Silty Clay. Beneath Stratum C in PB201, clayey sand, sandy clay and silty clay layers were encountered to a depth of approximately 121 feet. Interbedded with the clayey sand, sandy clay and silty clay layers was a fibrous peat layer from about 99 feet to 102 feet and a fine to medium sand layer from a depth of about 107 feet to 113 feet.

Stratum E: Weathered Shale. Beneath Stratum D in PB201, weathered shale was encountered to a depth of 130 feet, the termination of the boring.

Figure 7 of Appendix A is a site map showing the locations of the section lines for geologic cross sections A-A' and B-B'. Figures 8 and 9 of Appendix A are geologic cross sections A-A' and B-B', respectively, which show the interpreted correlation of the soil

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stratigraphy described above. The soil stratigraphy is consistent with the depositional environment of the area.

The evaluation of soil stratigraphy did not include hand augered borings, HA1 through HA14, because the maximum depth of these borings did not exceed 2 feet BG and the material encountered was consistent with soil probes advanced in the vicinity of the hand augers. Additionally, an evaluation of the logs for MW105 and MW105D which correspond to P&U wells MW-10S and MW-10D were also not included in the above discussion of soil stratigraphy since the soils were classified by others. However, generally the logs for MW105 and MW105D are consistent with site stratigraphy with the exception that the descriptions do not indicate the presence of a silt component within the sand matrix of the aquifer.

Stained soil and/or odors were noted in the capillary fringe or at the water table at IA-1, IA-9, SP101, MW-4, P-2, P-2D, MW101, MW101D and MW103. At IA-1, SP101 and P-2 the stained soil and/or odors extended to the termination depths of the drilling, which ranged from 12 feet to 16 feet. Odors also extended to the termination depth of 40 feet at P-2D. Stained soil and odors were also encountered to a depth of 40 feet at MW101D, however, the termination depth of MW101D was 47.5 feet. At IA-7/IA-7A, where groundwater was encountered at a depth of approximately 10.5 feet, odors and staining were encountered from a depth of 6 feet to 10 feet, in the unsaturated zone. Odors were also encountered in the unsaturated zone at IA-10. At P-3 and MW-3, odors were noted from a depth of 6 feet to 8 feet and 7 feet to 8 feet, respectively, which is about 2 feet below the depth at which groundwater was encountered at P-3 and 3 feet below the depth at which groundwater was encountered at MW-3. At IA-5, which was terminated at a depth of 2.5 feet due to refusal, the soil was partially blue in color from a depth of 1.5 to 2.5 feet. At MW104D and PB201, fine sand from a depth of about 10.5 feet to 21.5 feet was gray with black discoloration. The black discoloration did not appear to be staining. Instead, the discoloration appeared to be due to natural organics in the sand.

Coal tar was encountered at IA-7/IA-7A, HA1, HA6, HA7 and HA8, where IA-7/IA-7A were located adjacent to the east side of Building No. 214 and HA1, HA6, HA7 and HA8 were located in the coal storage area south of Building No. 214. At IA-7/IA-7A the coal tar was encountered over the depth interval of approximately 9 to 12 feet BG which approximately corresponds to the depth interval of the capillary fringe. At HA1 the coal tar was encountered near surface, over a depth interval of approximately 6 to 10 inches below grade. Coal tar was also encountered near surface at HA6, HA7 and HA8 over the depth interval of approximately 0.75 to 1.25 feet BG. As previously stated in Section 4.2, limited excavation of coal tar and coal tar impacted soil was conducted by P&U on September 22

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1999. Figure 5 of Appendix A shows the approximate locations of the excavations. The purpose of the excavations was to remove near-surface coal tar that could come in contact with P&U personnel during coal storage activities planned for the upcoming winter. The excavations were shallow with a maximum depth of approximately 2 feet. An estimated volume of 40 cubic yards of material was removed. The excavations were subsequently backfilled with clean fill. No soil samples were collected from the excavations for laboratory analysis.

5.2 Physical Properties

5.2.1 Porosity

The calculated porosity values for the soil samples collected from P-2D and MW101D are presented below:

Sample ID	Sample Depth	Soil Type	Porosity (n)
P-2D S16	36 -37.5 feet BG	F. to Med. Sand	0.50
MW101D S3	13.5 - 15 feet BG	Clayey Silt	0.36
MW101D S16	46 - 47.5 feet BG	F. to Med. Sand	0.42

The calculated porosity values for P-2D S16 and MW101D S16 represent upper end values when compared to published porosity values for sand material which range from 0.25 to 0.50 (Freeze and Cherry, 1979). Additional evaluation of site specific porosity values will be conducted for soil samples collected during future remedial investigation activities. A copy the porosity calculations with lab data sheets is presented in Appendix C.

5.2.2 Hydraulic Conductivity

The calculated hydraulic conductivity values for the slug tests conducted at MW-1, MW-2 and P-2 are presented below:

Sample ID	Screen Depth	Soil Type	Hydraulic Conductivity
MW-1	7 - 12 feet BG	F. to Coarse Sand (Fill/Native)	0.008 cm/s
MW-2	3 - 8 feet BG	F. to Med. Sand (Fill)	0.03 cm/s
P-2	8 -13 feet BG	F. to Med. Sand (Fill) and Peat	0.0005 cm/s

Notes:

(1) cm/s = centimeters per second

The calculated hydraulic conductivity's for MW-1 and MW-2 appear to be consistent with the type of soil material located over the length of the screened intervals. The calculated hydraulic conductivity for P-2 appears to be slightly lower than expected for the types of soil material that are located over the screened interval. The lower than expected hydraulic conductivity at P-2 may be related to the lower permeability of the peat material.

A hydraulic conductivity value could not be calculated for the slug test conducted at MW104D because the displacement of water within the well casing was minimal when the slug was introduced to the well.

Copies of output data sheets showing graphs of displacement versus time, as well as input parameters are presented in Appendix D.

5.3 Groundwater Conditions

During soil probing and well installation activities groundwater was encountered at depths ranging from approximately 3 to 14 feet BG.

Figure 10 of Appendix A shows the groundwater elevation contours for groundwater levels gauged in site monitoring wells on February 25, 1999. Figure 11 of Appendix A shows the groundwater elevation contours for groundwater levels gauged in site monitoring wells on June 22, 1999. Table 1 of Appendix C lists groundwater elevation data for February 8 and 25, 1999, as well as June 22, 1999.

Where comparative data is available, groundwater elevations gauged on June 22, 1999 appear to be approximately 0.4 to 0.5 feet lower than groundwater elevations gauged on February 25, 1999. The exception to this observation was at P-1, where the groundwater level was lower by only 0.06 feet compared with February 25, 1999.

For the northern portion of the site, the principal former MGP operations area, groundwater flow appears to be to the southeast with a calculated horizontal hydraulic gradient of 0.004 feet per foot. The interpreted direction of flow and horizontal gradient were consistent for both the February and June, 1999 groundwater gauging events.

For the central and southern portions of the site, where MGP operations appear to have been primarily associated with coke and coal storage, groundwater flow appears to be generally to the east with a calculated horizontal hydraulic gradient of 0.005 feet per foot. The interpreted direction of flow and horizontal gradient were consistent for both the February and June, 1999 groundwater gauging events.

The direction of groundwater flow throughout the site appears to be generally consistent with site topography.

Vertical hydraulic gradients were calculated for the following well pairs, P-2/P-2D, MW101/MW101D, MW104/MW104D and MW105/MW105D. For the well pairs located west of Pitcher Street, P-2/P-2D, MW101/MW101D and MW105/MW105D, the calculated vertical gradients were downward and ranged from 0.02 to 0.04 feet per foot; while for the well pair located east of Pitcher Street, MW104/MW104D the calculated vertical gradient was upward at 0.006 feet per foot.

Based on porosity, as well as hydraulic conductivity data for MW-1 and MW-2, groundwater flow velocities were calculated for the fine to coarse sand, both fill and native, at the site using the following formula:

$$v = (K \times I)/n$$

where,

v = groundwater flow velocity (feet per day)
K = hydraulic conductivity (feet per day)
n = effective porosity
I = hydraulic gradient

Using this formula the groundwater flow velocity for the fine to medium sand material of the aquifer matrix appears to be on the order of 0.2 to 0.8 feet per day. A copy of the calculations for groundwater flow velocities are presented in Appendix D.

6. ANALYTICAL RESULTS

The following sections present the analytical results for surface soil, subsurface soil, soil vapor and groundwater samples collected during remedial investigation activities conducted at the site. As previously stated, the appropriate land use category to be used for the evaluation of analytical data under Part 201 is believed to be Commercial II.

Figures 12, 13 and 14 of Appendix A show the sampling locations where MGP parameters exceed Part 201 Commercial II Cleanup Criteria for Surface Soil, Subsurface Soil and Groundwater, respectively. For cyanide, only Part 201 exceedances for amenable and/or free cyanide are indicated on the figures. The discussion of cyanide impact for this report is being limited to impact associated with amenable cyanide and/or free cyanide because the analysis of total cyanide includes a measure of strongly bound or complexed forms of cyanide which are not readily bioavailable.

GSI criteria for cadmium, copper, lead and zinc were calculated using the Final Chronic Value formula presented in the MDEQ Training Material for Part 201 Cleanup Criteria dated September, 1998. GSI Protection for these metals for soil were calculated by multiplying the groundwater criteria by 20. For soil, where the GSI Protection Criteria is less than the Statewide Default Background Concentration, the Statewide Default Background Concentration is used for comparison.

6.1 Surface Soil - Laboratory Soil Testing Results

Laboratory testing results for 42 surface soil samples submitted for analysis are summarized on Tables 2 and 4 of Appendix E. Tables 2 and 4 also list the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection, GSI Protection, Volatilization to Indoor Air Inhalation and Direct Contact. Figure 12 of Appendix A shows the sampling locations where MGP analytical parameters for surface soil samples exceeded Part 201 Commercial II Cleanup Criteria. Laboratory analytical reports for the surface soil samples are presented in Appendices E and F.

BTEX, PNAs, cyanide and metals concentrations for surface soil samples were less than the Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air Inhalation, Ambient Air Inhalation, Direct Contact and Groundwater Contact Protection. Additionally, BTEX concentrations for surface soil samples were less than the Part 201 Commercial II Cleanup Criteria for Soil Saturation.

6.1.1 BTEX

Xylene(s) concentrations at P-3 exceeded the Part 201 Commercial II Cleanup Criterion for GSI Protection. Benzene, toluene and ethylbenzene concentrations for P-3 were less than the Part 201 Commercial II Cleanup Criteria. P-3 was advanced at the northwest corner of Lovell Street and Pitcher Street.

Benzene, ethylbenzene and xylene(s) concentrations at HA1 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection or GSI Protection. The toluene concentration for this sample was less than the Part 201 Commercial II Cleanup Criteria. HA1 was advanced approximately 90 feet south of Building No. 214 within the current coal storage area.

BTEX concentrations for other surface soil samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

6.1.2 PNAs

Naphthalene, acenaphthene and/or phenanthrene concentrations at IA-2, IA-7, IA-10, P-3, P-4, SP102, SP106 and SP112 exceeded the Part 201 Commercial II Cleanup Criteria for GSI Protection. The concentrations of remaining PNAs for these samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria. IA-2 was advanced along the east side of Building No. 300. IA-7 was advanced on the east side of Building No. 214. IA-10, P-4 and SP112 were advanced south of Lovell Street. SP102 was advanced approximately 30 feet east of Building No. 214 adjacent to the current coal storage area. SP106 was advanced approximately 50 feet north of Lovell Street.

Naphthalene, acenaphthylene and phenanthrene concentrations at HA1 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection and/or GSI Protection. The concentrations of remaining PNAs for this sample were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

PNA concentrations for other surface soil samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

6.1.3 Metals

Arsenic, copper, lead, mercury, selenium and/or zinc concentrations at IA-7, IA-10, IA-11, IA-12, MW-2, MW-4, P-1, P-3, P-4, SP102, SP104, SP105, SP106, SP110 through SP117, SP119 through SP125 and HA1 were detected at concentrations which exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection and/or GSI Protection. The concentrations of remaining metals for these samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria. IA-7, P-1 and SP102 were advanced in the vicinity of Building No. 214. MW-2, P-3, SP104, SP105 and SP106 were advanced in the yard area between Building No. 300 and Pitcher Street, south of Building No. 214. IA-10, IA-11, IA-12, MW-4, P-4, SP110 through SP117 and SP119 through SP125 were advanced south of Lovell Street. HA1 was advanced approximately 90 feet south of Building No. 214 within the current coal storage area.

Metals concentrations for other surface soil samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

6.1.4 Cyanide

Amenable cyanide concentrations at SP104 and SP116 exceeded the Part 201 Commercial II Cleanup Criterion for Drinking Water Protection and/or GSI Protection.

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However, the concentrations of free cyanide for these soil samples did not exceed Part 201 Commercial II Cleanup Criteria.

Amenable and free cyanide concentrations for other surface soil samples were either less than the MDL or Part 201 Commercial II Cleanup Criteria for cyanide.

6.2 Subsurface Soil - Laboratory Soil Testing Results

Laboratory testing results for 49 subsurface soil samples submitted for analysis are summarized on Tables 3 and 5 of Appendix E. Tables 3 and 5 also list the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection, GSI Protection, Volatilization to Indoor Air Inhalation and Direct Contact. Figure 13 of Appendix A shows the sampling locations where MGP analytical parameters for subsurface soil samples exceeded Part 201 Commercial II Cleanup Criteria. Laboratory analytical reports for the subsurface soil samples are presented in Appendices G and H.

BTEX, PNAs, cyanide and metals concentrations for subsurface soil samples were less than the Part 201 Commercial II Cleanup Criteria for Ambient Air Inhalation and Groundwater Contact Protection.

6.2.1 BTEX

Benzene, toluene, ethylbenzene and/or xylene(s) concentrations at IA-1, IA-5, SP101, SP121 and HA1 exceeded the Part 201 Commercial II Cleanup Criterion for Drinking Water Protection and/or GSI Protection. IA-1 and IA-5 were located on the east side of Building No. 300. SP101 was located on the east side of Building No. 214. SP121 was located on the portion of the site south of Lovell Street.

Benzene, ethylbenzene, toluene and xylene(s) concentrations at IA-7A exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection, GSI Protection, Indoor Air Inhalation, Direct Contact and/or Soil Saturation. As previously stated, IA-7A was located adjacent to IA-7 on the east side of Building No. 214.

BTEX concentrations for other subsurface soil samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

6.2.2 PNAs

Naphthalene and phenanthrene concentrations for the subsurface soil sample collected from IA-1 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI Protection. The concentrations of remaining PNAs for this sample were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

Naphthalene and/or phenanthrene concentrations for subsurface soil samples collected from IA-5, IA-11, MW-2, SP101, SP104, SP109, SP117, SP121, SP122, SP123 and SP125 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI Protection. The concentrations of remaining PNAs for these samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

Naphthalene, 2-methylnaphthalene, acenaphthylene, acenaphthene, phenanthrene, anthracene, pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, ideno(1,2,3-cd)pyrene and/or dibenzo(a,h)anthracene concentrations at IA-7A and HA1 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection, GSI Protection and/or Direct Contact. The concentrations of remaining PNAs for these samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

PNA concentrations for other subsurface soil samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

6.2.3 Metals

Arsenic, barium, chromium, copper, lead, mercury, selenium and/or zinc concentrations at IA-4, IA-5, IA-9, IA-11, MW-2, IA-7A, SP101, SP102, SP109, SP113, SP114, SP115, SP117, SP118, SP120 through SP125, HA1, X1 and X3 through X6 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection and/or GSI Protection. The concentrations of remaining metals for these samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

Metals concentrations for other subsurface soil samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

6.2.4 Cyanide

Amenable and/or free cyanide concentrations at IA-5, IA-7A, SP117, SP118, SP121, SP122 and SP125 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection and/or GSI Protection.

Amenable and free cyanide concentrations for other subsurface soil samples were either less than the MDL or Part 201 Commercial II Cleanup Criteria for cyanide.

6.2.5 Total Organic Carbon

Analytical results for the evaluation of TOC are presented on Table 6 of Appendix C. With the exception of the soil samples collected from MW101D, soil samples submitted for TOC analysis were representative of non-impacted materials based on field observations.

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TOC results for soil samples consisting of sand, both fill and native, ranged from 670 to 66,000 ppm. TOC results for soil samples consisting of peat ranged from 87,100 to 249,000 ppm. TOC results for soil samples consisting of silt were 930 and 4,100 ppm.

6.3 Laboratory Soil Vapor Testing Results

Analytical results for 5 soil vapor samples submitted for analysis are summarized on Table 7 of Appendix E. Table 7 also lists the calculated Soil Gas Concentration Protective of Unacceptable Indoor Air Inhalation Health Risks criteria. Laboratory analytical reports for the soil vapor samples are also presented in Appendix H.

As previously stated, the soil gas criteria were calculated using the method described in Attachment C of the MDEQ document "Part 201 Generic Groundwater and Soil Volatilization to Indoor Air Inhalation Criteria: Technical Support Document," dated August 31, 1998. The calculation of the soil gas criteria assumed site use was consistent with either commercial or industrial activities. A copy of Attachment C along with the input criteria used for the calculations are also presented in Appendix H.

BTEX concentrations for each soil vapor sample were less than calculated Soil Gas Concentration Protective of Unacceptable Indoor Air Inhalation Health Risks.

6.4 Laboratory Groundwater Testing Results

Laboratory testing results for 43 groundwater samples submitted for analysis are summarized on Table 8 of Appendix E. Table 8 also lists the Part 201 Commercial II Cleanup Criteria for Drinking Water, GSI, Volatilization to Indoor Air Inhalation and Groundwater Contact. Figure 14 of Appendix A shows the lateral distribution of MGP analytical parameters for groundwater samples collected from soil probes and monitoring wells. Laboratory analytical reports for the groundwater samples collected in January, February and March, 1999 are presented in Appendices E and F.

BTEX, PNAs, cyanide and metals concentrations for groundwater samples were less than the Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air Inhalation, Groundwater Contact, Flammability/Explosivity, Water Solubility and Acute Inhalation.

6.4.1 BTEX

Benzene, toluene, ethylbenzene and/or xylene(s) concentrations at IA-1, IA-2, IA-6, IA-7, IA-8, SP104, SP106, MW-1, P-2, P-3, MW101 and MW101D exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI.

BTEX concentrations for other groundwater samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

6.4.2 PNAs

Naphthalene, 2-methylnaphthalene, acenaphthylene, acenaphthene, and/or phenanthrene concentrations at IA-1, IA-6, IA-7, SP106, P-2, P-3, MW101 and MW101D exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI. The concentrations of remaining PNA constituents for these samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

Naphthalene concentrations at IA-2, SP107, MW-1 and MW104D exceeded the Part 201 Commercial II Cleanup Criterion for GSI. The concentrations of remaining PNA constituents for these samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

PNA concentrations for other groundwater samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

6.4.3 Metals

The barium concentrations at IA-1, IA-11, SP107, SP108, MW101, MW101D, MW104 and MW104D exceeded the Part 201 Commercial II Cleanup Criterion for GSI. Other metals concentrations for these groundwater samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

The selenium concentration at P-1 and P-3 exceeded the Part 201 Commercial II Cleanup Criterion for GSI. Other metals concentrations for this groundwater sample were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

Metals concentrations for other groundwater samples were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

6.4.4 Cyanide

Amenable cyanide concentrations at IA-4, IA-6, SP105, SP106 and P-2 exceeded the Part 201 Commercial II Cleanup Criteria for GSI. Free cyanide concentrations at SP105, SP106 and P-2 were less than the MDL. Free cyanide was not evaluated at IA-4 and IA-6.

Amenable and free cyanide concentrations at SP103 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI.

Amenable and free cyanide concentrations for other groundwater samples were either less than the MDL or Part 201 Commercial II Cleanup Criteria.

7. PATHWAY EVALUATION

The discussion of the pathway evaluation presented below does not include MGP related impact to the surface and subsurface soil identified at HA1 since this impact was remediated during excavation activities conducted by P&U in September, 1999.

7.1 Area South of Lovell Street

7.1.1 Surface and Subsurface Soil

1. No coal tar has been encountered in surface and subsurface soil in the area south of Lovell Street.

2. BTEX, PNA, metal and cyanide concentrations for surface and subsurface soil samples collected from the portion of the site south of Lovell Street did not exceed Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, Groundwater Contact Protection, Direct Contact, Ambient Air Inhalation and Soil Saturation. Therefore, the data suggests the indoor inhalation, groundwater contact, direct contact and ambient air inhalation exposure pathways are not an issue.

3. For surface soil, BTEX impact at concentrations exceeding Part 201 Commercial II Cleanup Criteria was not identified at sampling locations south of Lovell Street.

4. For subsurface soil, BTEX impact consisting only of benzene was identified from a depth of 1.5 to 2.5 feet at SP121 where the concentration exceeded Part 201 Commercial II Cleanup Criterion for Drinking Water Protection. However, benzene concentrations for groundwater samples collected from monitoring wells in this area (MW-3, P-4 and MW-4) have been less than the Part 201 Commercial II Cleanup Criterion for Drinking Water for two consecutive sampling events. These results suggest the drinking water exposure pathway is not an issue for the benzene impact to subsurface soil south of Lovell Street. The source of the benzene impact in this area is believed to be associated with former MGP production components, storage structures or transfer lines.

5. For surface and subsurface soil, PNA impact consisting of naphthalene, phenanthrene and/or acenaphthene was identified at the following sampling locations south of Lovell Street: IA-10, IA-11, P-4, SP112, SP117, SP121, SP122, SP123 and SP125. The PNA concentrations exceeded Part 201 Commercial II Cleanup Criteria for GSI Protection. However, concentrations of naphthalene, phenanthrene and acenaphthene for groundwater samples collected from monitoring wells in this area, MW-3, P-4 and MW-4, have been less than the Part 201 Commercial II Cleanup Criteria for GSI for two consecutive sampling events. These results suggest the GSI exposure pathway is not an issue for the PNA impact to surface and subsurface soil south of Lovell Street. The source of PNA impact in this area is believed to be associated with former MGP production components, storage structures or transfer lines.

6. For surface and subsurface soil, metals impact consisting of arsenic, barium, chromium, copper, lead, mercury, selenium and/or zinc was identified at the following sampling locations south of Lovell Street: IA-9 through IA-12, MW-4, P-4 and SP110 through SP125, X1 and X3 through X6. The metals concentrations exceeded Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI Protection.

   Concentrations of arsenic, chromium, copper, lead, mercury, selenium and zinc for groundwater samples collected from monitoring wells in this area, MW-3, P-4 and MW-4, have been less than the MDLs or Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI for two consecutive sampling events. However, barium was detected at a concentration exceeding the Part 201 Commercial II Cleanup Criterion for GSI for a groundwater sample collected from a temporary well installed at IA-11. Discounting the result at IA-11 as being potentially anomalous, these results suggest both the Drinking Water and GSI exposure pathways may not be an issue for the metal impact to surface and subsurface soil south of Lovell Street. The source of metal impact in this area is believed to be associated with former MGP production components, storage structures or transfer lines.

7. For surface and subsurface soil, amenable cyanide at a concentration exceeding Part 201 Commercial II Cleanup Criterion for Drinking Water Protection and/or GSI Protection was identified at the following locations south of Lovell Street: SP116, SP117, SP118, SP121, SP122 and SP125. The concentration of free cyanide for these soil samples were less than the MDL. The concentrations of amenable cyanide and/or free cyanide for groundwater samples collected from monitoring wells in this area, MW-3, P-4 and MW-4, have been less than the MDL for two consecutive sampling events. These results suggest both the Drinking Water and GSI exposure pathways are not an issue for the cyanide impact to surface and subsurface soil south of Lovell Street. The source of cyanide impact in this area is believed to be associated with former MGP production components, storage structures or transfer lines.

7.1.2 Groundwater

1. Groundwater flow south of Lovell Street appears to be to the east. This interpretation is based on two groundwater level gauging events conducted in February and June, 1999, respectively.

2. BTEX, PNA, metals and cyanide concentrations for groundwater samples collected at locations south of Lovell Street did not exceed Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, Groundwater Contact, Flammability/Explosivity, Acute Inhalation and Water Solubility. Therefore, the data suggests the indoor inhalation and groundwater contact exposure pathways are not an issue at this time.

3. BTEX, PNA and cyanide impact to groundwater at concentrations exceeding Part 201 Commercial II Cleanup Criteria was not identified at sampling locations south of Lovell Street.

4. Dissolved barium in groundwater at a concentration exceeding Part 201 Commercial II Cleanup Criteria for GSI Protection was identified at IA-11. This groundwater sample was collected from a temporary well during soil probe activities conducted in January, 1999. Comparatively, dissolved barium, as well as other dissolved metal constituents, were not detected at concentrations exceeding Part 201 Commercial II Cleanup Criteria for groundwater samples collected from monitoring wells located in this area (MW-3, P-4 and MW-4) for two consecutive sampling events. Therefore, the indicated dissolved barium impact at IA-11 may either be anomalous or representative of background conditions within the groundwater bearing unit. The background concentration of barium in groundwater within the vicinity of the site will be evaluated during future remedial investigation activities.

7.2 Area North of Lovell Street

7.2.1 Surface Soil

1. Coal tar was encountered at HA6, HA7 and HA8 which were advanced within the coal storage area south Building No. 214 over depth intervals ranging from 0.5 to 1.25 feet BG. This area was not part of the excavation activities performed by P&U in the vicinity of HA1. The lateral extent of the near surface coal tar impact appears to be limited to the coal storage area since coal tar was not encountered at HA2, HA4, HA5, HA9, HA11, HA12 and HA14. Vertically, the coal tar appears to be limited to the upper 2 feet. However, additional delineation is planned. The source of the coal tar appears to be associated with releases from former MGP production components, storage structures or transfer lines.

2. BTEX, PNA, metal and cyanide concentrations for surface soil samples collected from the portion of the site north of Lovell Street did not exceed Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, Direct Contact, Groundwater Contact Protection and Ambient Air Inhalation. Therefore, the data suggests the indoor inhalation, direct contact, groundwater contact and ambient air inhalation exposure pathways are not an issue with respect to surface soil. However, future remedial investigation activities conducted in this area will continue to evaluate data with respect to Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, Direct Contact, Groundwater Contact Protection and Ambient Air Inhalation.

3. BTEX impact to surface soil consisting of xylene(s) was identified at P-3 where the concentration exceeded Part 201 Commercial II Cleanup Criteria for GSI Protection. Xylene(s) impact to surface soil at P-3 appears to be laterally delineated based on analytical results for surface samples collected from MW-2, SP104, SP105 and SP106 which indicated xylene(s) concentrations either less than the MDLs or Part 201 Commercial II Cleanup Criteria. The source of xylene(s) impact at P-3 is believed to be associated with former MGP production components, storage structures or transfer lines.

4. PNA impact to surface soil consisting of naphthalene and/or phenanthrene was identified at the following sampling locations north of Lovell Street: IA-2, IA-7, P-3, SP102 and SP106. The PNA impact identified at these locations exceeds Part 201 Commercial II Cleanup Criteria for GSI Protection. The concentrations of other PNA constituents at these sampling locations were either less than the MDL or Part 201 Commercial II Cleanup Criteria. Surface PNA impact at IA-2 is partially delineated based on PNA concentrations for soil samples collected from IA-1 and IA-3 which were less than Part 201 Commercial II Cleanup Criteria. Surface PNA impact at IA-7 is approximately delineated based on PNA concentrations for soil samples collected from IA-6, P-1,P-2 and SP101 which were less than Part 201 Commercial II Cleanup Criteria. Surface PNA impact at P-3 and SP106 appears to be partially delineated based on analytical results for surface samples collected from MW-2, SP104 and SP105 which indicated PNA concentrations either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

   Surface PNA impact identified at SP102 may be associated with the coal that is stored in the area for use at Building No. 214. Surface PNA impact identified at IA-2, P-3 and SP106 may be associated the storage of coke or coal for former MGP production operations. Surface PNA impact identified at IA-7 may be associated with releases from former MGP production components, storage structures or transfer lines.

5. Metals impact to surface soil consisting of copper, lead, mercury, selenium and/or zinc was identified at the following sampling locations north of Lovell Street: IA-7, MW-2, P-1, P-3, SP102, SP104, SP105 and SP106. The metals concentrations exceeded Part 201 Commercial II Cleanup Criteria for Drinking Water Protection and/or GSI Protection.

   However, since chromium, copper, lead, mercury and zinc concentrations for groundwater samples collected from P-1, P-2, P-2D, P-3, MW-1, MW-2, MW101, and MW101D, as well as downgradient wells MW104 and MW104D, have been less than the MDLs or Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI for the groundwater sampling events conducted to date then the Drinking Water and GSI exposure pathways may not be an issue for these metals north of Lovell Street.

   Selenium has been detected at P-1 and P-3 at concentrations slightly exceeding the Part 201 Commercial II Cleanup Criteria for GSI. Selenium was not detected in the groundwater samples collected from down gradient monitoring well MW104 and MW104D, as well as soil probes SP107 and SP109.

   The source of metal impact to surface soil in this area is believed to be associated with former MGP production components, storage structures or transfer lines..

6. Amenable cyanide impact to surface soil for the area north of Lovell Street was identified only at SP104 at a concentration exceeding the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection and GSI Protection. The free cyanide concentration for this sample was less than the method detection limit.

However, the amenable cyanide concentration in the groundwater sample from SP104, as well as in groundwater samples from downgradient sampling locations, MW-2, P-3 and SP109 has been less than the MDL. Therefore, the Drinking Water and GSI exposure pathways may not be an issue for this location north of Lovell Street.

The source of cyanide impact to surface soil in this area is believed to be associated with former MGP production components, storage structures or transfer lines.

7.2.2 Subsurface Soil

1. Coal tar was encountered at IA-7/IA-7A over the depth interval of approximately 9 to 12 feet. The lateral extent of the coal tar has been approximately delineated in the immediate vicinity of IA-7/IA-7A since coal tar was not encountered at P-1, IA-6 and SP101, which are located north, south and east, respectively, of IA-7/IA-7A. The source of the coal tar appears to be associated with release(s) from former MGP production components, storage structures or transfer lines. The tar well for the former MGP operations had been located approximately 100 feet to the south-southwest of IA-7/IA-7A.

2. BTEX, PNA, metal and cyanide concentrations for subsurface soil samples collected from the portion of the site north of Lovell Street did not exceed Part 201 Commercial II Cleanup Criteria for Groundwater Contact Protection and Ambient Air Inhalation. Therefore, the data suggests the groundwater contact and ambient air inhalation exposure pathways are not an issue at this time. However, future remedial investigation activities conducted at the site will continue to evaluate data with respect to Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, Groundwater Contact Protection and Ambient Air Inhalation.

3. BTEX impact to subsurface soil was identified at the following sampling locations north of Lovell Street: IA-1, IA-5, IA-7A and SP101.

   For IA-1, IA-5 and SP101, the concentrations of benzene, toluene, ethylbenzene and/or xylene(s) exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection and/or GSI Protection. BTEX impact at IA-1 and SP101 appeared to be limited to the capillary fringe, however, BTEX impact at IA-5 occurs within the upper 2.5 feet. The extent of impact at IA-1 and IA-5 appears to be delineated based on BTEX concentrations for soil samples collected from IA-2, IA-8, SP103 and SP102 which were less than Part 201 Commercial II Cleanup Criteria. The source of BTEX impact to subsurface soil at IA-1 may have been associated with release(s) from the gas holders; while the source of the releases at IA-5 and SP101 is believed to be associated with releases from former MGP production components, storage structures or transfer lines.

For IA-7A, the concentrations of benzene, toluene, ethylbenzene and xylene(s) exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection, GSI Protection, Indoor Air Inhalation, Direct Contact and/or Soil Saturation. Subsurface BTEX impact at IA-7A appears to be limited to the capillary fringe. BTEX impact at IA-7A is approximately delineated based on BTEX concentrations for soil samples collected from IA-6, P-1 and P-2 which were less than Part 201 Commercial II Cleanup Criteria. The BTEX impact at IA-7A corresponds with the coal tar impact. The source of BTEX impact at IA-7A may be associated with releases from former MGP production components, storage structures or transfer lines

4. PNA impact to subsurface soil was identified at the following sampling locations north of Lovell Street: IA-1, IA-5, IA-7A, MW-2, SP101, SP104 and SP109.

   For IA-1, IA-5, MW-2, SP101, SP104 and SP109, the concentrations of naphthalene and/or phenanthrene exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection and/or GSI Protection. The concentrations of other PNA constituents at these locations were either less than the MDL or Part 201 Commercial II Cleanup Criteria. The PNA impact at IA-1, MW-2 and SP101 appears to be limited to the capillary fringe. The PNA impact at IA-5 and SP104 occurs within the upper 5 feet of the vadose zone. The extent of subsurface impact at IA-1 and IA-5 appears to be delineated based on PNA concentrations for subsurface soil samples collected from IA-2, IA-8, SP103 and SP102 which were less than the Part 201 Commercial II Cleanup Criteria. The extent of subsurface impact at MW-2 and SP104 appears to be delineated based on PNA concentrations for subsurface soil samples collected from MW-1, SP105 and SP106 which were less than the Part 201 Commercial II Cleanup Criteria. The source of subsurface PNA impact at IA-1, IA-5 and SP101 may have been associated with releases from former MGP production components, storage structures or transfer lines. The source of PNA impact at MW-2 and SP104 may be coke/coal storage associated with former MGP operations.

   For IA-7A, the concentrations of several PNA constituents exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection, GSI Protection and/or Direct Contact. PNA impact at IA-7A appears to be limited to the capillary fringe. The PNA impact at IA-7A is approximately delineated based on PNA concentrations for soil samples collected from IA-6, P-1 and P-2 which were less than Part 201 Commercial II Cleanup Criteria The PNA impact at IA-7A corresponds with the coal tar impact. The source of subsurface PNA impact at IA-7A may be associated with releases from former MGP production components, storage structures or transfer lines.

5. Metals impact to subsurface soil consisting of arsenic, copper, lead, mercury, selenium and/or zinc was identified at the following sampling locations north of Lovell Street, IA-4, IA-5, MW-2, IA-7A, SP101, SP102 and SP109. The concentrations of these metals at these locations exceeded Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI Protection. The concentrations for other metals were either less than the MDLs or Part 201 Commercial II Cleanup Criteria.

As previously stated for surface soil, the Drinking Water and GSI exposure pathways may not be an issue for arsenic, copper, lead, mercury, and zinc based on analytical results for groundwater samples collected from site monitoring wells which were either less than the MDLs or Part 201 Commercial II Criteria. However, selenium has been detected in site monitoring wells at concentrations exceeding the Part 201 Commercial II Cleanup Criterion for GSI.

The source of metals impact to subsurface soil in this area may be associated with releases from former MGP production components, storage structures or transfer lines.

6. Amenable and/or free cyanide impact to subsurface soil was identified at the following sampling locations north of Lovell Street, IA-5 and IA-7A. At IA-5, amenable cyanide impact exceeds Part 201 Commercial II Cleanup Criteria for Drinking Water Protection and GSI Protection. Free cyanide at IA-5 was not evaluated. At IA-7A, amenable and free cyanide impact exceeds Part 201 Commercial II Cleanup Criteria for GSI Protection. The extent of cyanide impact at both locations appears to be limited based on analytical results for soil samples collected from P-1, IA-1, IA-8, SP101, SP102 and P-2 where concentrations of amenable and/or free cyanide were either less than the MDL or Part 201 Commercial II Cleanup Criteria. The source of the cyanide impact to subsurface soil in this area may be associated with releases from former MGP production components, specifically former gas purification components.

7. The Indoor Inhalation pathway at Building No. 214 does not appear to be an issue, though benzene and xylene(s) concentrations for a soil sample collected from IA-7A at a depth of 11 to 12 feet BG exceeded Part 201 Commercial II Volatilization to Indoor Inhalation Cleanup Criteria. This conclusion is based on analytical results for soil vapor samples collected at locations adjacent to Building No. 214 which indicated concentrations of benzene and xylene(s), as well as toluene and ethylbenzene, being significantly less than the calculated Soil Gas Concentration Protective of Unacceptable Indoor Air Inhalation Health Risks.

7.2.3 Groundwater

1. Groundwater flow for the northern portion of the site, where former MGP production components, storage structures and transfer lines were principally located, appears to be to the southeast. This interpretation is based on two groundwater level gauging events conducted in February and June, 1999, respectively. Groundwater flow appears to be consistent with site topography.

2. BTEX, PNA, metals and cyanide concentrations for groundwater samples collected at locations north of Lovell Street did not exceed Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, Groundwater Contact, Flammability/Explosivity, Acute Inhalation and Water Solubility. Therefore, the data suggests the indoor inhalation, groundwater contact and acute inhalation exposure pathways are not an issue. However, future remedial investigation activities conducted at the site will continue to evaluate data with respect to Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, Groundwater Contact and Acute Inhalation.

3. BTEX and/or PNA impact to groundwater was identified at the following sampling locations north of Lovell Street: IA-1, IA-2, IA-6, IA-7, IA-8, SP104, SP106, SP107, MW-1, P-2, P-3, MW101, MW101D and MW104D. The BTEX and/or PNA impact identified at these locations exceeds Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI.

   BTEX and PNA impact to groundwater for the portion of the site north of Lovell Street appears to be delineated to the north and south based on BTEX and PNA concentrations for groundwater samples collected from MW-3, MW102, MW103, MW105 and MW105D which were either less than the MDLs or Part 201 Commercial II Cleanup Criteria. However, the extent of BTEX and PNA impact to the east does not appear to be delineated based on detections of BTEX and/or PNAs at SP107, MW104D and P-3. At SP107 and MW104D, only naphthalene was detected at concentrations which exceed the Part 201 Commercial II Cleanup Criteria for GSI; while at P-3, benzene, ethylbenzene, xylene(s), naphthalene and phenanthrene were detected at concentrations which exceed the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection and/or GSI. The vertical extent of BTEX and PNA impact at well pairs MW101/MW101D and MW104/MW104D was not delineated based on analytical results for the groundwater sample collected from MW101D and MW104D where ethylbenzene, xylene(s), naphthalene, acenaphthylene and/or acenaphthene exceed the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection and/or GSI. It should be noted that the exceedance identified at MW104D was only for naphthalene which slightly exceeded the Part 201 Commercial II Cleanup Criterion of 13 ppb, therefore the detection at MW104D may be anomalous. The vertical extent of BTEX and PNA impact at well pair P-2/P-2D was delineated where BTEX and PNA concentrations for the groundwater sample collected from P-2D were either less than the MDLs or less than the Part 201 Commercial II Cleanup Criteria.

   Figures 16, 17 and 18 present isoconcentration contours for benzene, xylene(s) and naphthalene concentrations in groundwater, respectively. These diagrams were developed using analytical data from soil probes, as well as analytical results from site monitoring wells sampled in June, 1999. Therefore, the diagrams are not time specific. Each diagram indicates that groundwater impact appears to be migrating south-southeast, which is consistent with the interpreted direction of groundwater flow. The isoconcentration diagrams also suggest that the storm sewers located beneath Pitcher and Lovell Streets may be a potential migration pathway for groundwater impact at the water table. Future remedial activities will evaluate if the storm sewers are acting as a preferential pathway.

   Based on the prevalence of dissolved naphthalene in groundwater, which is a constituent of MGP residues, the source of the groundwater impact identified in the northern portion of the site appears to be associated with releases from MGP production components, storage structures, or transfer lines. Potential contributions from off-site sources located west of the site are not currently evident based on a review of the report "Environmental Site Assessment/ Former MGP Site/Kalamazoo, Michigan," dated May, 1997 prepared by ECT. This report did not identify potential source areas to the west of the site based on ECT's review of state and federal data bases.

4. Dissolved barium and/or selenium impact to groundwater was identified at the following sampling locations north of Lovell Street, IA-1, SP107, SP108, P-1, P-3, MW101, MW101D, MW104, MW104D. The dissolved barium and selenium impact exceeds Part 201 Commercial II Cleanup Criteria for GSI only. The source of the metals impact may be the former MGP operations, however the indicated concentrations of barium and selenium may also be representative of background conditions within the groundwater bearing unit. The occurrence of barium and selenium will be further evaluated as part of proposed additional remedial investigation activities.

5. Amenable or free cyanide impact to groundwater was identified at the following locations north of Lovell Street, IA-4, IA-6, SP103, SP105, SP106 and P-2. The amenable and/or free cyanide impact exceeds Part 201 Commercial II Cleanup Criteria for GSI only. However, amenable or free cyanide impact to groundwater at concentrations exceeding Part 201 Commercial II Cleanup Criteria has not been identified in groundwater samples collected from downgradient, off-site locations, SP107, SP108, SP109, MW104 and MW104D. Therefore, the GSI exposure pathway may not be an issue for area north of Lovell Street.

8. CONCLUSIONS

8.1 Surface and Subsurface Soil

1. No coal tar has been encountered in surface and subsurface soil in the area south of Lovell Street.

2. Coal tar was encountered at two locations in the area of the site north of Lovell Street. The first location was within the current coal storage area south of Building No. 214 where the coal tar was encountered over depth intervals ranging from 0.5 to 1.25 feet BG. This area was not part of the excavation activities performed by P&U in the vicinity of HA1. The lateral extent of the coal tar impact at this location appears to be limited to the coal storage area. The second location where coal tar was encountered was on the east side of Building No. 214 where the coal tar extended over the depth interval of approximately 9 to 12 feet. The lateral extent of the coal tar impact in this area appears to be limited to the east side of Building No. 214. The source of the coal tar at both locations appears to be associated with releases from former MGP production components, storage structures or transfer lines. The tar well for the former MGP operations had been located in the area that is now the south side of Building No. 214.

3. BTEX, PNA, metal and cyanide concentrations for surface and subsurface soil samples collected from the portion of the site south of Lovell Street did not exceed Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, Groundwater Contact Protection, Direct Contact, Ambient Air Inhalation and Soil Saturation.

4. BTEX, PNA, metal and cyanide concentrations for surface and subsurface soil samples collected from the portion of the site north of Lovell Street did not exceed Part 201 Commercial II Cleanup Criteria for Groundwater Contact Protection and Ambient Air Inhalation.

5. BTEX, PNAs, metals and/or cyanide were detected in surface and subsurface soil at concentrations exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water Protection and GSI Protection at various sampling locations north and south of Lovell Street. However, the Drinking Water and GSI exposure pathways do not appear to be an issue for impact to surface and subsurface soil south of Lovell Street. This conclusion is based on concentrations of BTEX, PNAs, metals and amenable cyanide for groundwater samples collected from monitoring wells located south of Lovell Street, which have been less than the MDLs or Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI for two consecutive sampling events. Similarly, the Drinking Water and GSI exposure pathways may not be an issue for arsenic, copper, lead, mercury, and zinc impact to surface and subsurface soil north of Lovell Street. This conclusion is based on analytical results for groundwater samples collected from monitoring wells located north of Lovell Street, which have been either less than the MDLs or Part 201 Commercial II Criteria for two consecutive sampling events for arsenic, copper, lead, mercury, and zinc.

6. On the east side of Building No. 214, at IA-7A, benzene and xylene(s) concentrations also exceeded Part 201 Commercial II Cleanup Criteria for Indoor Air Inhalation, Direct Contact and/or Soil Saturation. However, the Indoor Inhalation Pathway at Building No. 214 does not appear to be an issue based on analytical results for soil vapor samples collected at locations adjacent to Building No. 214. The soil vapor results indicated concentrations of benzene and xylene(s), as well as toluene and ethylbenzene, were significantly less than the calculated Soil Gas Concentration Protective of Unacceptable Indoor Air Inhalation Health Risks.

8.2 Groundwater

1. BTEX, PNA and cyanide impact to groundwater at concentrations exceeding Part 201 Commercial II Cleanup Criteria have not been identified at sampling locations south of Lovell Street.

2. Dissolved barium impact to groundwater at a concentration exceeding Part 201 Commercial II Cleanup Criteria for GSI Protection was identified for a groundwater sample collected from a temporary well set at soil probe IA-11 in January, 1999. Comparatively, dissolved barium, as well as other dissolved metal constituents, were not detected at concentrations exceeding Part 201 Commercial II Cleanup Criteria for groundwater samples collected from monitoring wells located in this area (MW-3, P-4 and MW-4) for two consecutive sampling events.

3. Groundwater flow for the northern portion of the site, where former MGP production components, storage structures and transfer lines were principally located appears to be to the southeast. This interpretation is based on two groundwater level gauging events conducted in February and June, 1999, respectively. Groundwater flow appears to be consistent with site topography.

4. BTEX, PNA, metals and cyanide concentrations for groundwater samples collected at locations north of Lovell Street did not exceed Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, Groundwater Contact, Flammability/Explosivity, Acute Inhalation and Water Solubility.

5. BTEX and/or PNA impact to groundwater was identified at sampling locations north of Lovell Street at concentrations exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI. BTEX and PNA impact to groundwater in this area appears to be delineated to the north and south, however, the extent of impact does not appear to be delineated to the east-southeast. Additionally, the vertical extent of BTEX and/or PNA impact at well pairs MW101/MW101D and MW104/MW104D does not appear to have been delineated. Groundwater impact appears to be migrating south-southeast, which is consistent with the interpreted direction of groundwater flow. The interpreted lateral extent of groundwater impact also suggests that the storm sewers located beneath Pitcher and Lovell Streets may be a potential migration pathway for groundwater impact at the water table.

6. Based on the prevalence of dissolved naphthalene in groundwater, which is a constituent of MGP residues, the source of the groundwater impact identified in the area north of Lovell Street appears to be associated with releases from former MGP production components, storage structures or transfer lines. Potential contributions from off-site sources located west of the site are not currently evident based on a review of the report "Environmental Site Assessment/ Former MGP Site/Kalamazoo, Michigan," dated May, 1997 prepared by ECT. This report did not identify potential source areas to the west of the site based on ECT's review of state and federal data bases.

7. Dissolved barium, selenium, amenable and/or free cyanide impact to groundwater was identified at several sampling locations north of Lovell Street at concentrations exceeding Part 201 Commercial II Cleanup Criteria for GSI only. Dissolved barium was detected at several sampling locations east of Pitcher Street at concentrations exceeding the Part 201 Commercial II Cleanup Criterion for GSI, therefore the GSI exposure pathway for barium will require additional evaluation. Amenable or free cyanide impact to groundwater at concentrations exceeding Part 201 Commercial II Cleanup Criteria have not been identified in groundwater samples collected from downgradient, off-site locations, therefore it has not been confirmed that the GSI exposure pathway is an issue for the area north of Lovell Street.

9. RECOMMENDATIONS

Recommendations for additional remedial investigation activities are discussed below. Figure 19 of Appendix A shows the proposed soil probe and monitoring well locations.

1. Install 1 shallow monitoring well, MW201, at a location on the east side of Pitcher Street at the intersection with Lovell Street. The monitoring well will be screened at the water table surface. The purpose of the well is to further evaluate the downgradient extent of groundwater impact east of Pitcher Street.

2. Install 2 deep monitoring wells, MW202D and P-3D. MW202D would be installed adjacent to MW101 and MW101D; while P-3D would be installed adjacent to P-3. It is anticipated that the screened interval for MW202D will be set from approximately 55 to 60 feet BG; while the screened interval for P-3D will be set from approximately 35 to 40 feet BG. The purpose of the deep monitoring wells is to further evaluate the vertical extent of groundwater impact.

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3. Conduct vertical groundwater sampling at soil boring locations coinciding with proposed monitoring wells MW201, MW202D and P-3D. Vertical groundwater sampling will also be conducted in a proposed soil boring B203 which will be located south of MW201 on the opposite side of the storm sewer line running from the intersection of Pitcher Street and Lovell Street to Portage Creek. Groundwater samples will be collected at 10 foot intervals. However, at B203 vertical groundwater sampling will be limited to the upper 20 feet. The purpose of the groundwater sampling is to further evaluate the vertical extent of groundwater impact. Additionally, groundwater sampling at B203 may assist in evaluating if the storm sewer in this area is acting as a preferential pathway. Groundwater samples from the vertical sampling will be submitted for laboratory analysis of BTEX and PNAs only.

4. Advance soil probes SP301 through SP321 within the coal storage area located immediately south of Building No. 214. Soil probes will be advanced on a grid with approximately 20 foot offsets. It is anticipated that soil probes will not exceed 10 feet in depth. The purpose of the soil probes is to further evaluate the spatial extent of coal tar impact which had been identified at HA1, HA6, HA7 and HA8.

5. Implement quarterly groundwater sampling at site monitoring wells. Groundwater samples will be evaluated in the field for pH, conductivity and dissolved oxygen (DO). Groundwater samples collected from site monitoring wells will be submitted for laboratory analysis of MGP constituents, BTEX, PNAs, 10 Michigan Metals and cyanide (amenable and free). Additionally, groundwater samples collected from site monitoring wells will also be evaluated for dissolved iron, nitrate, sulfate and bicarbonate to initiate an evaluation of potential natural attenuation of BTEX and naphthalene. Analytical data from the quarterly groundwater monitoring will also be used to evaluate background concentrations and seasonal variations of barium and selenium in groundwater.

6. Conduct an MDEQ file review of listed sites in the downtown Kalamazoo area in order to obtain additional data for background concentrations of dissolved metals in groundwater.

Field procedures for conducting soil probes, as well as the installation and construction of shallow and deep monitoring wells will be consistent with those presented in Section 4.2 of this report. Unless otherwise specified, soil and/or groundwater samples collected during the recommended additional remedial investigation activities will be submitted for laboratory analysis of MGP constituents. Analytical methods and detection limits for soil and groundwater samples will be consistent with those presented in Section 4.2 of this report.

The locations of the proposed soil probes and monitoring wells may be subject to change based on utility clearance issues.

INTERIM REPORT OF REMEDIAL INVESTIGATION

CONSUMERS ENERGY COMPANY
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- *Pavement Evaluation/Design*
- *Roof System Management*
- *Sealants/Waterproofing*
- *Structural Steel/Welding*
- *Air Quality*
- *Asbestos/Lead Based Paint*
- *Baseline Environmental Assessment*
- *Due Care Analysis*
- *Environmental Site Assessment*
- *Hydrogeologic Evaluation*
- *Industrial Hygiene*
- *Landfill Services*
- *Pollution Prevention*
- *Regulatory Compliance*
- *Remediation*
- *Risk Assessment*
- *Storm Water Discharge*
- *Underground Storage Tanks*

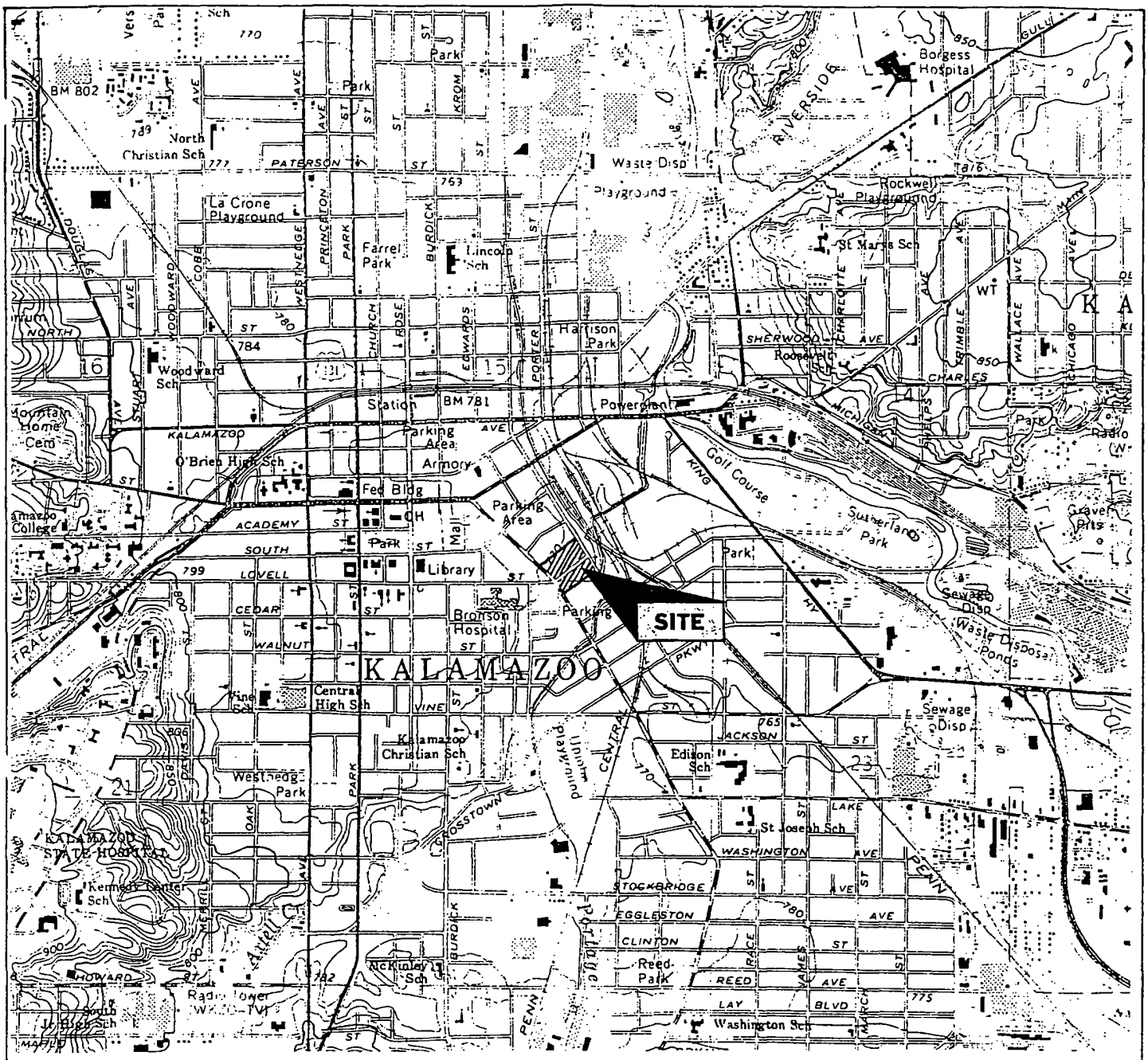
00185524

APPENDIX A

FIGURES

KR059B029510

00185533



SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

KR059B029511

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

KALAMAZOO QUADRANGLE

MICHIGAN–KALAMAZOO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

1967
PHOTOREVISED 1973
AMS 3868 I SE–SERIES V862

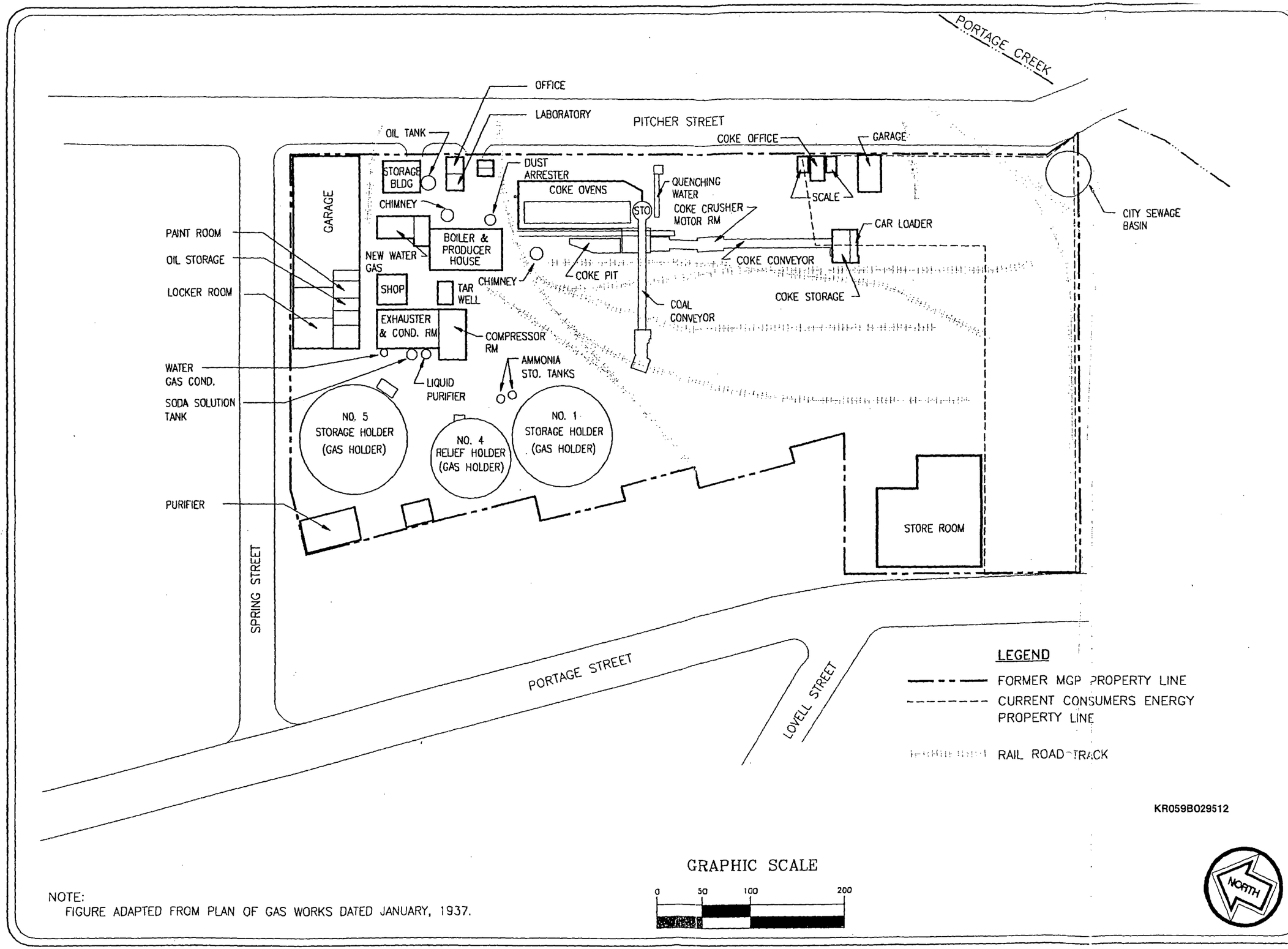
00185534

QUADRANGLE LOCATION

NORTH

Date 10-22-98	BAY CITY KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc	SITE LOCATION DIAGRAM KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN
Drawn By ARR			
Scale AS SHOWN			
Job KE 31823			

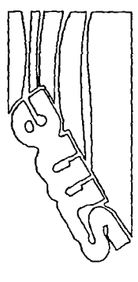
DWG. NO. 31823-01



NOTE:
FIGURE ADAPTED FROM PLAN OF GAS WORKS DATED JANUARY, 1937.

FORMER MGP SITE FEATURES DIAGRAM, JANUARY, 1937
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

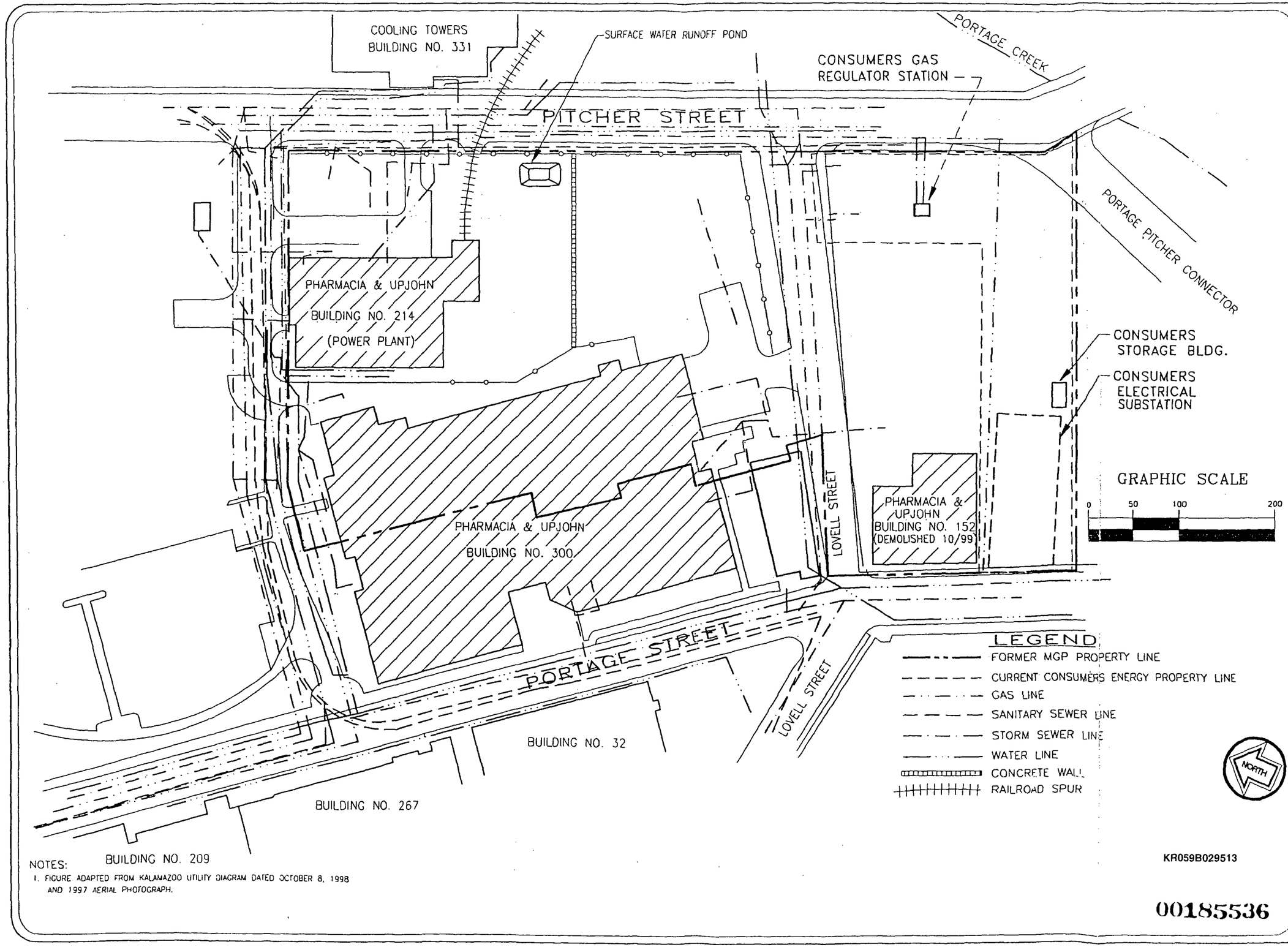
DATE: 10-22-98
SCALE: 1" = 100'
DRAFTER: ARR
JOB: KE 31823



FILE NAME H:\CECO\31823-02.DWG

00185535

Figure No. 2



NOTES:
1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.

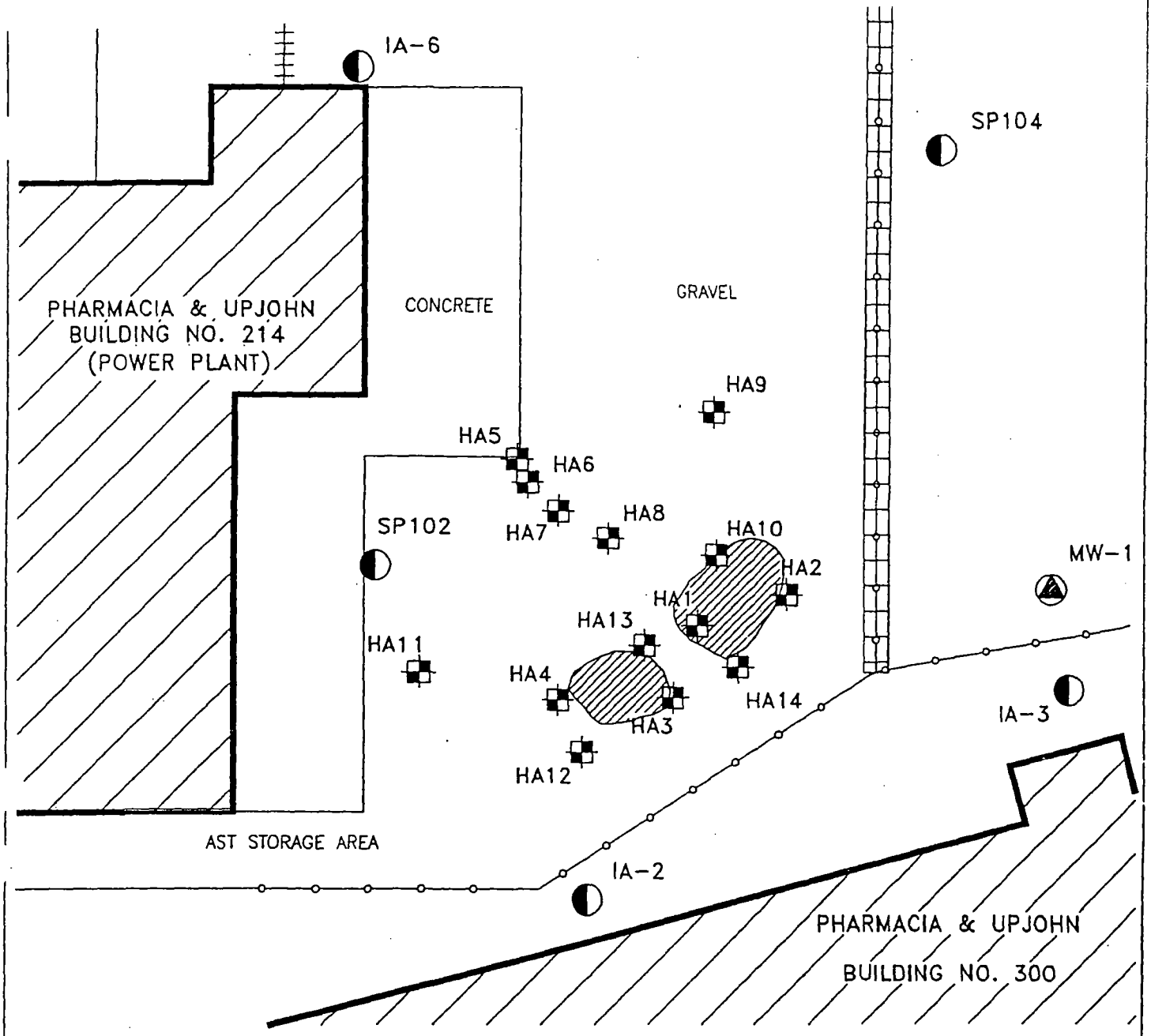
CURRENT SITE FEATURES DIAGRAM

KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 11-10-99
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:\CECO\31823-03.DWG



LEGEND

FENCE

CONCRETE WALL

RAILROAD SPUR

MW-1 MONITORING WELL LOCATION

IA-2 SOIL PROBE LOCATION

HA1 HAND AUGER LOCATION

APPROXIMATE AREA OF EXCAVATION BY BACKHOE

NOTES:

1. HAND AUGERS WERE ADVANCED FOR CONSUMERS ENERGY JULY 1999.

GRAPHIC SCALE

0 15 30 60

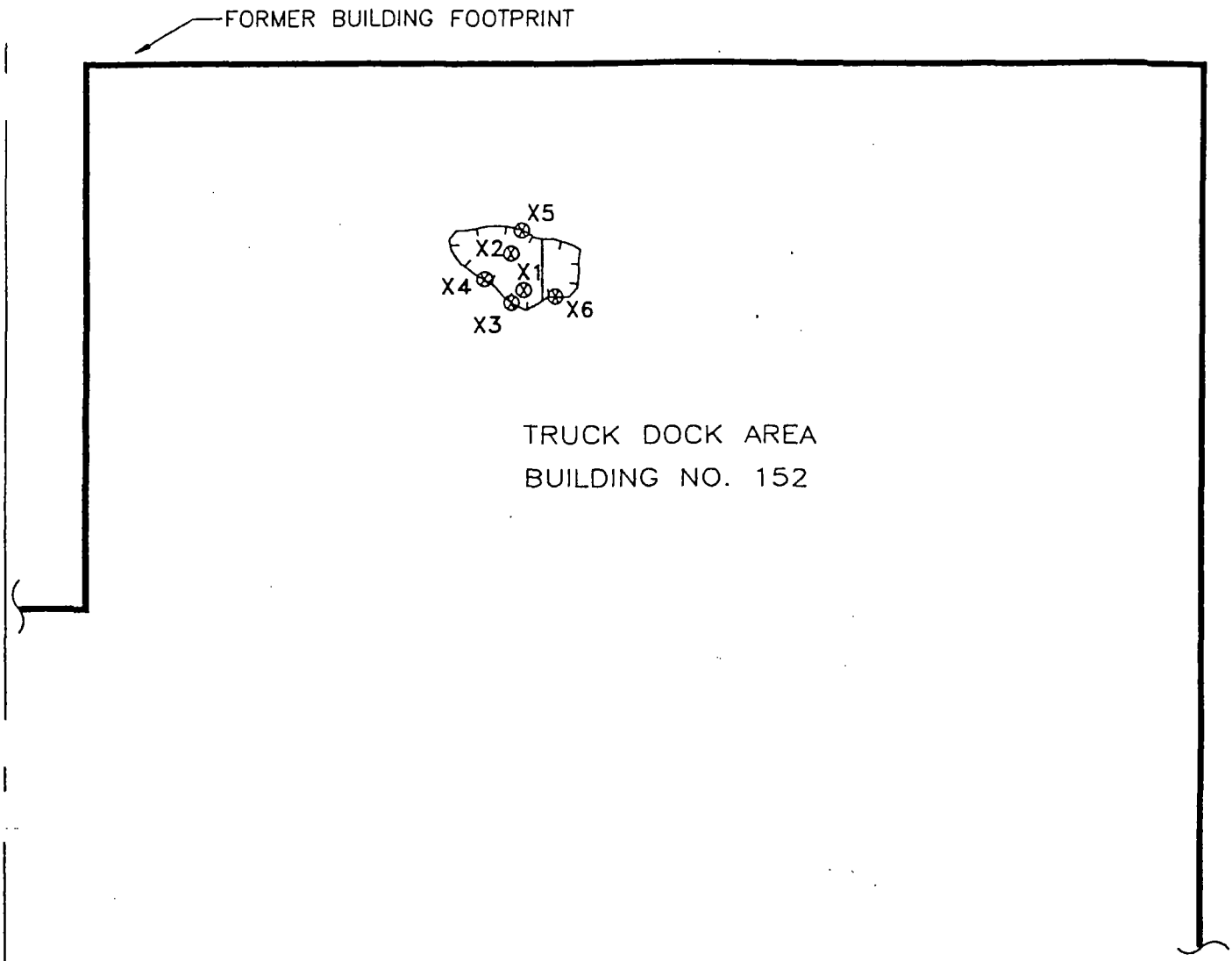
NORTH

SAIC 43980 PLYMOUTH OAKS BOULEVARD PLYMOUTH, MICHIGAN 48170 (313) 454-9900	BAY CITY KALAMAZOO LANSING PLYMOUTH TOLEDO	DATE 10-28-99 DRAWN BY ARR SCALE 1" = 30' JOB KE 31823	HAND AUGER LOCATION DIAGRAM KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN

FILE NAME H:CECO\31823-04.DWG

00185538 Figure No. 5

KR059B029515



LEGEND

◐ SOIL PROBE LOCATION

APPROXIMATE EXCAVATION LIMITS

⊗ EXCAVATION SAMPLE LOCATION

X1 – WEST FLOOR
X2 – EAST FLOOR
X3 – WEST SIDEWALL
X4 – NORTH SIDEWALL
X5 – EAST SIDEWALL
X6 – SOUTH SIDEWALL

NORTH

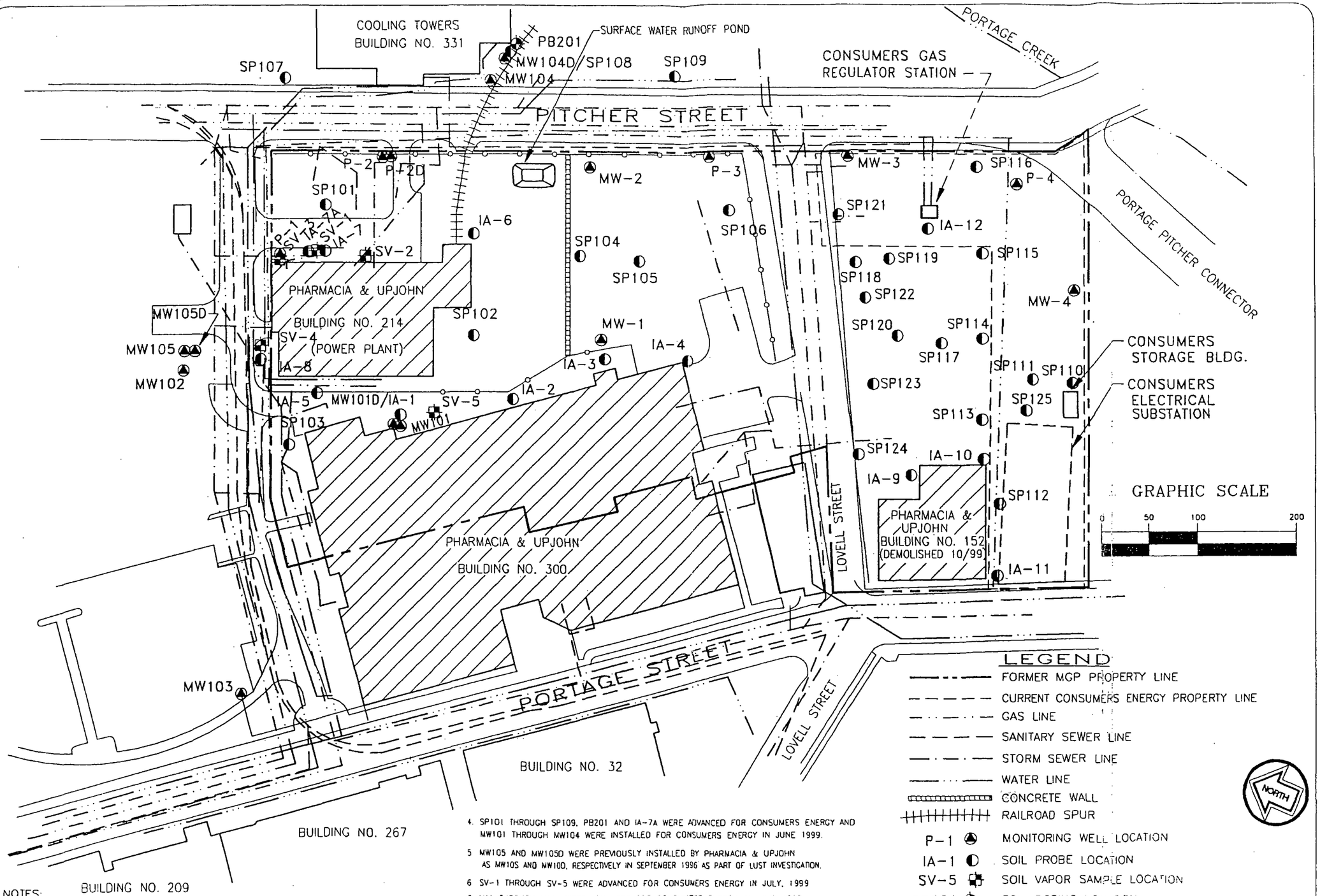
43980 PLYMOUTH OAKS BOULEVARD PLYMOUTH, MICHIGAN 48170 (734) 454-9900	BAY CITY KALAMAZOO LANSING PLYMOUTH TOLEDO	DATE 11-16-99 DRAWN BY ARR SCALE 1" = 10' JOB KE 31823	EXCAVATION SOIL SAMPLE LOCATIONS FOR FLOOR DRAIN SUMP KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN

FILE NAME H:CECO\31823-08.DWG

00185539

Figure No. 6

KR059B029516



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.

SOIL PROBE, SOIL VAPOR AND MONITORING WELL
LOCATION DIAGRAM
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 11-10-99
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823

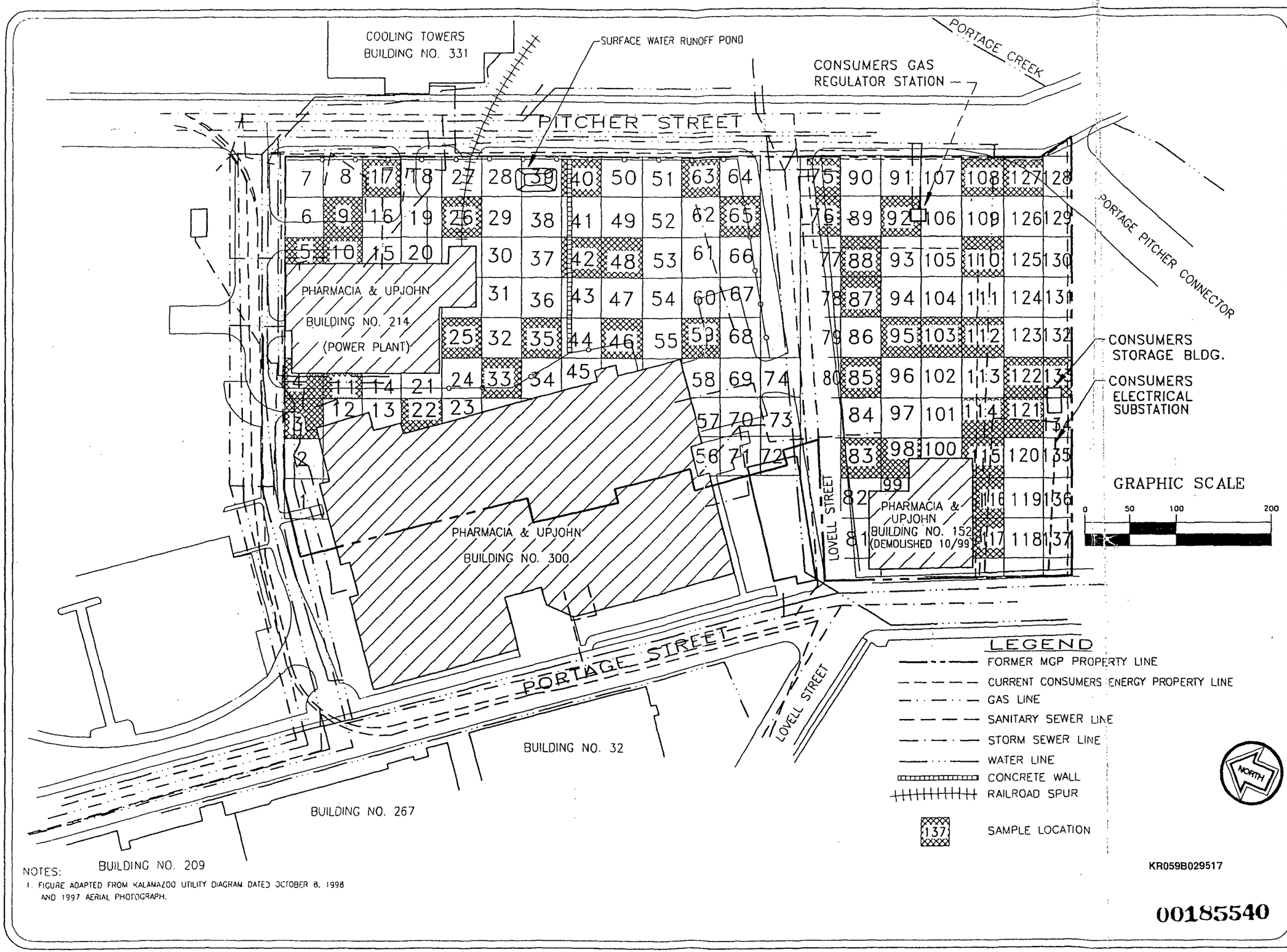
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:\CECO\31823-03.DWG

00185537

KR059B029514

Figure No. 4



NOTES:
1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.

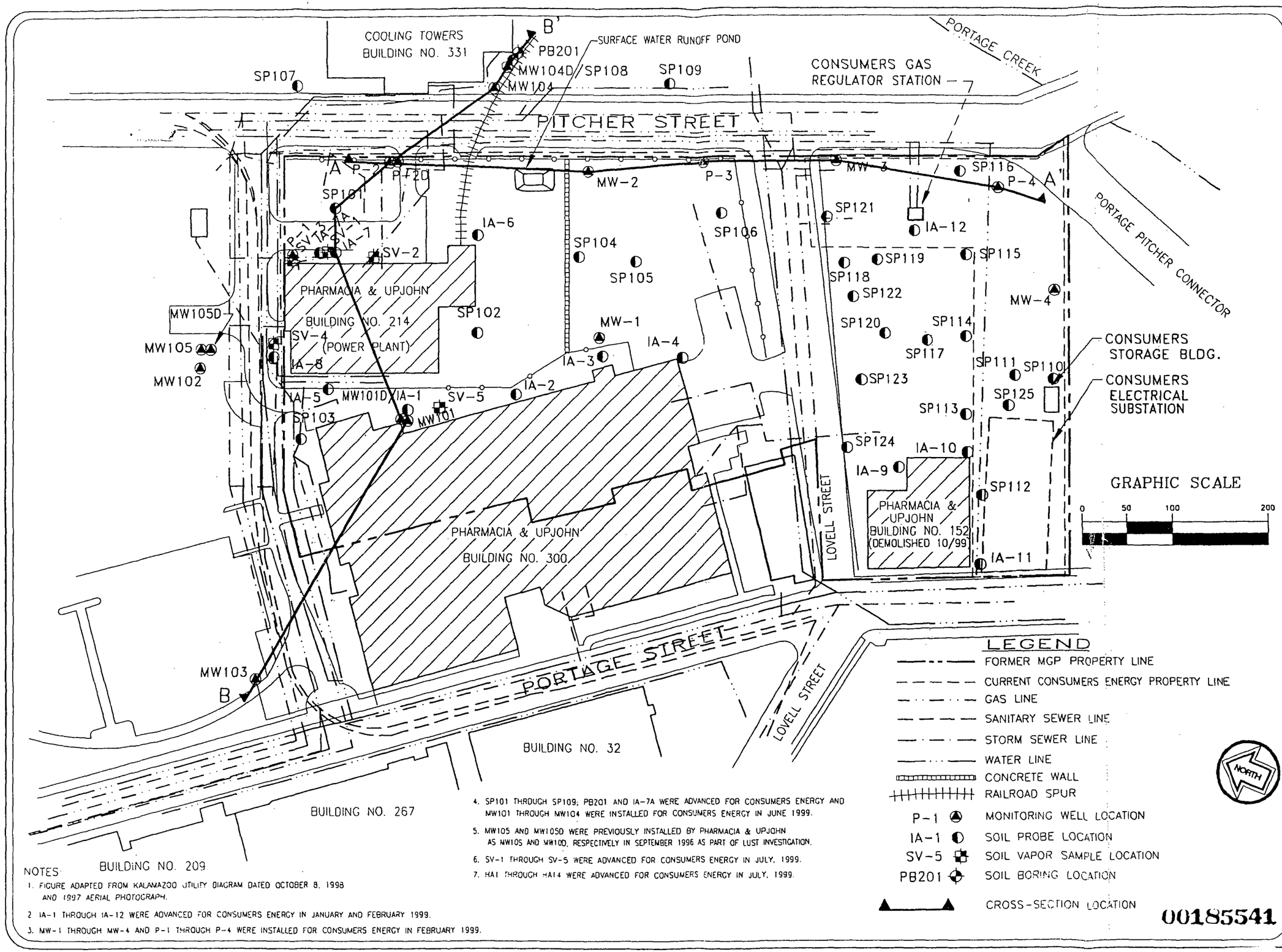
VSR SAMPLING GRID WITH SAMPLE LOCATIONS
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 11-10-99
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:\CECO\31823-03.DWG

Figure No. 7



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109; PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.

GEOLOGIC CROSS-SECTION LOCATION DIAGRAM
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

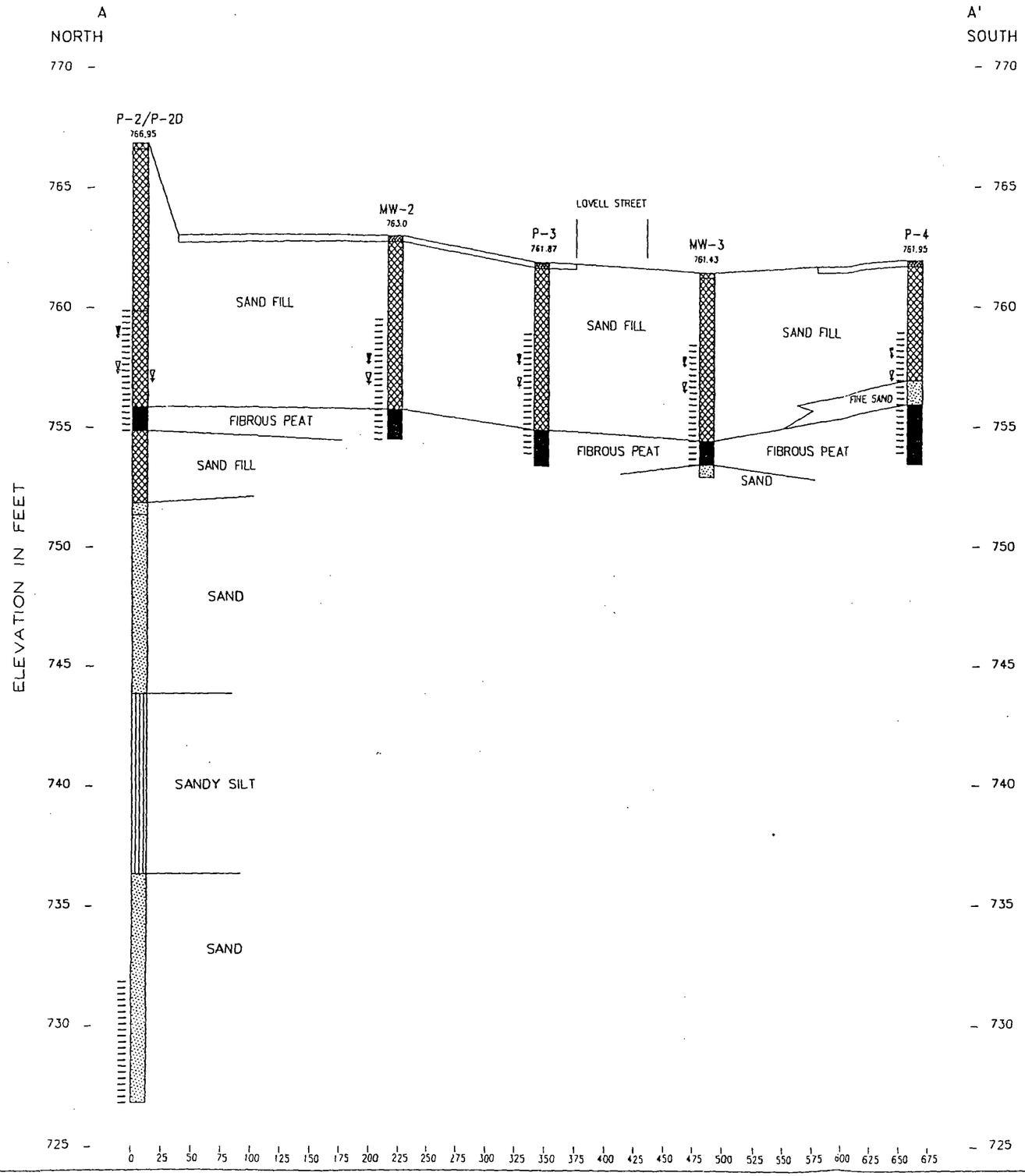
DATE: 11-10-99
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:\CECO\31823-03.DWG

KR059B029518

Figure No. 8



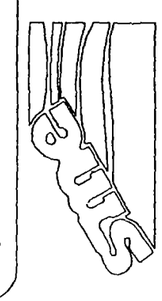
LEGEND

- ASPHALTIC CONCRETE
- SAND FILL
- FIBROUS PEAT
- SAND
- SANDY SILT
- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ELEVATION GAUGED ON JUNE 22, 1999
- WELL SCREEN INTERVAL

SCALE
VERTICAL: 1" = 5'
HORIZONTAL: 1" = 100'
VE: 20 X

CROSS-SECTION ,A - A'
KALAMAZOO MGP SITE
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

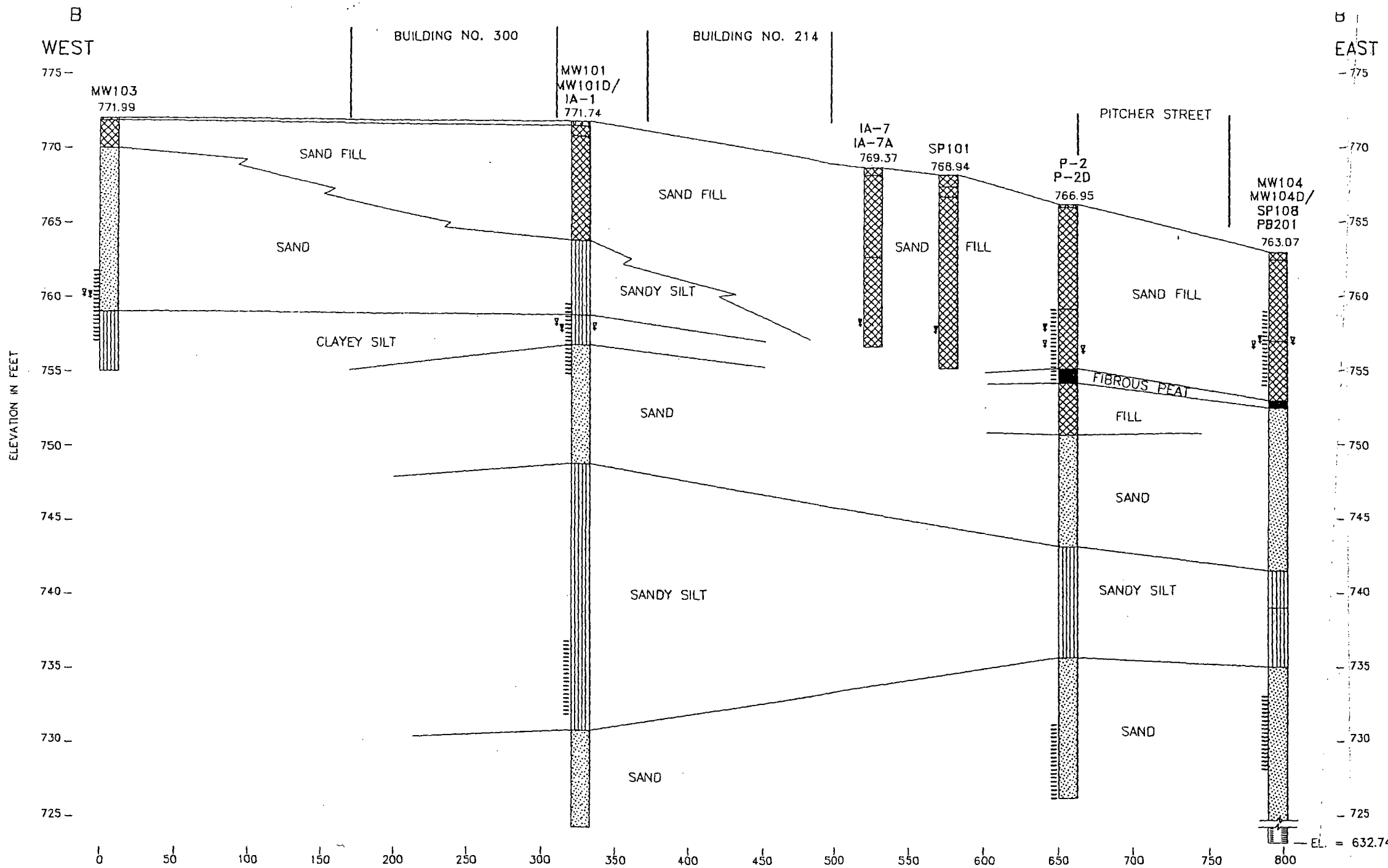
DATE: 10-28-99
SCALE: AS SHOWN
DRAFTER: ARR
JOB: PE 31823B



FILE NAME H:\CECO\31823B-1.DWG

00185542 Figure No. 9

KR059B029519



LEGEND

- ASPHALT CONCRETE
- FILL
- SAND
- SANDY SILT
- CLAYEY SILT
- FIBROUS PEAT
- SHALE
- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER ELEVATION GAUGED ON JUNE 22, 1999
- WELL SCREEN INTERVAL

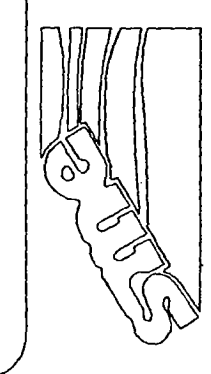
NOTE:
PB201 WAS DRILLED TO A DEPTH OF 130 FEET BELOW GRADE. SEE COPY OF LOG IN APPENDIX B FOR DETAIL OF SOIL STRATIGRAPHY ENCOUNTERED BELOW A DEPTH OF 40 FEET.

SCALE

VERTICAL: 1" = 8'
HORIZONTAL: 1" = 80'
VE: 10 X

CROSS-SECTION B – B'
KALAMAZOO MGP SITE
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 11-10-99
SCALE: AS SHOWN
DRAFTER: ARR
JOB: KE 31283B

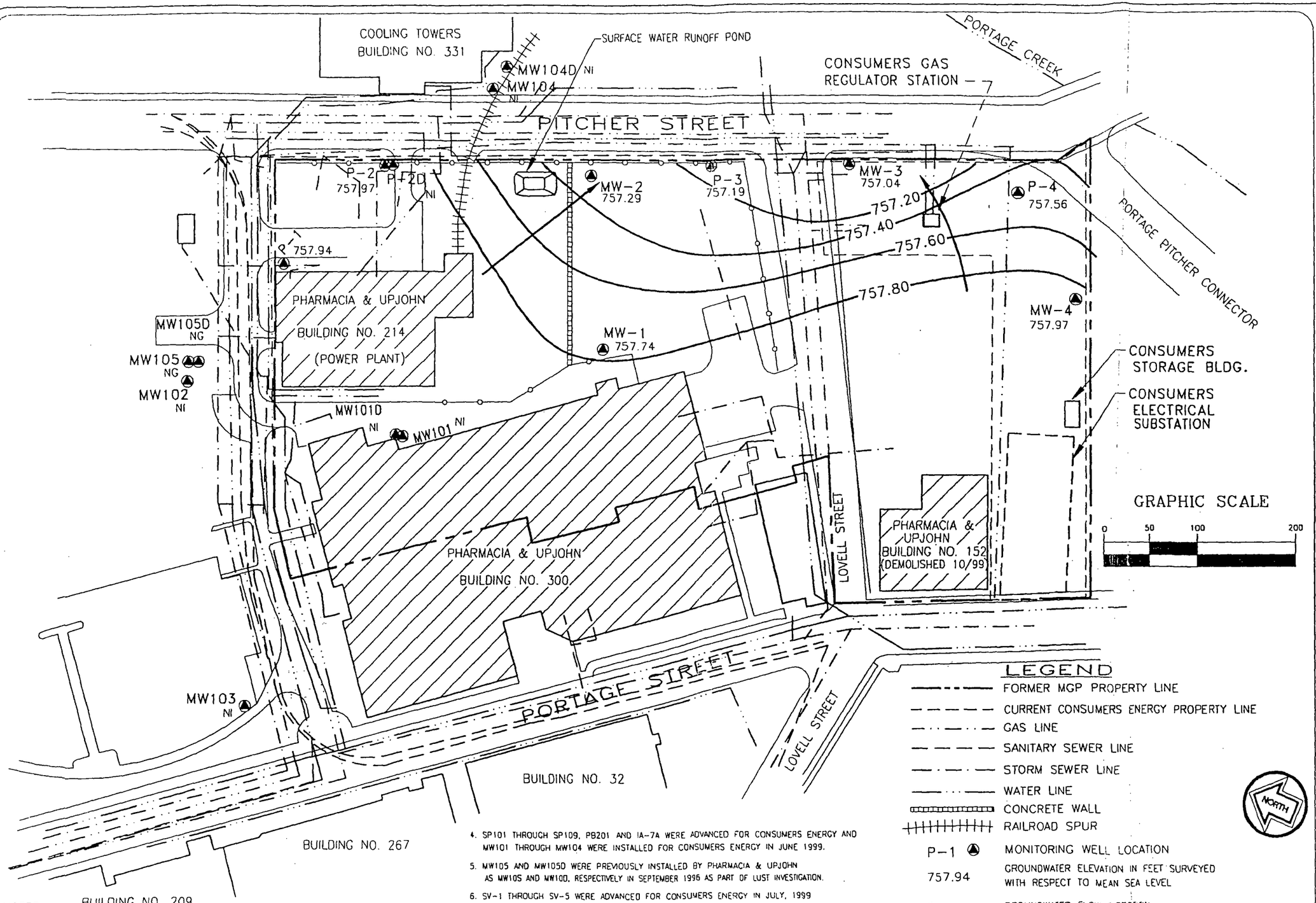


FILE NAME H:CECO\31823B-3.DWG

00185543

Figure No. 10

KR059B029520

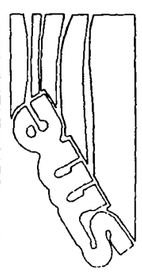


NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.

GROUNDWATER ELEVATION CONTOUR DIAGRAM
FEBRUARY 25, 1999
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

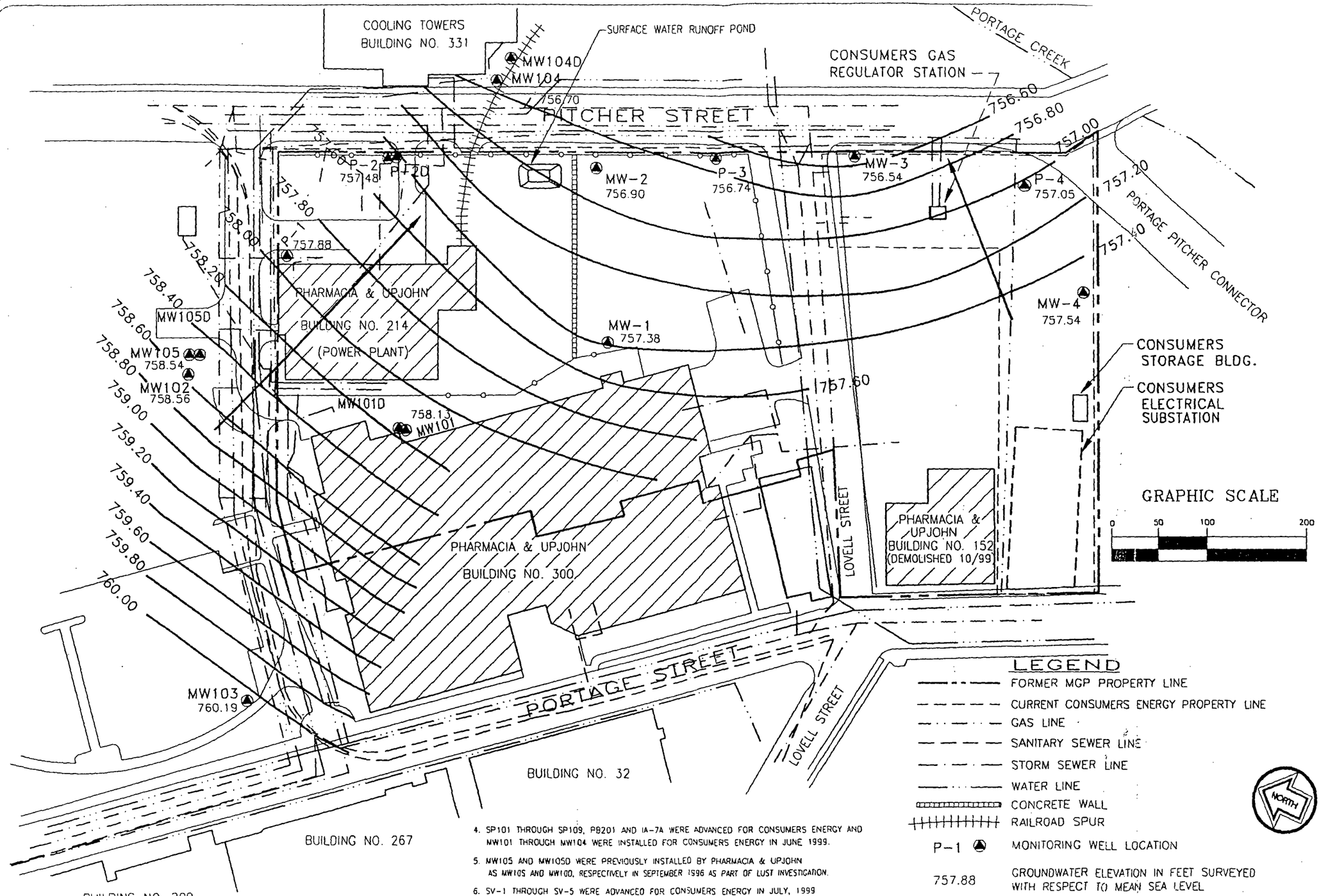
DATE: 11-10-99
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823



FILE NAME: H:\CECO\31823-03.DWG

KR059B029521

00185544 Figure No. 11



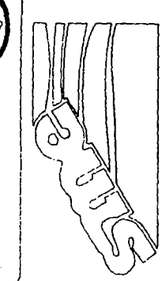
NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. * = GROUNDWATER ELEVATIONS AT MW105 AND MW105D WERE GAUGED ON JUNE 23, 1999.
9. GROUNDWATER ELEVATIONS GAUGED AT P-2D, MW101D, MW104D AND MW105D WERE NOT USED TO INTERPRET GROUNDWATER FLOW AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.

00185545

GROUNDWATER ELEVATION CONTOUR DIAGRAM
JUNE 22, 1999*
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

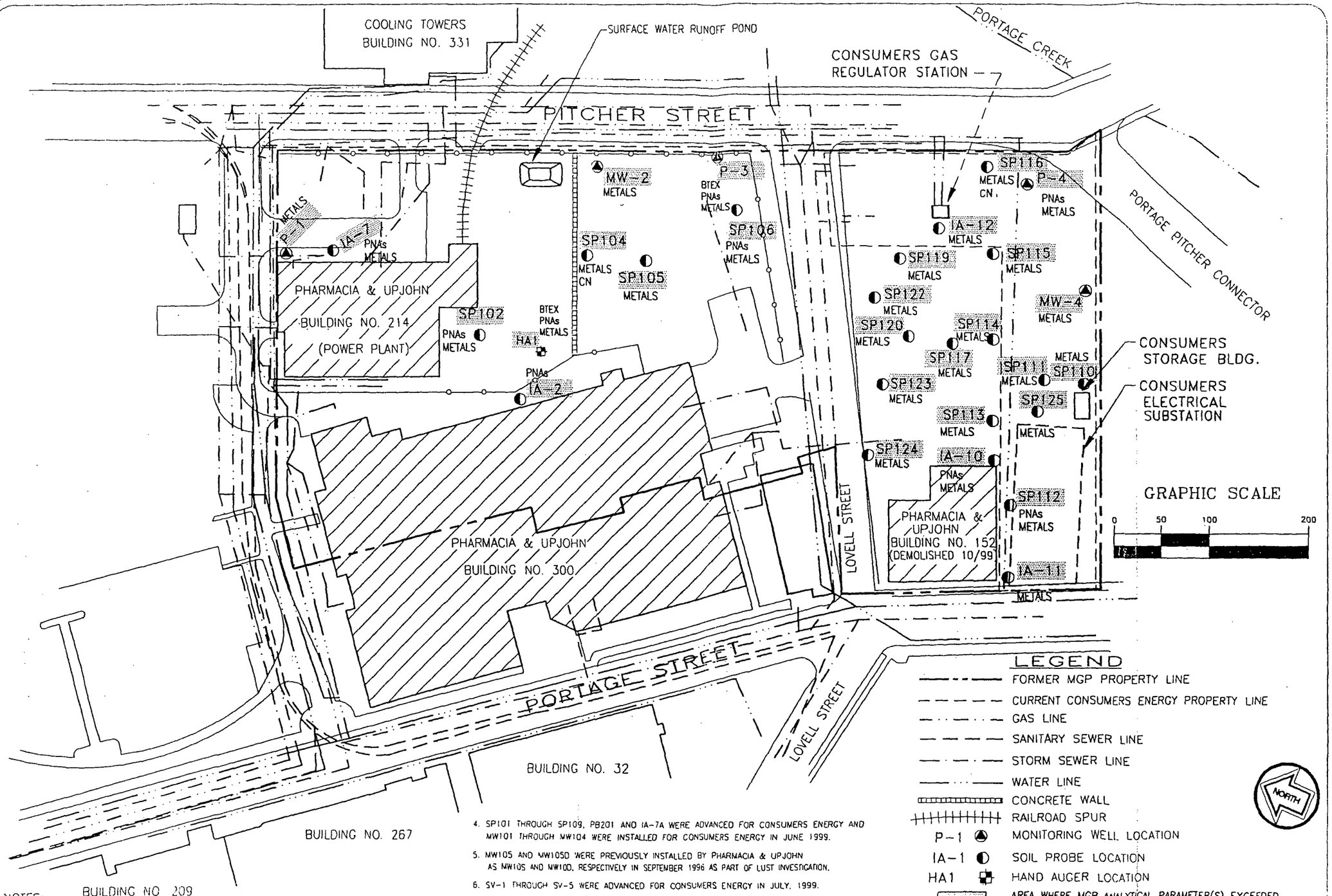
DATE: 11-10-99
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823



FILE NAME H:\CECO\31823-03.DWG

Figure No. 12

KR059B029522

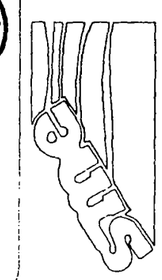


NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO COUNTY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. THIS DIAGRAM ONLY SHOWS THOSE SAMPLE LOCATIONS WHERE BTEX, PNAs, METALS, AND/OR CYANIDE WERE DETECTED AT CONCENTRATIONS EXCEEDING PART 201 COMM. II CLEAN-UP CRITERIA.

SURFACE SOIL (0-1) LOCATIONS WHERE MGP PARAMETERS EXCEED PART 201 COMM. II CLEAN-UP CRITERIA
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

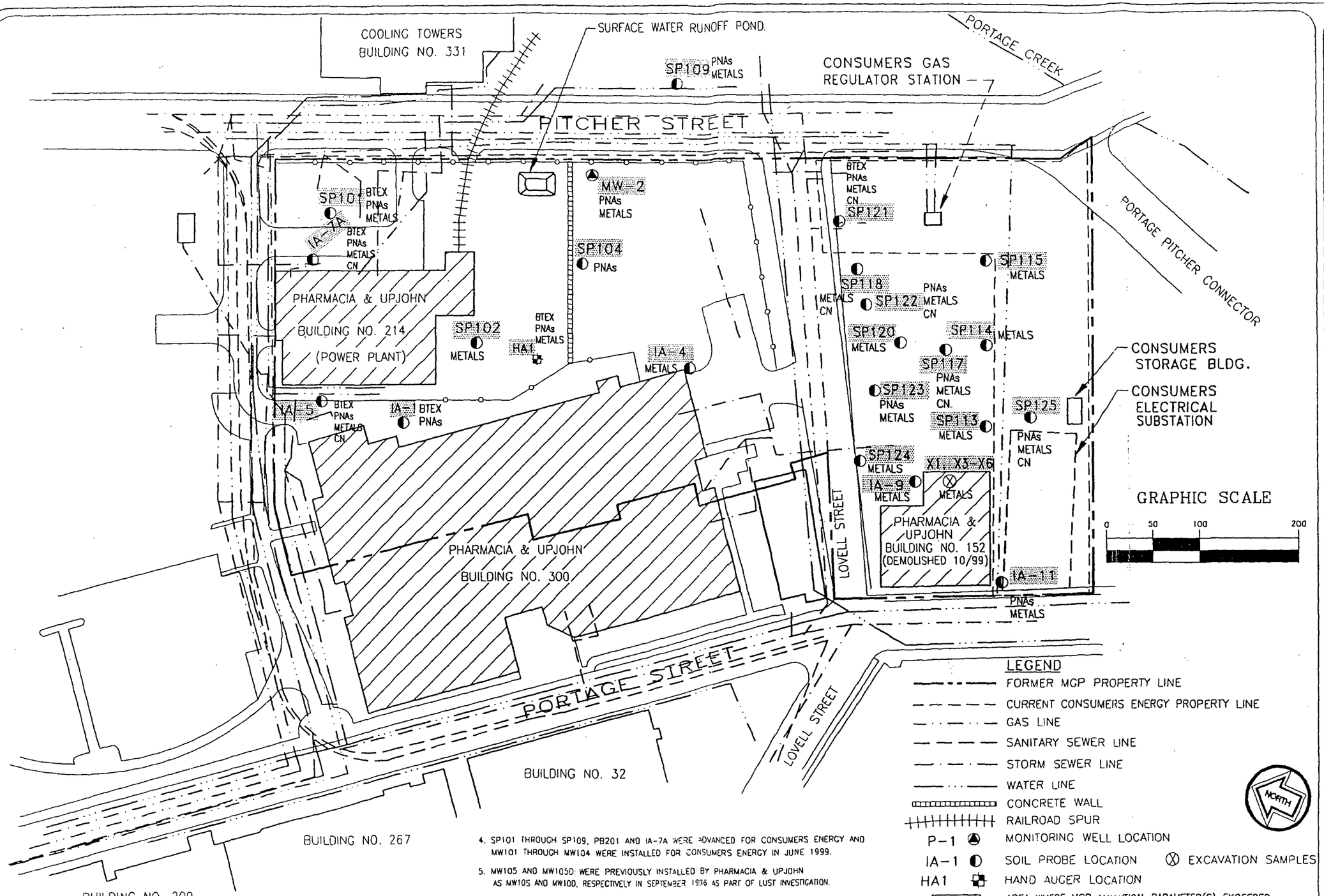
DATE: 11-10-99
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823



FILE NAME H:\CECO\31823-03.DWG

KR059B029523

Figure No. 13



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. **THIS DIAGRAM ONLY SHOWS THOSE SAMPLE LOCATIONS WHERE BTEX, PNAs, METALS AND/OR CYANIDE WERE DETECTED AT CONCENTRATIONS EXCEEDING PART 210 COMM. II CLEAN-UP CRITERIA.**

00185547

SUBSURFACE SOIL (>1) LOCATIONS WHERE MGP PARAMETERS EXCEED PART 201 COMM. II CLEAN-UP CRITERIA
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

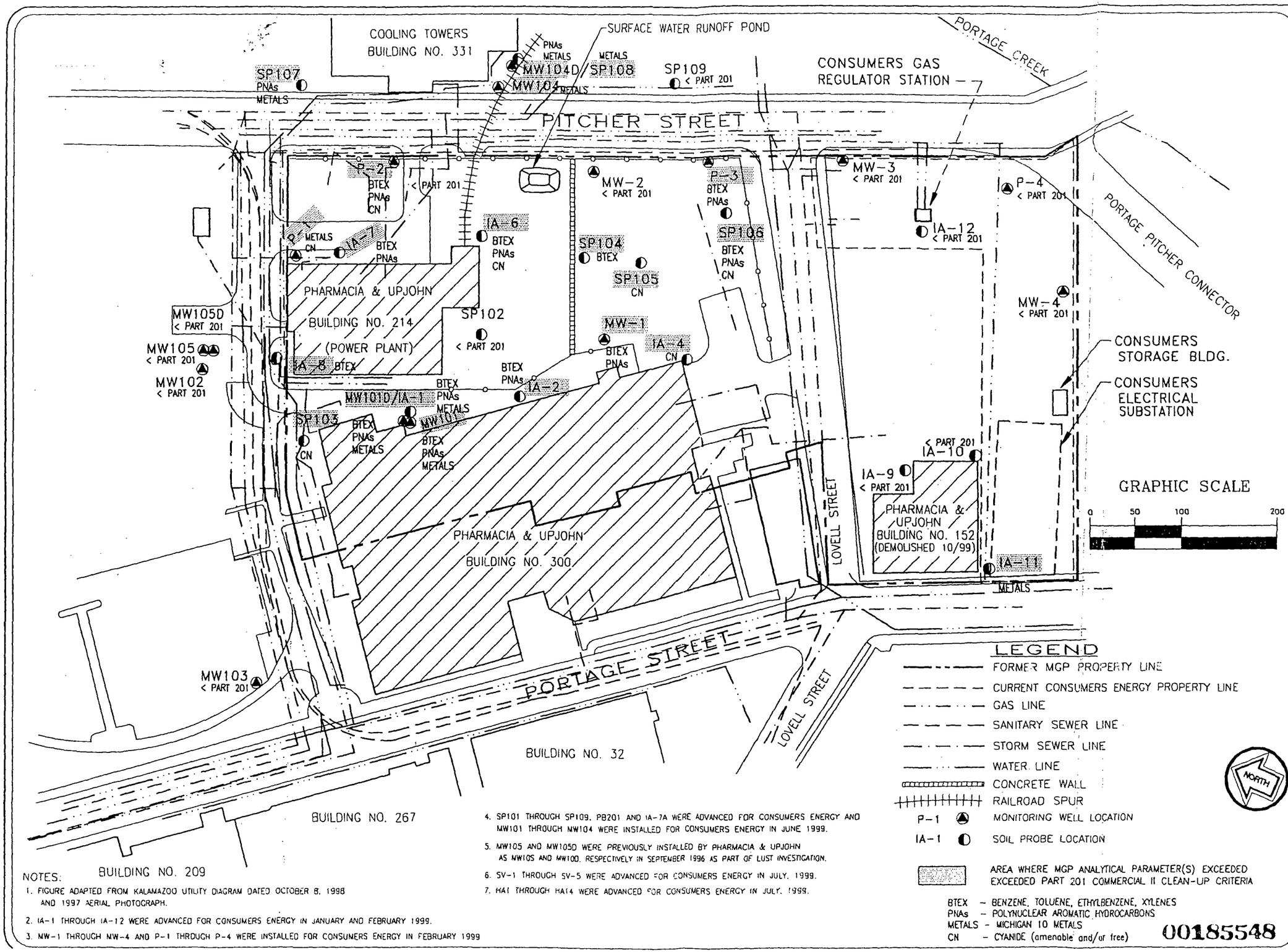
DATE: 11-10-99
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-05.DWG

Figure No. 14

KR059B029524



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW100, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.

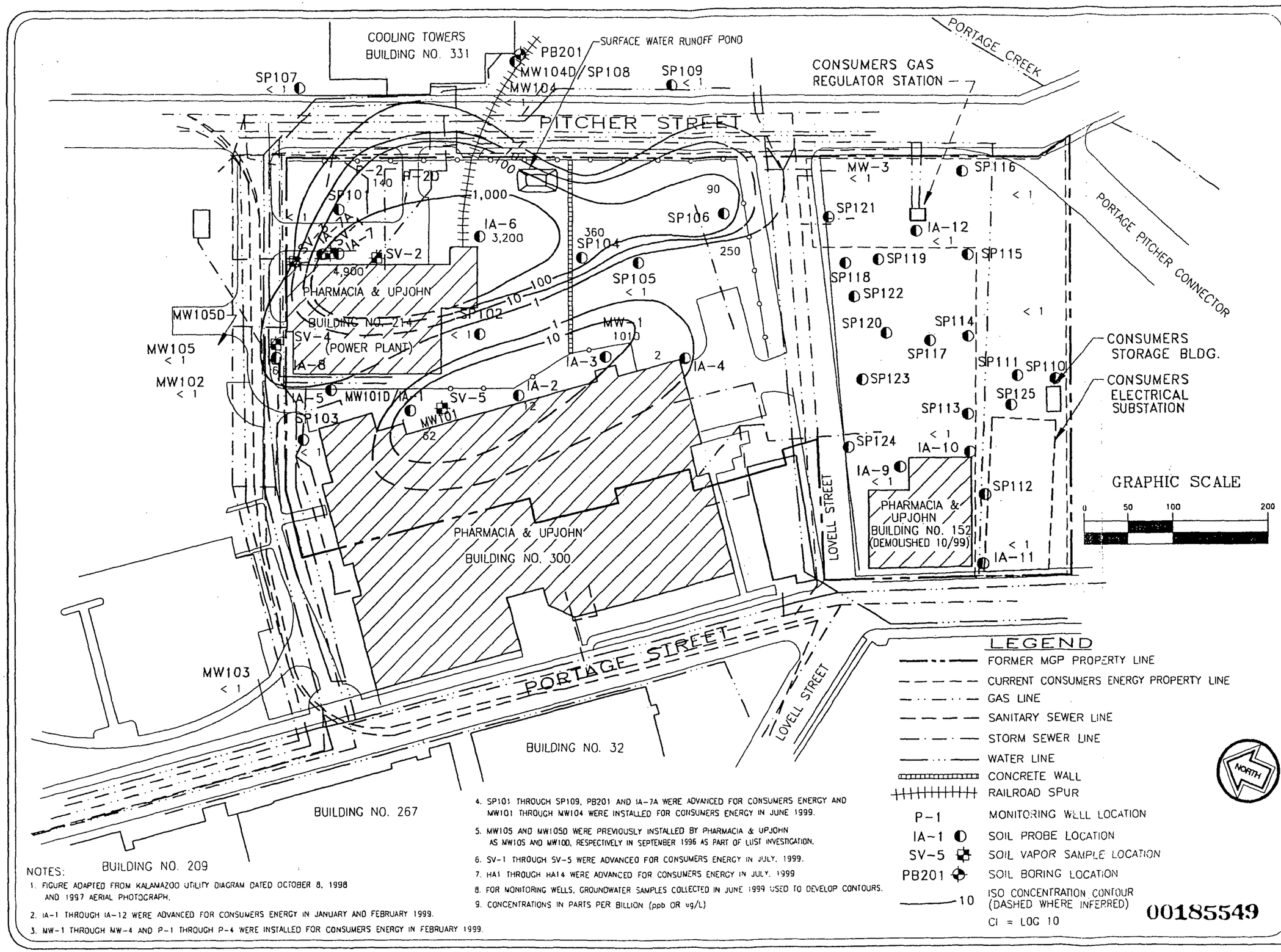
GROUNDWATER LOCATIONS WHERE MGP PARAMETERS EXCEED PART 201 COMM. II CLEAN-UP CRITERIA
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 11-10-99
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823

KR059B029525

FILE NAME H:\CECO\31823-06.DWG

Figure No. 15



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999
8. FOR MONITORING WELLS, GROUNDWATER SAMPLES COLLECTED IN JUNE 1999 USED TO DEVELOP CONTOURS.
9. CONCENTRATIONS IN PARTS PER BILLION (ppb OR ug/L)

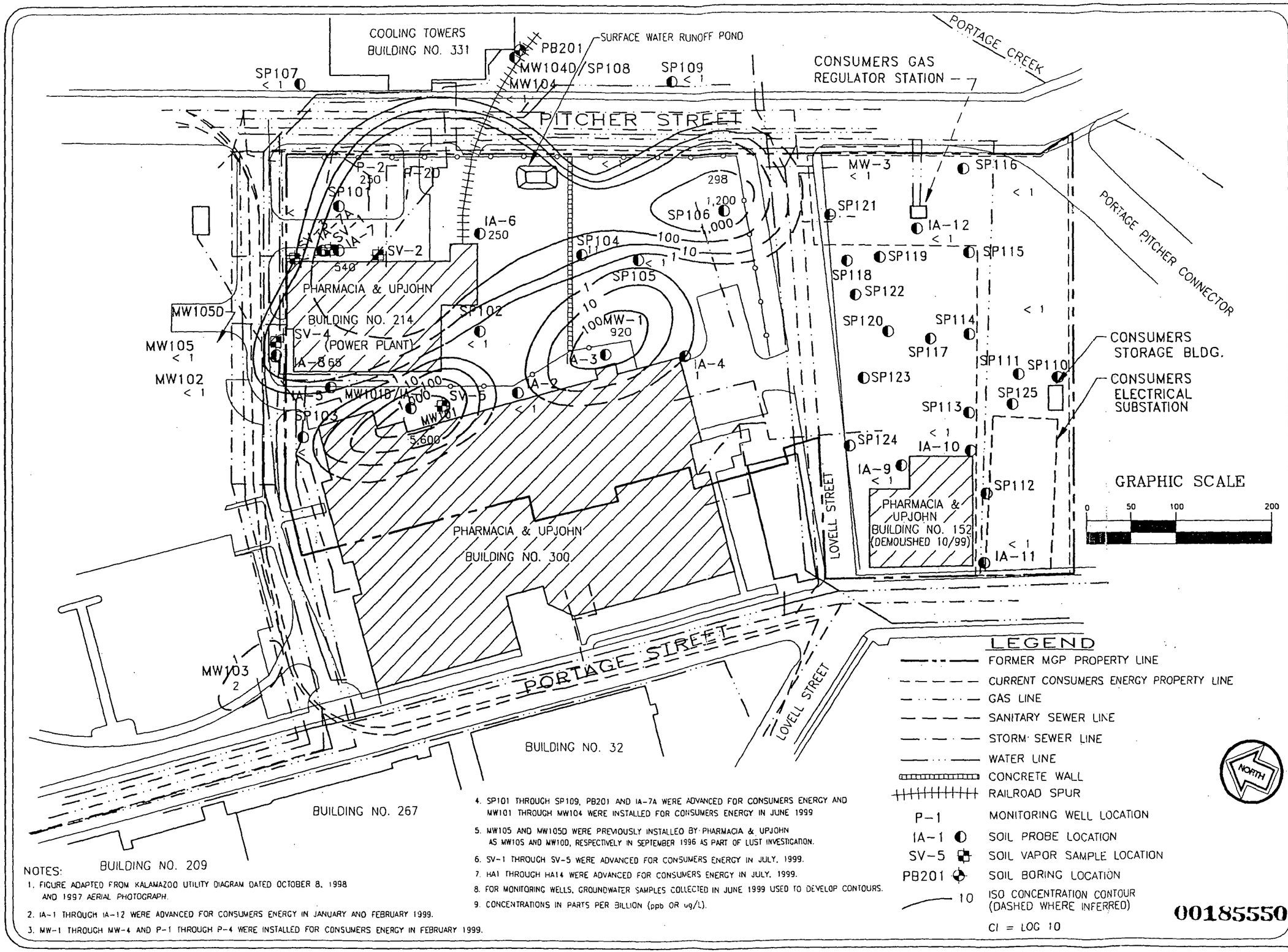
ISO CONCENTRATION DIAGRAM
FOR BENZENE IN GROUNDWATER
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 11-10-99
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823

KR059B029526

FILE NAME H:\CECO\31823-07.DWG

Figure No. 16



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. FOR MONITORING WELLS, GROUNDWATER SAMPLES COLLECTED IN JUNE 1999 USED TO DEVELOP CONTOURS.
9. CONCENTRATIONS IN PARTS PER BILLION (ppb OR ug/L).

ISO CONCENTRATION DIAGRAM FOR XYLENES IN GROUNDWATER KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN

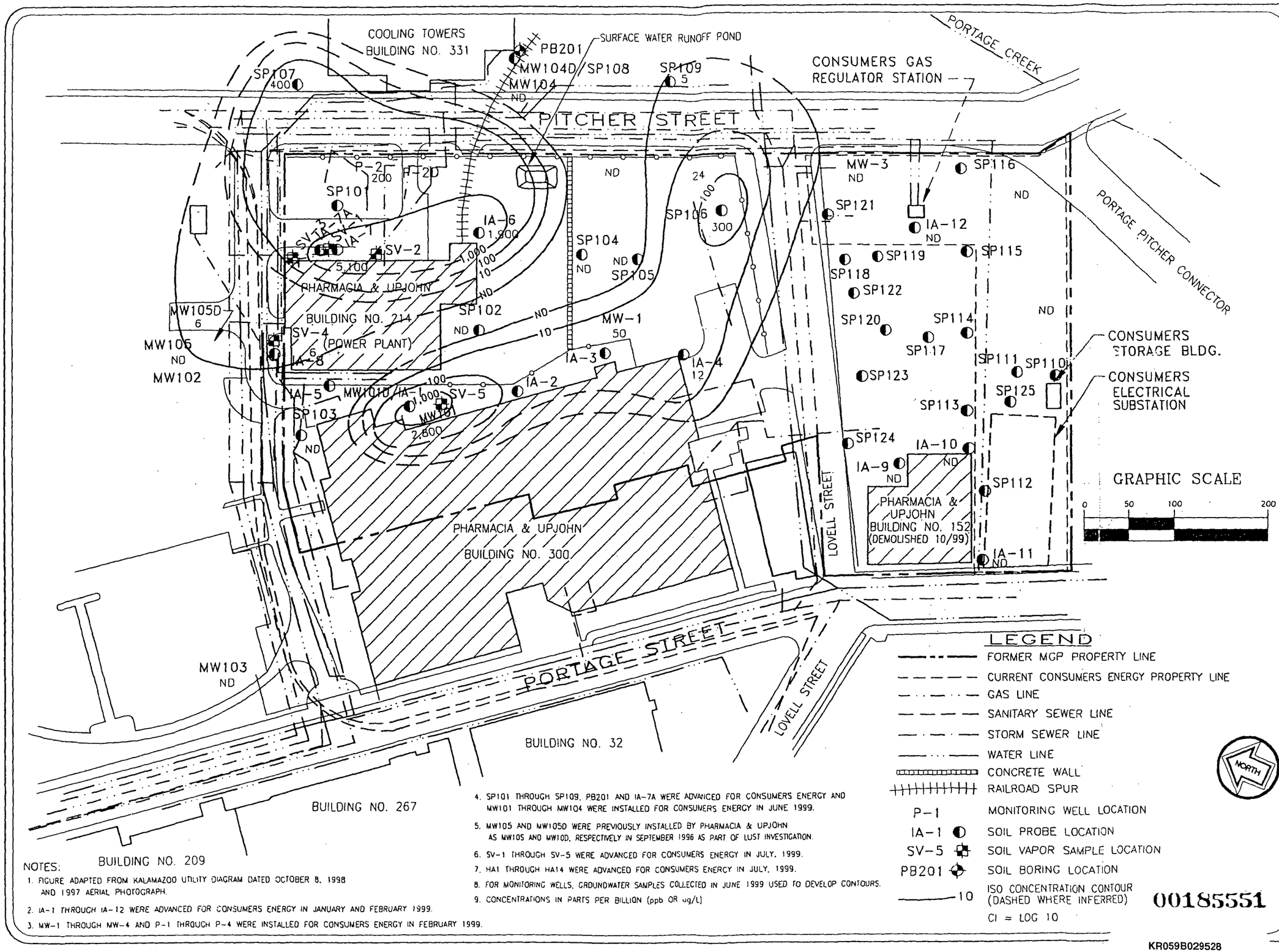
DATE: 11-10-99
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-07.DWG

KR059B029527

Figure No. 17



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. FOR MONITORING WELLS, GROUNDWATER SAMPLES COLLECTED IN JUNE 1999 USED TO DEVELOP CONTOURS.
9. CONCENTRATIONS IN PARTS PER BILLION (ppb OR ug/L)

00185551

KR059B029528

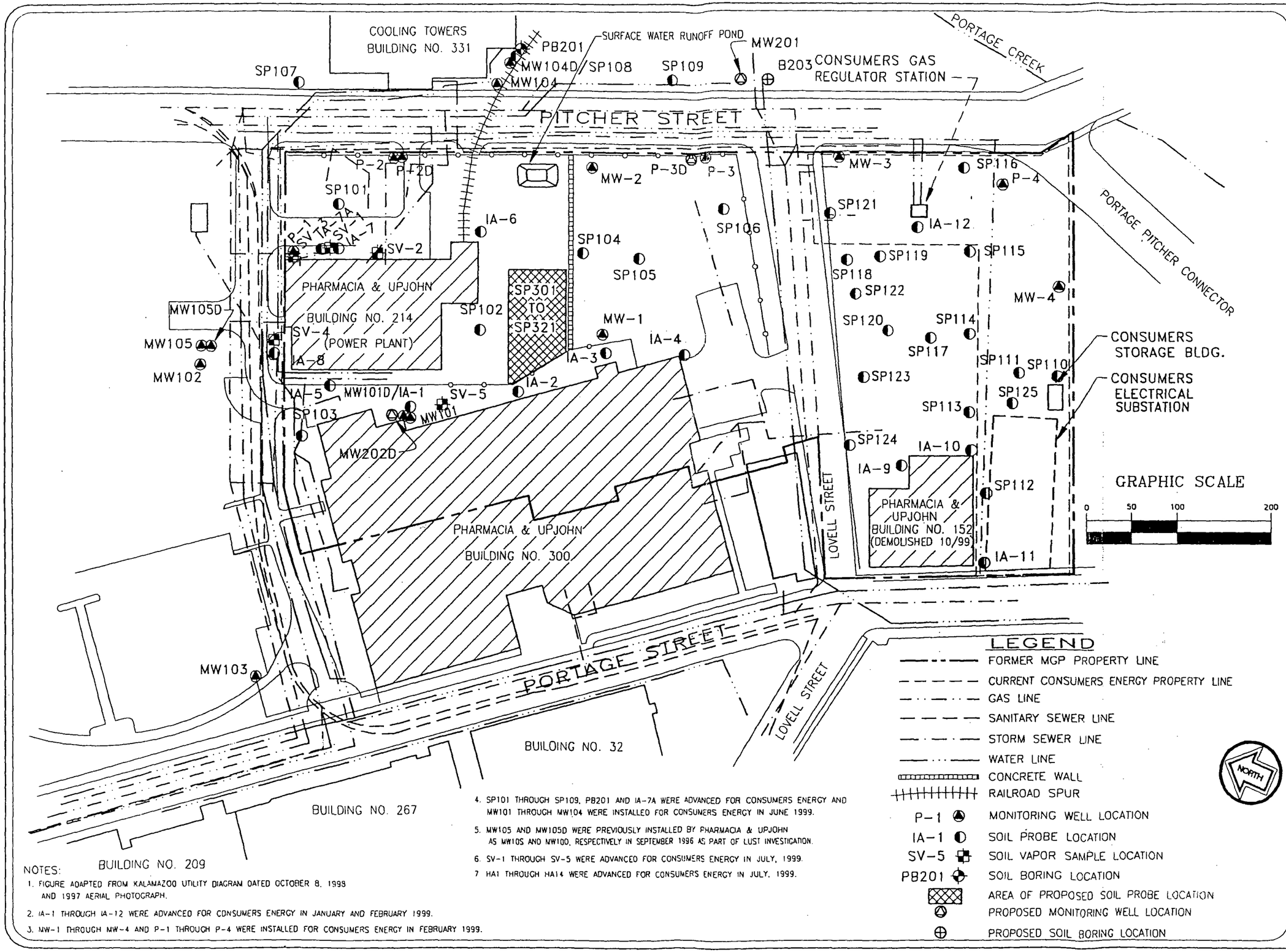
ISO CONCENTRATION DIAGRAM FOR NAPHTHALENE IN GROUNDWATER KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN

DATE: 11-10-99
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:\CECO\31823-07.DWG

Figure No. 18



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.

PROPOSED SOIL PROBE, SOIL BORING AND MONITORING WELL LOCATION DIAGRAM
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 11-10-99
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-03.DWG

KR059B029529

00185552

Figure No. 19

APPENDIX B

SOIL PROBE AND MONITORING WELL LOGS

00185554

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 2/3/99 & 2/22/99 PROBE IA-1
JOB NUMBER: KE31823 SHEET: 1

WELL DIAGRAM

DRILLER: NBL/BEST RIG: HA/DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 20 30 40 50 60 100 | LEGEND

GROUND SURFACE ELEVATION = 771.84

3 Inches Asphalt Concrete

Sandy Gravel- Trace Silt- Brown- Moist (GP/Fill)

Fine to Medium Sand- Trace Gravel and Silt- Occasional Silty Clay Clumps- Brown- Moist (SP/Fill)

Silty Fine Sand- Trace Medium Sand and Gravel- Brown- Moist (SM)

Clayey Silt- Occasional Sand Seams- Gray and Brown with Black Staining (ML)

END OF PROBE AT 18 FEET.

NOTE (S):

1. Soil sampling was conducted from grade to 8 feet below grade on February 3, 1999 by hand auger due to potential presence of subsurface utilities. Soil and groundwater sampling was conducted from 8 feet below grade to the termination depth on February 22, 1999 using direct-push soil probe.
2. Soil samples S1, S2, and S3 were submitted for laboratory analysis.
3. Soil samples were physically classified from grade to termination depth of the probe.
4. Odors noted from 13 to 14 feet below grade.
5. Temporary well screen installed from 14 to 18 feet below grade.

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185555

KR059B029531

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 1/19/99
JOB NUMBER: KE31823

PROBE IA-
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 20 30 40 50 60 100	LEGEND
		GROUND SURFACE ELEVATION = 771.47			
		4 Inches Asphalt Concrete	S1		
5					
		Fine to Medium Sand- Trace to Some Gravel- Trace Silt- Brown- Moist to Wet (SP/Fill)			
10			S2		
15		END OF PROBE AT 15 FEET.			

NOTE (S):

1. Soil samples S1 and S2 were submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the probe.
3. Temporary well screen installed from 13 to 15 feet below grade.

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185556

KR059B029532

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 1/19/99
JOB NUMBER: KE31823

PROBE IA-:
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = 767.79	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 20 30 40 50 60 100	LEGEND
		4 Inches Asphalt Concrete	S1		
5					
		Fine to Medium Sand- Trace Gravel and Silt- Brown- Moist to Wet (SP/Fill)			
10			S2		
		END OF PROBE AT 14 FEET.			
15		NOTE (S): 1. Soil samples S1 and S2 were submitted for laboratory analysis. 2. Soil samples were physically classified from grade to the termination depth of the probe. 3. Temporary well screen installed from 12 to 14 feet below grade. However, insufficient quantities of groundwater prevented sample collection.			

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185557

KR059B029533

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 1/19/99
JOB NUMBER: KE31823

PROBE IA-4
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 20 30 40 50 60 100 | LEGEND

GROUND SURFACE ELEVATION = 765.11

Silty Fine Sand- Trace Organics and Grass- Black (SM/Topsoil) — S1

Fine to Medium Sand- Trace to Some Silt- Trace Clay and Gravel- Gray- Moist (SP-SM/Fill)

S2

5

Fine to Medium Sand- Trace Silt, Gravel and Coarse Sand- Brown- Moist to Wet (SP)

S3

10

15

END OF PROBE AT 14 FEET.

NOTE (S):

1. Soil samples S1 and S3 were submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the probe.
3. Temporary well screen installed from 12 to 14 feet below grade.

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185558

KR059B029534

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 2/3/99
JOB NUMBER: KE31823

PROBE IA-5
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = 771.19	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 20 30 40 50 60 100
		3 Inches Asphalt Concrete	S1	
		Sandy Gravel- Trace Silt- Brown- Moist (SP/Fill)		
		Fine to Medium Sand- Trace Silt, Organics, Wood Fragments, Brick Pieces, Coal Pieces and Gravel- Black, Brown and Blue- Moist (SP/Fill)	S2	
		END OF BORING AT 2.5 FEET.		
5		NOTE (S):		
		1. Soil sampling was conducted from grade to termination depth of boring on February 3, 1999 by hand auger due to the potential presence of subsurface utilities.		
		2. Soil samples S1 and S2 were submitted for laboratory analysis.		
		3. Soil samples were physically classified from grade to the termination depth of the probe.		
10		4. Groundwater was not encountered.		
		5. Obstruction encountered at 2.5 feet below grade, probe terminated.		
15				

LEGEND

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185559

KR059B029535

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 1/18/99
JOB NUMBER: KE31823

PROBE IA-6
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 20 30 40 50 60 100 | LEGEND

GROUND SURFACE ELEVATION = 782.87

Gravelly Fine to Medium Sand- Trace Silt- Brown- Moist (SP/Fill) — S1

Fine Sand- Trace Medium Sand, Coarse Sand, Gravel and Silt- Brown- Moist to Wet (SP/Fill) — S2

5

END OF PROBE AT 8 FEET.

NOTE (S):

1. Soil samples S1 and S2 were submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the probe.
3. Temporary well screen installed from 3 to 8 feet below grade.

10

15

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185560

KR059B029536

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: 1/19/99 IA-7
BY: NBL DATE: 6/3/99 IA-7A
JOB NUMBER: KE31823

PROBE I
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 20 30 40 50 60 100 | LEGEND

GROUND SURFACE ELEVATION = 788.37

Fine to Medium Gravel- White (GP/Fill) — S1

Silty Fine Sand- Trace Medium Sand and Gravel- Brown- Moist (SM/Fill)

5

Fine to Medium Sand- Trace Silt, Gravel, Brick Pieces, Coal Pieces and Coal Tar - Brown with Black Staining at 10 Feet- Moist to Wet (SP/Fill)

10

S2

END OF PROBE AT 12 FEET.

NOTE (S):

1. Soil samples S1 and S2 were submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the probe.
3. Odors and staining noted from 8 to 10 feet below grade.
4. Temporary well screen installed from 7 to 12 feet below grade.

15

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185561

KR059B029537

SOIL AND MATERIALS ENGINEERS, IN(

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 2/3/99 & 2/22/99 PROBE IA-8
JOB NUMBER: KE31823 SHEET: 1

WELL DIAGRAM

DRILLER: BEST RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 20 30 40 50 60 100	LEGEND
		GROUND SURFACE ELEVATION = 770.80			
		Fine to Medium Gravel- White (GP/Fill)	S1		
5		Fine Sand- Trace Medium Sand, Silt and Gravel- Brown- Moist (SP/Fill)	S2		
10		Silty Fine Sand- Trace Medium Sand, Gravel and Silty Clay Clumps- Brown- Moist to Wet (SM)			
15		END OF PROBE AT 15 FEET.			
20					
25					
30					

NOTE (S):

1. Soil sampling was conducted from grade to 8 feet below grade on February 3, 1999 by hand auger due to potential presence of subsurface utilities. Soil and groundwater sampling was from 8 feet below grade to the termination depth on February 22, 1999 using a direct-push soil probe.
2. Soil samples S1 and S2 were submitted for laboratory analysis.
3. Soil samples were physically classified from grade to the termination depth of the probe.
4. Temporary well screen installed from 10 to 15 feet below grade.

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185562

KR059B029538

SOIL AND MATERIALS ENGINEERS, IN(

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 1/18/99
JOB NUMBER: KE31823

PROBE IA-9
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL
		GROUND SURFACE ELEVATION = 783.47	
		Silty Fine Sand- Trace Organics and Grass- Black (SM/Topsoil)	S1
		Fine Sand- Trace to Some Silt- Trace Medium Sand and Gravel- Brown (SP-SM/Fill)	
5		Fine to Medium Sand- Occasional Clay Layers- Trace Silt, Gravel, Concrete Pieces, Slag Pieces and Coal Pieces- Brown with Black Staining- Moist to Wet (SP/Fill)	S2, S3
		Fibrous Peat- Occasional Root Pieces and Sand Partings- Black (Pt)	
10		END OF PROBE AT 10 FEET.	
15			

STANDARD PENETRATION - (BLOWS/FOOT)
20 30 40 50 60 100

LEGEND

NOTE (S):

1. Soil samples S1, S2, and S3 were submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the probe.
3. Odors and staining noted from 6.5 to 7.5 feet below grade.
4. Temporary well screen installed from 7 to 12 feet below grade.

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185563

KR059B029539

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 1/19/99
JOB NUMBER: KE31823

PROBE IA-10
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 20 30 40 50 60 100	LEGEND
		GROUND SURFACE ELEVATION = 783.07			
		2 Inches Asphalt Concrete over 2 Inches Sandy Gravel Base Material over 2 Inches Cement Concrete Pieces	S1		
5		Fine to Medium Sand- Trace Silt, Gravel, Wood Pieces and Coal Pieces- Brown to Gray (SP/Fill)	S2		
10		Fibrous Peat- Occasional Root Pieces and Sand Partings- Brown (Pt)			
15		END OF PROBE AT 12 FEET.			

NOTE (S):

1. Soil samples S1 and S2 were submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the probe.
3. Odors noted from 6 to 7 feet below grade.
4. Temporary well screen installed from 10 to 12 feet below grade.

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185564

KR059B029540

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 1/18/99
JOB NUMBER: KE31823

PROBE IA-11
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 20 30 40 50 60 100 | LEGEND

GROUND SURFACE ELEVATION = 784.50

Gravelly Fine to Medium Sand- Trace Silt and Brick Pieces- Brown- Moist (SP/Fill)

S1

S2

Fine to Medium Sand- Trace Silt- Gray- Moist to Wet (SP)

5

END OF PROBE AT 8 FEET.

NOTE (S):

1. Soil samples S1 and S2 were submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the probe.
3. Temporary well screen installed from 6 to 8 feet below grade.

10

15

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185565

KR059B029541

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 1/18/99
JOB NUMBER: KE31823

PROBE IA-12
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 20 30 40 50 60 100 | LEGEND

GROUND SURFACE ELEVATION = 761.91

Sandy Gravel- Trace Silt- Brown and White- Moist (GP/Fill) — S1

Fine Sand- Trace Silt, Medium Sand, Gravel, Concrete Pieces, Coal Pieces and Silty Clay Clumps- Brown- Moist (SP/Fill)

S2

Fine to Medium Sand- Trace Coarse Sand, Gravel and Silt- Brown- Moist to Wet (SP)

5

Sandy Silt- Trace Clay- Gray (ML)

Fibrous Peat- Occasional Root Pieces and Sand Partings- Brown (Pt)

10

END OF PROBE AT 9 FEET.

NOTE (S):

1. Soil samples S1 and S2 were submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the probe.
3. Temporary well screen installed from 2 to 7 feet below grade.

15

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185566

KR059B029542

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/3/99 & 6/9/99 PROBE SP10
JOB NUMBER: KE31823 SHEET: 1

WELL DIAGRAM

DRILLER: NBL/BEST RIG: HA/DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50 | LEGEND

GROUND SURFACE ELEVATION = 768.94

Fine to Medium Gravel - White (GP/Fill) — S1

Fine Sand- Trace to Some Silt- Trace Medium Sand & Gravel- Brown (SP/Fill) — S2

5

Fine to Medium Sand- Trace Silt, Gravel, Brick Pieces, Coal Pieces & Cinders- Brown & Black- Staining at 10 to 13 feet (SP/Fill) — S3

10

END OF PROBE AT 13 FEET.

15

NOTE (S):

1. Soil sampling was conducted from grade to 6 feet below grade on June 3, 1999 by hand auger due to the potential presence of subsurface utilities. The probe was terminated at 6 feet due to the presence of an unknown obstruction. The probe was offset 10 feet to the east on June 9, 1999 and soil sampling by hand auger was completed to the termination depth.
2. Soil sample S1, S2, and S3 were submitted for laboratory analysis.
3. Soil samples were physically classified from grade to termination depth of the probe.

20

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185567

KR059B029543

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/3/99 & 6/4/99 PROBE SP102
JOB NUMBER: KE31823 SHEET: 1

WELL DIAGRAM

DRILLER: NBL/BEST RIG: HA/DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = 762.31	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND
		Fine to Medium Sand- Trace Silt & Gravel- Brown- Moist (SP/Fill)	S1		
		Coal Pieces- Black (Fill)			
		Fine to Medium Sand- Trace Silt- Reddish Brown- Moist (SP/Fill)	S2		
		Fine Gravel- Trace Sand & Silt- Brown- Moist to Wet (GP/Fill)			
5			S3		
▼		Fine Sand- Trace Silt & Gravel- Brown- Moist to Wet (SP/Fill)	S4		
		END OF PROBE AT 9 FEET.			
10		NOTE (S):			
		1. Soil sampling was conducted from grade to 6 feet below grade on June 3, 1999 by hand auger due to the potential presence of subsurface utilities. Soil and groundwater sampling was conducted from 6 feet below grade to the termination depth on June 4, 1999 using direct-push soil probe.			
		2. Soil samples S1 & S2 were submitted for laboratory analysis.			
15		3. Soil samples were physically classified from grade to termination depth of the probe.			
		3. Temporary well screen installed from 4 to 9 feet below grade.			

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES: 1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185568

KR059B029544

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/3/99 & 6/4/99 PROBE SP10
JOB NUMBER: KE31823 SHEET: 1

DRILLER: NBL/BEST RIG: HA/DP

WELL DIAGRAM | DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50 | LEGEND

GROUND SURFACE ELEVATION = 771.10

Woodchips (Fill)

S1

Fine to Medium Sand- Trace Silt, Clay & Gravel- Brown- Moist to Wet (SP/Fill)

S2

5

S3

10

END OF PROBE AT 10 FEET.

NOTE (S):

1. Soil sampling was conducted from grade to 8 feet below grade on June 3, 1999 by hand auger due to the potential presence of subsurface utilities. Soil and groundwater sampling was conducted from 8 feet below grade to the termination depth on June 4, 1999 using direct-push soil probe.
2. Soil samples S1, S2, and S3 were submitted for laboratory analysis.
3. Soil samples were physically classified from grade to termination depth of the probe.
4. Temporary well screen installed from 5 to 10 feet below grade.

15

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185569

KR059B029545

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 8/3/99
JOB NUMBER: KE31823

PROBE SP10
SHEET: 1

WELL DIAGRAM

DRILLER: BEST RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = 763.52		
		2 Inches of Asphalt Concrete		
		Fine to Medium Sand- Trace Silt & Gravel- Brown- Moist (SP/Fill)	S1	
			S2	
5		Fine to Medium Sand- Trace Silt, Gravel, Brick Pieces, Concrete Pieces, Slag, Coal Pieces & Cinders- Brown & Black (SP/Fill)	S3	
			S4	
			S5	
10		END OF PROBE AT 10 FEET.		
15				

NOTE (S):

1. Soil samples S1 and S3 were submitted for laboratory analysis.
2. Soil samples were physically classified from grade to termination depth of the probe.
3. Temporary well screen installed from 5 to 10 feet below grade.

LEGEND

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185570

KR059B029546

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/3/99
JOB NUMBER: KE31823

PROBE SP105
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	PROFILE DESCRIPTION (GROUND SURFACE ELEVATION = 762.96)	SAMPLE TYPE, NUMBER & INTERVAL
	2 Inches of Asphalt Concrete	
	Fine to Medium Sand- Trace Silt & Gravel- Brown- Moist (SP/Fill)	S1
	Coke Cinders- Trace to Some Coal Pieces- Black- Moist (Fill)	S2
5	Fine to Medium Sand- Trace Silt, Gravel, Brick Pieces, Concrete Pieces, Coal Pieces, Slag & Cinders (SP/Fill)	S3
	Fine Sand- Trace Silt & Gravel- Brown- Wet (SP)	S4
	Fibrous Peat- Occasional Root Pieces & Sand Partings- Brown (PT)	S5
10	END OF PROBE AT 10 FEET.	
15		

STANDARD PENETRATION - (BLOWS/FOOT)
20 30 40 50 60 100

LEGEND

NOTE (S):

1. Soil sample S1 was submitted for laboratory analysis.
2. Soil samples were physically classified from grade to termination depth of the probe.
3. Temporary well screen installed from 5 to 10 feet below grade.

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185571

KR059B029547

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/3/99
JOB NUMBER: KE31823

PROBE SP106
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL
		GROUND SURFACE ELEVATION = 762.08	
		2 Inches of Asphalt Concrete	
		Fine to Medium Sand- Trace Silt & Gravel- Brown (SP/Fill)	S1
		Coke Cinders- Trace Coal Pieces, Brick Pieces, Gravel & Fine Sand- Black- Moist (Fill)	S2
5		Fine to Medium Sand & Fine Gravel- Trace Silt- Gray- Moist to Wet (SP)	S3
		Fibrous Peat- Occasional Root Pieces & Sand Partings- Brown (PT)	S4
		Fine Sand- Trace Silt- Light Gray- Wet (SP)	S5
10		END OF PROBE AT 10 FEET.	
15			

NOTE (S):

1. Soil sample S1 was submitted for laboratory analysis.
2. Soil samples were physically classified from grade to termination depth of the probe.
3. Temporary well screen installed from 5 to 10 feet below grade.

STANDARD PENETRATION - (BLOWS/FOOT)

20 30 40 50 60 100

LEGEND

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185572

KR059B029548

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/3/99
JOB NUMBER: KE31823

PROBE SP107
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	PROFILE DESCRIPTION (GROUND SURFACE ELEVATION = 765.54)	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 20 30 40 50 60 100
	Fine to Medium Sand- Trace to Some Gravel- Trace Silt- Brown- Moist (SP/Fill)	S1	
	Fine to Medium Sand- Trace Silt, Gravel, Concrete Pieces & Coal Pieces at 2.5 to 3.5 Feet- Brown- Moist (SP/Fill)	S2	
5	Clayey Sand- Trace to Some Silt- Trace Gravel- Brown (CL/Fill)	S3	
		S4	
	Fine Sand- Trace Silt & Gravel- Gray & Black- Wet (SP)		
10	Fibrous Peat- Occasional Root Pieces- Brown (PT)		
	END OF PROBE AT 10 FEET.		
15			

NOTE (S):

1. Soil sample S3 was submitted for laboratory analysis.
2. Soil samples were physically classified from grade to termination depth of the probe.
3. Temporary well screen installed from 5 to 10 feet below grade.

LEGEND

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185573

KR059B029549

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 8/3/99
JOB NUMBER: KE31823

PROBE SP108
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 20 30 40 50 60 100 | LEGEND

GROUND SURFACE ELEVATION = 782.92

Fine to Medium Sand- Trace to Some Gravel- Trace Silt- Brown- Moist (SP/Fill) — S1

Fine Sand- Trace Silt, Gravel & Coal Pieces at 3.75 Feet- Brown- Moist to Wet (SP/Fill) — S2, S3

5

Fine to Coarse Sand- Trace Gravel, Silt, Brick & Limestone Pieces- Black- Wet (SP/Fill) — S4, S5

10

Fibrous Peat- Occasional Root Pieces- Brown (PT)

END OF PROBE AT 10 FEET.

NOTE (S):

1. Soil sample S3 was submitted for laboratory analysis.
2. Soil samples were physically classified from grade to termination depth of the probe.
3. Temporary well screen installed from 5 to 10 feet below grade.

15

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185574

KR059B029550

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/3/99
JOB NUMBER: KE31823

PROBE SP109
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 20 30 40 50 60 100 | LEGEND

GROUND SURFACE ELEVATION = 781.93

Fine to Medium Sand- Trace to Some Gravel- Trace Silt- Brown- Moist (SP/Fill) — S1

Fine to Medium Sand- Trace Silt, Gravel, Slag & Coal Pieces- Brown & Black- Moist to Wet (SP/Fill) — S2

5 — S3

Fine Sand- Trace Silt- Gray- Wet (SP) — S4

Fibrous Peat- Occasional Root Pieces- Brown (PT)

END OF PROBE AT 8 FEET.

NOTE (S):

1. Soil sample S2 was submitted for laboratory analysis.
2. Soil samples were physically classified from grade to termination depth of the probe.
3. Temporary well screen installed from 3 to 8 feet below grade.

10

15

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185575

KR059BD29551

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 8/4/99
JOB NUMBER: KE31823

PROBE SP110
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND
		GROUND SURFACE ELEVATION = 782.69			
		2 Inches of Asphalt Concrete	S1		
		Fine to Medium Sand- Trace Silt and Gravel- Brown- Moist (SP/Fill)			
		Fine to Medium Sand- Trace Gravel, Silt, Cinders, Slag and Coal Pieces- Black- Moist (SP/Fill)	S2		
		END OF PROBE AT 4 FEET.			
5					

NOTES:
1. Soil sample S1 submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of probe.
3. Probe backfilled with bentonite.
4. Groundwater not encountered.

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185576

KR059B029552

SOIL AND MATERIALS ENGINEERS, IN(

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 8/4/99
JOB NUMBER: KE31823

PROBE SP111
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = 762.47		
		2 Inches of Asphalt Concrete	S1	
		Fine to Medium Sand- Trace Silt and Gravel- Brown- Moist (SP/Fill)		
		Silty Fine Sand- Trace Gravel, Brick Pieces, Cinders, Slag and Concrete Pieces- Brown and Black (SM/Fill)	S2	
5		END OF PROBE AT 4 FEET.		

NOTES:
1. Soil sample S1 submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of probe.
3. Probe backfilled with bentonite.
4. Groundwater not encountered.

LEGEND

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185577

KR059B029553

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/4/99
JOB NUMBER: KE31823

PROBE SP112
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = 763.45	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND
		Gravelly Fine to Medium Sand- Trace Silt- Brown- Moist (SP/Fill)	S1		
		3 Inches of Asphalt Concrete			
		Fine to Medium Sand- Trace Silt, Gravel, Brick Pieces, Coal Pieces and Organics- Brown and Black (SP/Fill)	S2		
5		END OF PROBE AT 4 FEET.			

NOTES:
1. Soil samples S1 and S2 submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of probe.
3. Probe backfilled with bentonite.
4. Groundwater not encountered.

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185578

KR059B029554

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/4/99
JOB NUMBER: KE31823

PROBE SP113
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND
		GROUND SURFACE ELEVATION = 762.67			
		2 Inches of Asphalt Concrete	S1		
		Fine to Medium Sand- Trace Gravel, Silt, Coal Pieces, Brick Pieces and Silty Clay Layers- Brown and Black- Moist (SP/Fill)	S2		
5		END OF PROBE AT 4 FEET.			

NOTES:
1. Soil samples S1 and S2 submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of probe.
3. Probe backfilled with bentonite.
4. Groundwater not encountered.

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185579

KR059B029555

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/4/99
JOB NUMBER: KE31823

PROBE SP114
SHEET: 1

WELL DIAGRAM

DRILLER: BEST RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = 762.39	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND
		2 Inches of Asphalt Concrete	S1		
		Fine to Medium Sand- Trace Gravel, Silt, Coal Pieces and Brick Pieces- Brown and Black- Moist (SP/Fill)	S2		
5		END OF PROBE AT 4 FEET.			

NOTES:
1. Soil samples S1 and S2 submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of probe.
3. Probe backfilled with bentonite.
4. Groundwater not encountered.

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185580

KR059B029556

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/4/99
JOB NUMBER: KE31823

PROBE SP115
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50 | LEGEND

GROUND SURFACE ELEVATION = 762.04

2 Inches of Asphalt Concrete

S1

Fine to Medium Sand- Trace Gravel, Silt, Coal Pieces and Brick Pieces- Brown and Black- Moist (SP/Fill)

S2

END OF PROBE AT 4 FEET.

NOTES:
1. Soil samples S1 and S2 submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of probe.
3. Probe backfilled with bentonite.
4. Groundwater not encountered.

5

KR059B029557

WATER LEVEL OBSERVATIONS

NOTES: 1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185581

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 8/4/99
JOB NUMBER: KE31823

PROBE SP116
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = 761.83	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION – (BLOWS/FOOT) 20 30 40 50 60 100
		Gravelly Fine to Medium Sand– Trace Silt– Brown– Moist (SP/Fill)	S1	
		Fine to Medium Sand– Trace Gravel, Silt, Cinders and Slag Pieces– Brown and Black– Moist (SP/Fill)		
		END OF PROBE AT 2 FEET.		
5				

NOTES:
1. Soil sample S1 submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of probe.
3. Probe backfilled with bentonite.
4. Groundwater not encountered.

LEGEND

KR059B029558

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185582

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/4/99
JOB NUMBER: KE31823

PROBE SP117
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = 762.60	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		2 Inches of Asphalt Concrete	S1	
		Fine to Medium Sand- Trace Silt and Gravel- Brown- Moist (SP/Fill)		
		Fine to Medium Sand- Trace Gravel, Brick Pieces and Coal Pieces- Brown and Black- Moist (SP/Fill)	S2	
5		END OF PROBE AT 4 FEET.		

NOTES:
1. Soil samples S1 and S2 submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of probe.
3. Probe backfilled with bentonite.
4. Groundwater not encountered.

LEGEND

KR059B029559

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185583

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 8/4/99
JOB NUMBER: KE31823

PROBE SP118
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND
		GROUND SURFACE ELEVATION = 762.24			
		2 Inches of Asphalt Concrete	S1		
		Fine to Medium Sand- Trace Gravel, Silt, Brick Pieces, Cinders and Slag Pieces- Brown and Black- Moist (SP/Fill)	S2		
5		END OF PROBE AT 4 FEET.			

NOTES:
1. Soil samples S1 and S2 submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of probe.
3. Probe backfilled with bentonite.
4. Groundwater not encountered.

KR059B029560

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185584

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/4/99
JOB NUMBER: KE31823

PROBE SP119
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = 762.21		
		2 Inches of Asphalt Concrete	S1	
		Fine to Medium Sand- Trace Gravel, Coal Pieces and Cinders- Black- Moist (SP/Fill)		
		Fine to Medium Sand- Trace Coarse Sand and Gravel- Brown- Moist (SP/Fill)	S2	
5		END OF PROBE AT 4 FEET.		

NOTES:
1. Soil samples S1 and S2 submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of probe.
3. Probe backfilled with bentonite.
4. Groundwater not encountered.

LEGEND

KR059B029561

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185585

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/4/99
JOB NUMBER: KE31823

PROBE SP120
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = 762.46		
		2 Inches of Asphalt Concrete	S1	
		Fine to Medium Sand- Trace Gravel, Coal Pieces and Cinders- Black- Moist (SP/Fill)	S2	
5		END OF PROBE AT 4 FEET.		

NOTES:
1. Soil samples S1 and S2 submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of probe.
3. Probe backfilled with bentonite.
4. Groundwater not encountered.

LEGEND

KR059B029562

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185586

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 8/4/99
JOB NUMBER: KE31823

PROBE SP121
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50 | LEGEND

GROUND SURFACE ELEVATION = 761.77

Fine to Medium Gravel- Trace Silt and Sand- Brown- Moist (GP/Fill)

3 Inches of Asphalt Concrete Over 3 Inches of Sand and Gravel Base Material

6 Inches Cement Concrete

Fine to Medium Sand- Trace Gravel, Silt, Cinders and Slag Pieces- Brown and Black- Moist (SP/Fill)

S1

END OF PROBE AT 2 FEET.

NOTES:
1. Soil sample S1 submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of probe.
3. Probe backfilled with bentonite.
4. Groundwater not encountered.

5

KR059B029563

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185587

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/4/99
JOB NUMBER: KE31823

PROBE SP122
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = 762.40		
		2 Inches of Asphalt Concrete	S1	
		Fine to Medium Sand- Trace Silt, Gravel, Brick Pieces and Clay Clumps- Brown- Moist (SP/Fill)		
		Mixture of Coal Pieces, Cinders, Slag Pieces and Brick Pieces- Black and Red (Fill)	S2	
		END OF PROBE AT 4 FEET.		
5				

NOTES:
1. Soil samples S1 and S2 submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of probe.
3. Probe backfilled with bentonite.
4. Groundwater not encountered.

LEGEND

KR059B029564

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185588

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/4/99
JOB NUMBER: KE31823

PROBE SP123
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = 762.75		
		2 Inches of Asphalt Concrete	S1	
		Fine to Medium Sand- Trace Silt, Gravel and Clay Clumps- Brown- Moist (SP/Fill)		
		Mixture of Coal Pieces, Cinders, Slag Pieces, Brick Pieces, Sand and Gravel- Black, Red and Brown (Fill)	S2	
		END OF PROBE AT 4 FEET.		
5		NOTES: 1. Soil samples S1 and S2 submitted for laboratory analysis. 2. Soil samples were physically classified from grade to the termination depth of probe. 3. Probe backfilled with bentonite. 4. Groundwater not encountered.		

LEGEND

KR059B029565

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185589

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/4/99
JOB NUMBER: KE31823

PROBE SP124
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND
		GROUND SURFACE ELEVATION = 762.84			
		Silty Fine Sand- Trace Organics, Wood Pieces, Roots, Clay Pieces and Gravel with Plastic and Metal Pieces from 3.75 to 4 Feet- Brown (SM/Fill)	S1		
			S2		
5		END OF PROBE AT 4 FEET.			

NOTES:
1. Soil samples S1 and S2 submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of probe.
3. Probe backfilled with bentonite.
4. Groundwater not encountered.

KR059B029566

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185590

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/4/99
JOB NUMBER: KE31823

PROBE SP125
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE
ELEVATION = 762.88

STANDARD PENETRATION (BLOWS/FOOT): 0 10 20 30 40 50

2 Inches of Asphalt Concrete

S1

Fine to Medium Sand- Trace Gravel, Silt, Concrete Pieces, Brick Pieces and Cinders- Brown and Black- Moist (SP/Fill)

S2

END OF PROBE AT 4 FEET.

NOTES:
1. Soil samples S1 and S2 submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of probe.
3. Probe backfilled with bentonite.
4. Groundwater not encountered.

5

KR059B029567

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185591

SOIL AND MATERIALS ENGINEERS, INC

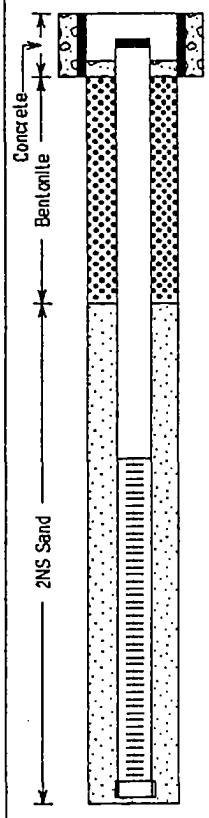
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 2/3/99
JOB NUMBER: KE31823

BORING MW-1
SHEET: 1

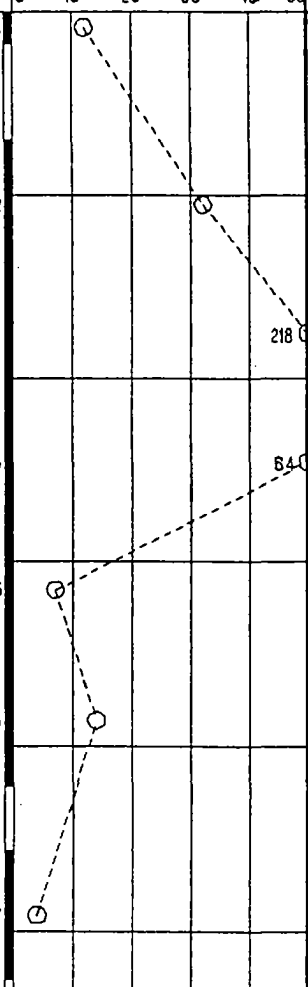
DRILLER: GLD RIG: HSA

WELL DIAGRAM



DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL
		GROUND SURFACE ELEVATION = 767.05	
		Gravelly Sand- Trace Silt- Brown- Moist (SP/Fill)	S1, S2
5		Silty Fine to Medium Sand- Trace Gravel and Silty Clay Clumps- Brown- Moist- Dense to Extremely Dense to Very Dense (SM/Fill)	S3, S4
10		Fine to Coarse Sand- Trace Silt and Gravel- Brown- Moist to Wet- Loose to Medium Dense to Loose (SP)	S5, S6, S7
15		END OF BORING AT 15 FEET.	

STANDARD PENETRATION - (BLOWS/FOOT)



LEGEND

KR059B029568

NOTE (S):

1. Soil samples S1 and S4 were submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the boring.
3. Permanent well installed in borehole.
4. TOC Elevation = 768.51 ft. MSL

WATER LEVEL OBSERVATIONS

- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER 0 HOURS AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185592

SOIL AND MATERIALS ENGINEERS, INC

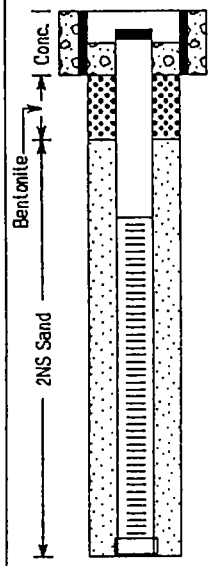
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 2/3/99
JOB NUMBER: KE31823

BORING MW-2
SHEET: 1

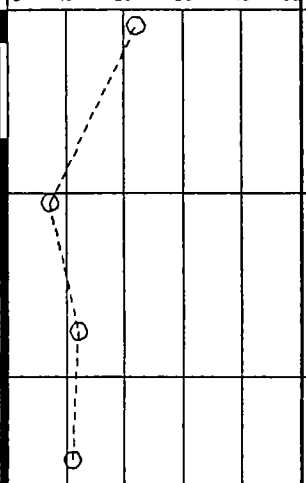
DRILLER: GLD | RIG: HSA

WELL DIAGRAM



DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL
		GROUND SURFACE ELEVATION = 783.0	
		3 Inches Asphalt Concrete	S1
		Fine to Medium Sand- Trace Brick Pieces, Coal Pieces, Cinders, Gravel and Silt- Black and Brown- Moist to Wet- Loose to Medium Dense (SP/Fill)	S2, S3, S4
5			
		Fibrous Peat- Occasional Root Pieces and Sand Partings- Brown (Pt)	
		END OF BORING AT 8.5 FEET.	
10			
15			

STANDARD PENETRATION - (BLOWS/FOOT)



LEGEND

NOTE (S):

1. Soil samples S1 and S3 were submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the boring.
3. Permanent well installed in borehole.
4. TOC Elevation = 785.58 ft. MSL

KR059B029569

WATER LEVEL OBSERVATIONS
GROUNDWATER ENCOUNTERED DURING DRILLING
GROUNDWATER 0 HOURS AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185593

SOIL AND MATERIALS ENGINEERS, INC

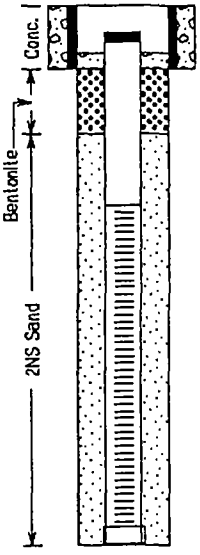
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMER ENERGY COMPANY

A/E:
BY: NBL DATE: 2/1/99
JOB NUMBER: KE31823

BORING MW-3
SHEET: 1

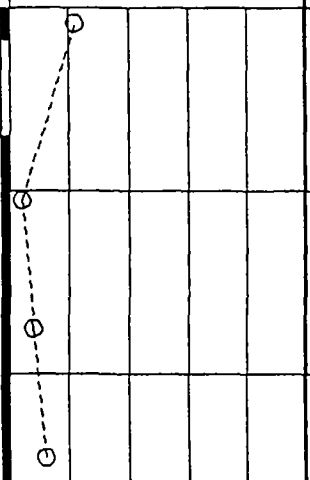
DRILLER: GLD | RIG: HSA

WELL DIAGRAM



DEPTH (FEET)	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL
	GROUND SURFACE ELEVATION = 761.43	
	Gravelly Sand- Trace Silt- Brown (SP/Fill)	S1
	Fine to Coarse Sand- Trace Silt and Gravel- Brown- Moist to Wet- Very Loose to Loose (SP/Fill)	S2, S3
5		
	Fibrous Peat- Occasional Root Pieces and Sand Partings- Brown (Pt)	S4
	Fine Sand- Trace Medium Sand, Silt and Gravel- Gray- Moist to Wet (SP)	
10	END OF BORING AT 8.5 FEET	
15		

STANDARD PENETRATION - (BLOWS/FOOT)



LEGEND

NOTE (S):

1. Soil sample S1 was submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the boring.
3. Odors noted from 7 to 8 feet below grade.
4. Permanent well installed in borehole.
5. TOC Elevation = 760.86 ft. MSL

KR059B029570

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▽ GROUNDWATER 0 HOURS AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185594

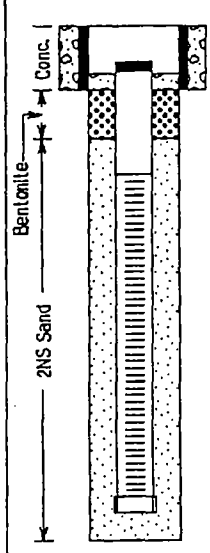
SOIL AND MATERIALS ENGINEERS, INC.

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 2/1/99
JOB NUMBER: KE31823

BORING MW-4
SHEET: 1

WELL DIAGRAM



DRILLER: GLD | RIG: HSA

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = 761.70		
		Fine to Medium Sand- Trace to Some Silt- Trace Topsoil and Gravel- Brown- Moist (SP-SM/Fill)	S1	
		Fine to Medium Sand- Trace Silt, Gravel, Brick Pieces, Coal Pieces, Slag and Cinders- Brown and Black- Moist- Very Loose (SP/Fill)	S2	
5		Clayey Silt- Trace Sand- Gray- Very Soft (ML)	S3	
		Fine Sand- Trace Silt- Gray with Black Staining- Wet- Very Loose (SP)	S4	
		Fibrous Peat- Occasional Root Pieces and Sand Partings- Brown (Pt)		
		END OF BORING AT 8 FEET		
10				
15				

NOTE (S):

1. Soil sample S1 was submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the boring.
3. Odors and staining noted from 4 to 6.5 feet below grade.
4. Permanent well installed in borehole.
5. TOC Elevation = 760.99 ft. MSL

LEGEND

KR059B029571

WATER LEVEL OBSERVATIONS

- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER 0 HOURS AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185595

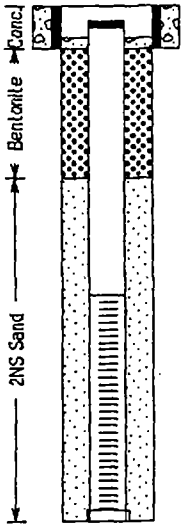
SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 2/3/99 & 2/22/99 BORING P-1
JOB NUMBER: KE31823 SHEET: 1

DRILLER: NBL/BEST RIG: HA/HSA

WELL DIAGRAM



DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 20 30 40 50 60 100
		GROUND SURFACE ELEVATION = 768.91		
		Fine to Medium Gravel- White- Moist (GP/Fill)	S1	
5		Silty Fine Sand- Trace Medium Sand, Gravel and Silty Clay Clumps- Brown- Moist (SM/Fill)	S2	
10				
		END OF BORING AT 12 FEET.		
15				
20				
25				

NOTE (S):

1. Soil sampling was conducted from grade to 8 feet below grade on February 3, 1999 by hand auger due to the potential presence of subsurface utilities. Soil and groundwater was conducted from 8 feet below grade to the termination depth on February 22, 1999 using hollow stem augers.
2. Soil samples S1 and S2 were submitted for laboratory analysis.
3. Soil samples were phyically classified from grade to the termination depth of the boring
4. Permanent well installed in borehole.
5. TOC Elevation = 768.38 ft. MSL

LEGEND

KR059B029572

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▽ GROUNDWATER 0 HOURS AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185596

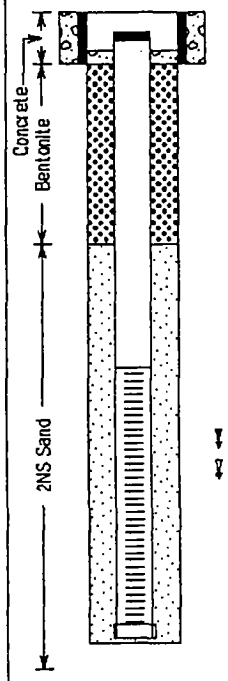
SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 2/1/99
JOB NUMBER: KE31823

BORING P-2
SHEET: 1

WELL DIAGRAM



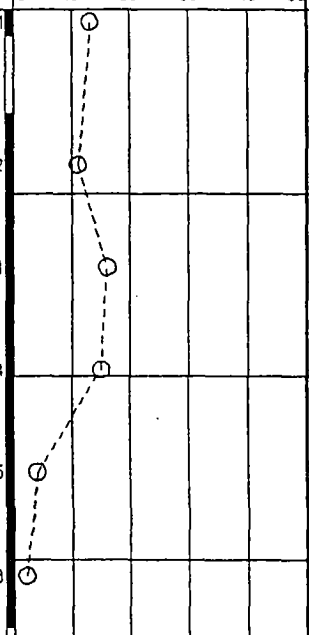
DRILLER: GLD | RIG: HA

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL
		GROUND SURFACE ELEVATION = 766.95	
		Sandy Gravel- Trace Silt- Brown- Moist (GP/Fill)	S1, S2
5		Fine Sand- Trace Silt and Gravel- Brown- Moist- Medium Dense (SP/Fill)	S3, S4
10		Fine to Medium Sand- Trace Gravel, Brick Pieces, Cinders and Silt- Brown and Black- Moist to Wet- Medium Dense to Very Loose (SP/Fill)	S5
		Fibrous Peat- Occasional Root Pieces and Sand Partings- Brown (Pt)	S6
		END OF BORING AT 12 FEET.	
15			
20			

NOTE (S):

1. Soil samples S1 and S2 were submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the boring.
3. Odors noted from 8 to 12 feet below grade.
4. Permanent well installed in borehole.
5. TOC Elevation = 768.35 ft. MSL

STANDARD PENETRATION - (BLOWS/FOOT)



LEGEND

KR059B029573

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185597

SOIL AND MATERIALS ENGINEERS, INC

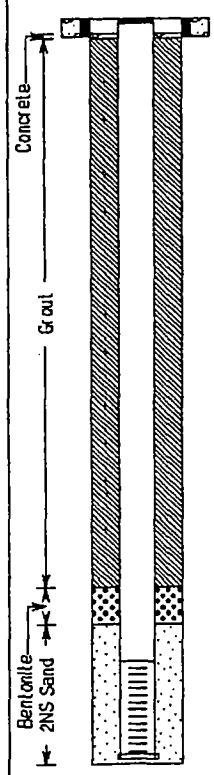
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/18/99
JOB NUMBER: KE31823

BORING P2D
SHEET: 1

DRILLER: Stearns | RIG: HSA

WELL DIAGRAM



DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL

GROUND SURFACE ELEVATION = 766.84

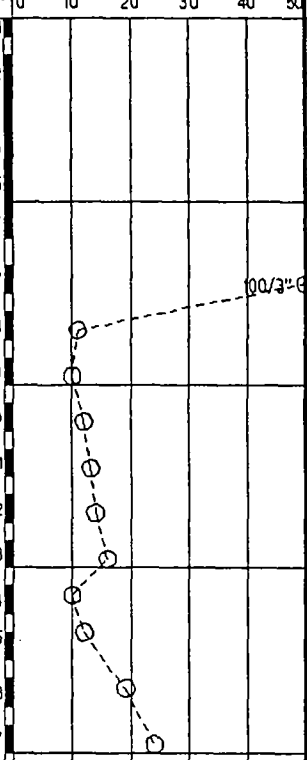
- Fine to Medium Gravel- White (GP/Fill)
- Fine Sand- Trace Silt & Gravel- Brown- Moist- Medium Dense (SP/Fill)
- Fine to Medium Sand- Trace Gravel, Brick Pieces, Cinder & Silt- Brown & Black- Moist to Wet- Medium Dense to Very Loose (SP/Fill)
- Fibrous Peat- Occasional Root Pieces & Sand Partings- Brown (PT)
- Fine to Medium Sand- Trace Silt, Brick Pieces, Gravel & Concrete Pieces- Black & Brown- Wet- Extremely Dense (SP/Fill)
- Fine to Medium Sand- Trace Silt & Gravel- Black to Gray at 21 Feet- Wet- Medium Dense (SP)
- Sandy Silt- Trace Clay with Occasional Fine Sand Partings- Gray- Medium (ML)
- Fine to Medium Sand- Trace Silt- Brown- Wet- Medium Dense (SP)

END OF BORING AT 40 FEET.

NOTE (S):

1. Soil description from surface to 12 feet obtained from P2, conducted approximately 5 feet to north of P2D. The remainig depth (12 feet to 40 feet) was physically classified during drilling.
2. Permanent monitoirng well installed in borehole.
3. Odors noted from 8 to 40 feet below grade.
4. TOC Elevation = 766.61

STANDARD PENETRATION - (BLOWS/FOOT)



LEGEND

KR059B029574

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185598

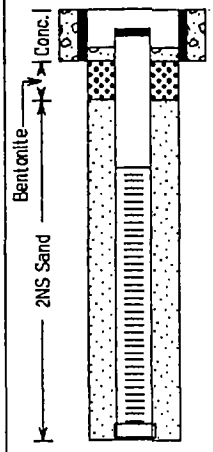
SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 2/3/99
JOB NUMBER: KE31823

BORING P-3
SHEET: 1

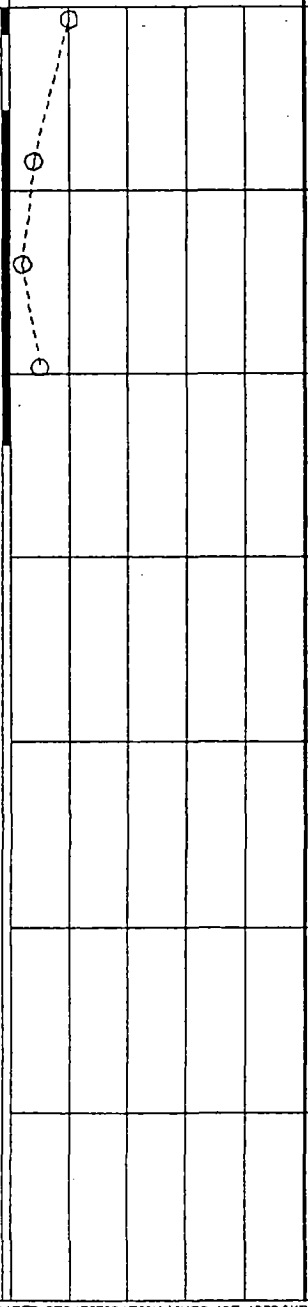
WELL DIAGRAM



DRILLER: GLD | RIG: HA

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL
		GROUND SURFACE ELEVATION = 761.87	
		3 Inches Asphalt Concrete	S1
		Fine to Medium Sand- Trace Silt, Gravel, Coal Pieces, Cinders, Slag and Brick Pieces- Black and Gray- Moist to Wet- Very Loose to Loose (SP/Fill)	S2, S3
5			
		Fibrous Peat- Occasional Root Pieces and Sand Partings- Brown (Pt)	S4
		END OF BORING AT 8.5 FEET.	
10			
15			
20			

STANDARD PENETRATION - (BLOWS/FOOT)



NOTE (S):

1. Soil sample S1 was submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the boring.
3. Odors noted from 8 to 8 feet below grade.
4. Permanent well installed in borehole.
5. TOC Elevation = 761.35 ft. MSL

LEGEND

KR059B029575

WATER LEVEL OBSERVATIONS

GROUNDWATER ENCOUNTERED DURING DRILLING
GROUNDWATER 0 HOURS AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185599

SOIL AND MATERIALS ENGINEERS, INC

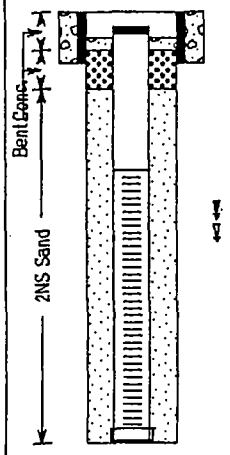
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 2/1/99
JOB NUMBER: KE31823

BORING P-4
SHEET: 1

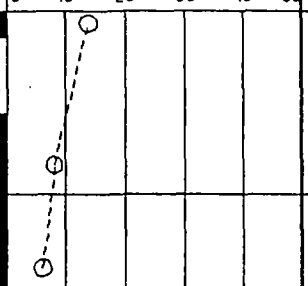
DRILLER: GLD | RIG: HA

WELL DIAGRAM



DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL
		GROUND SURFACE ELEVATION = 761.95	
		3 Inches Asphalt Concrete	S1
		Fine to Medium Sand- Trace Silt, Gravel, Slag, Cinders, Brick Pieces and Coal Pieces- Black and Gray- Moist to Wet- Medium Dense to Loose (SP/Fill)	S2
5		Fine Sand- Trace Silt, Medium Sand and Gravel- Brown- Wet- Loose (SP)	S3
		Fibrous Peat- Occasional Root Pieces and Sand Partings- Brown (Pt)	
		END OF BORING AT 8.5 FEET.	
10		NOTE (S):	
		1. Soil sample S1 was submitted for laboratory analysis.	
		2. Soil samples were physically classified from grade to the termination depth of the boring.	
		3. Permanent well installed in borehole.	
		4. TOC Elevation = 761.51 ft. MSL	
15			
20			

STANDARD PENETRATION - (BLOWS/FOOT)



LEGEND

KR059B029576

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▽ GROUNDWATER 0 HOURS AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185600

SOIL AND MATERIALS ENGINEERS, IN

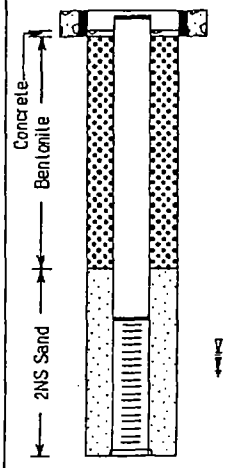
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/17/99
JOB NUMBER: KE31823

BORING MW101
SHEET: 1

DRILLER: Stearns | RIG: HSA

WELL DIAGRAM



DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION (GROUND SURFACE ELEVATION = 771.74)	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		3 Inches of Asphalt Concrete		
		Sandy Gravel- Trace Silt- Brown- Moist (GP/Fill)		
5		Fine to Medium Sand- Trace Gravel & Silt- Occasional Silty Clay Clumps- Brown- Moist (SP/Fill)		
10		Silty Fine Sand- Trace Medium Sand & Gravel- Brown- Moist (SM)		
		Clayey Silt- Occasional Sandy Seams- Gray & Brown with Black Staining- Medium (ML)		
15		Fine Sand- Trace to Some Silt- Trace Gravel & Clay- Brown & Gray- Wet- Medium Dense (SP)		
20		END OF BORING AT 17 FEET.		
25				
30				
35				
40				
45				

NOTE (S):

1. Soil descriptions from surface to termination depth (17') obtained from IA-1 & MW101D, conducted approximately 4' to east of MW101.
2. Permanent monitoring well installed in borehole.
3. TOC Elevation = 771.41

LEGEND

KR059B029577

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▽ GROUNDWATER GAUGED ON 6/22/99

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185601

SOIL AND MATERIALS ENGINEERS, INC

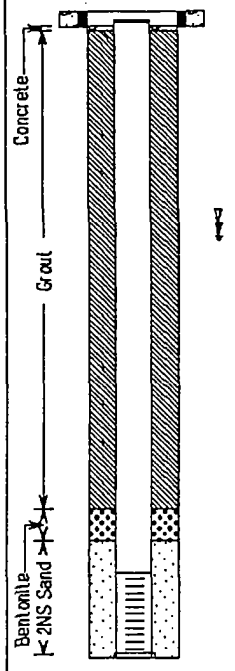
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/16/99
JOB NUMBER: KE31823

PROBE MW101D
SHEET: 1

DRILLER: Stearns | RIG: HSA

WELL DIAGRAM



DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE ELEVATION = 771.59

3 Inches of Asphalt Concrete

Sandy Gravel- Trace Silt- Brown- Moist (GP/Fill)

Fine to Medium Sand- Trace Gravel & Silt- Occasional Silty Clay Clumps- Brown- Moist (SP/Fill)

Silty Fine Sand- Trace Medium Sand & Gravel- Brown- Moist (SM)

Clayey Silt- Occasional Sandy Seams- Gray & Brown with Black Staining- Medium (ML)

Fine Sand- Trace to Some Silt- Trace Gravel & Clay- Brown & Gray- Wet- Medium Dense (SP)

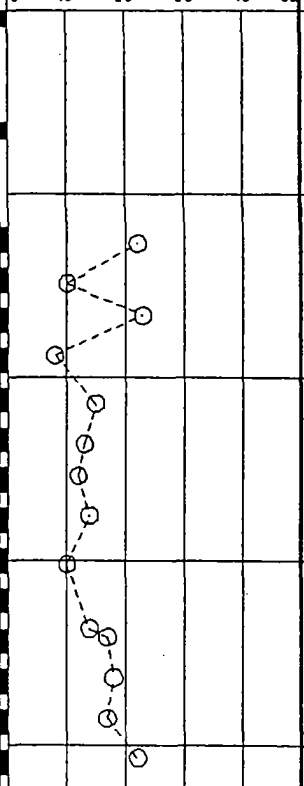
Sandy Silt- Trace Clay & Gravel- Brown with Black Staining- Medium (ML)

Fine to Medium Sand- Trace Silt & Gravel- Black to Brown- Wet- Medium Dense (SP)

END OF BORING AT 47.5 FEET.

NOTE (S):

1. Soil descriptions from surface to 16 feet obtained from IA-1. The remaining depth (16 to 47.5 feet) was physically classified during drilling.
2. Soil samples were physically classified from grade to termination depth of boring.
3. Permanent monitoring well installed in borehole.
4. Odors noted from 13.5 to 40 feet below grade.
5. Soil samples S3 and S16 submitted for laboratory analysis.
6. Black coloring at 41 to 45 feet believed to be organic.
7. TOC Elevation = 770.91



KR059B029578

WATER LEVEL OBSERVATIONS

- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER 0 HOURS AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185602

SOIL AND MATERIALS ENGINEERS, INC

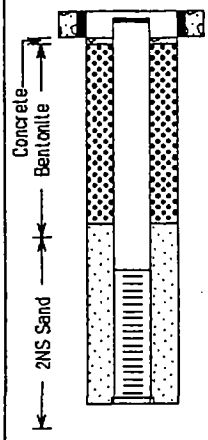
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/17/99
JOB NUMBER: KE31823

BORING MW103
SHEET: 1

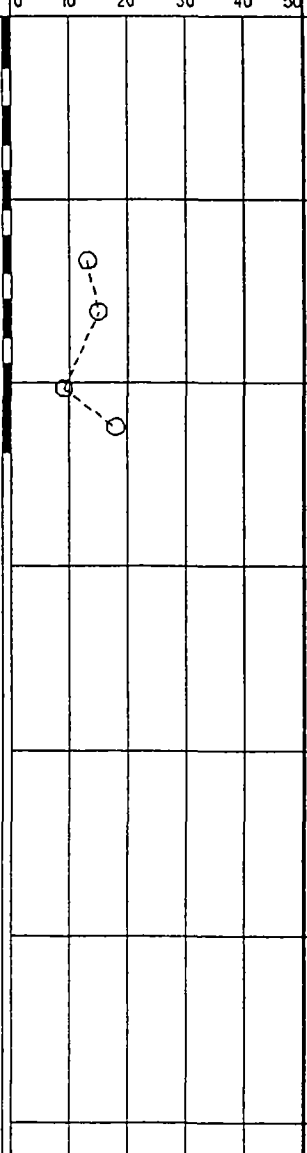
DRILLER: NBL/Stearns | RIG: HA/HSA

WELL DIAGRAM



DEPTH (FEET)	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL
	GROUND SURFACE ELEVATION = 771.99	
	6 Inches of Asphalt Concrete over 16 Inches of Base Material	S1
5		S2
	Fine to Medium Sand- Trace Silt & Gravel- Brown with Black Staining at 12 to 12.5- Moist to Wet- Medium Dense (SP)	S3
10		S4
		S5
		S6
15	Sandy Silt- Trace to Some Clay with Occasional Fine Sand Seams- Brown (ML)	S7
	END OF BORING AT 17 FEET.	
20		
25		
30		
35		
40		
45		

STANDARD PENETRATION - (BLOWS/FOOT)



LEGEND

NOTE (S):

1. Soil sampling was conducted from grade to 5 feet below grade on June 17, 1999 by hand auger due to the potential presence of subsurface utilities. Soil sampling from 5 feet to the termination depth of the boring was completed using HSAs.
2. Soil sample S4, S5, and S6 were submitted for laboratory analysis.
3. Soil samples were physically classified from grade to termination depth of the boring.
4. Temporary well screen installed from 5 to 10 feet below grade.
5. Odors noted in at 11 to 12.5 feet.
6. TOC Elevation = 771.52

KR059B029579

WATER LEVEL OBSERVATIONS

GROUNDWATER ENCOUNTERED DURING DRILLING
GROUNDWATER 0 HOURS AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185603

SOIL AND MATERIALS ENGINEERS, IN

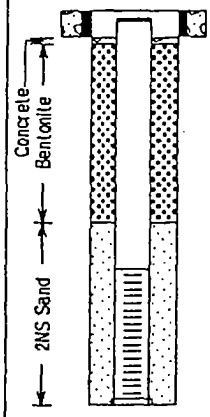
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/18/99
JOB NUMBER: KE31823

BORING MW102
SHEET: 1

DRILLER: NBL/Stearns | RIG: HA/HSA

WELL DIAGRAM

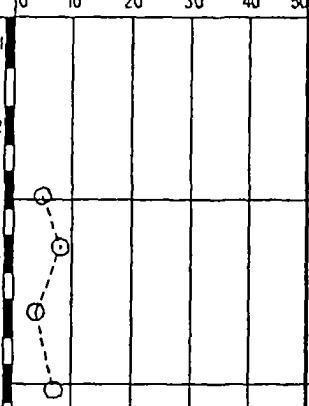


DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL
		GROUND SURFACE ELEVATION = 770.02	
		Fine to Medium Sand- Some Gravel- Trace Silt- Brown- Moist (SP/Fill)	S1
5		Fine Sand- Trace to Some Silt- Trace Medium Sand & Gravel- Brown- Moist (SP/Fill)	S2, S3
10		Fine Sand- Trace Silt with Occasional Clayey Silt Seams- Brown- Loose (SP)	S4, S5, S6
15		END OF BORING AT 15 FEET.	
20			
25			
30			
35			
40			
45			

NOTE (S):

1. Soil sampling was conducted from grade to 5 feet below grade on June 18, 1999 by hand auger due to the potential presence of subsurface utilities. Soil sampling from 5 feet to the termination depth of the boring was completed using HSAs.
2. Soil samples were physically classified from grade to termination depth of the boring.
3. Soil samples S3 & S6 submitted for laboratory analysis.
4. Permanent monitoring well installed in borehole.
5. TOC Elevation = 769.88

STANDARD PENETRATION - (BLOWS/FOOT)



LEGEND

KR059B029580

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▽ GROUNDWATER GAUGED ON 6/22/99

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED

00185604

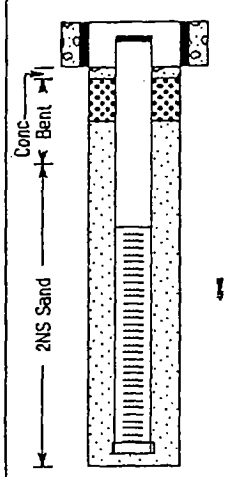
SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/16/99
JOB NUMBER: KE31823

BORING MW104
SHEET: 1

WELL DIAGRAM



DRILLER: Stearns | RIG: HSA

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = 763.07		
		Fine to Medium Sand- Trace to Some Gravel- Trace Silt- Brown- Moist (SP/Fill)		
		Fine Sand- Trace Silt, Gravel & Coal Pieces at 3.75 Feet- Brown- Moist to Wet (SP/Fill)		
5				
		Fine to Coarse Sand- Trace Gravel, Silt, Brick & Limestone Pieces- Black- Wet (SP/Fill)		
10		END OF BORING AT 9 FEET.		
15				
20				
25				

NOTE (S):

1. Soil descripiton from surface to termination depth of boring obtained from PB201, conducted approximately 8 feet to east of MW104.
2. Permanent monitoirng well installed in borehole.
3. TOC Elevation = 762.74

LEGEND

KR059B029581

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▽ GROUNDWATER GAUGED ON 6/22/99

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185605

SOIL AND MATERIALS ENGINEERS, INC

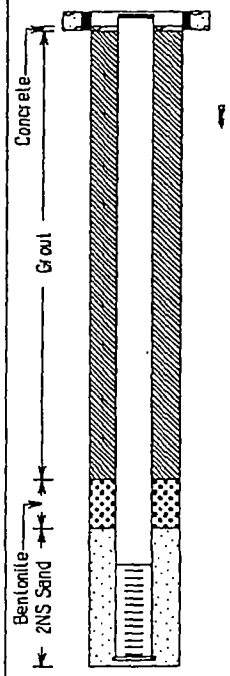
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 8/18/99
JOB NUMBER: KE31823

BORING MW104D
SHEET: 1

DRILLER: Stearns | RIG: HSA

WELL DIAGRAM



DEPTH (FEET)	PROFILE DESCRIPTION (GROUND SURFACE ELEVATION = 782.92)	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION – (BLOWS/FOOT) 0 10 20 30 40 50
	Fine to Medium Sand- Trace to Some Gravel- Trace Silt- Brown- Moist (SP/Fill)		
5	Fine Sand- Trace Silt, Gravel & Coal Pieces at 3.75 Feet- Brown- Moist to Wet (SP/Fill)		
10	Fine to Coarse Sand- Trace Gravel, Silt, Brick & Limestone Pieces- Black- Wet (SP/Fill)		
15	Fiberous Peat- Occasional Root Pieces- Brown (PT)		
20	Fine Sand- Trace Silt, Medium Sand & Gravel- Gray with Black Discoloring- Wet- Very Loose to Loose (SP)		
25	Clayey Silt- Trace Sand with Occasional Sand Partings- Gray- Soft (ML)		
30	Silty Fine Sand with Occasional Silty Seams- Gray- Loose (SM)		
35	Fine to Medium Sand- Trace Silt & Coarse Sand- Brown- Wet- Loose to Medium Dense to Very Dense (SP)		
40	END OF BORING AT 35 FEET.		
45	NOTE (S):		
50	1. Soil descripiton from surface to termination depth of boring obtained from PB201, conducted approximately 8 feet to east of MW104.		
55	2. Permanent monitoirng well installed in borehole.		
60	3. TOC Elevation = 782.66		
65	KR059B029582		

LEGEND

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING
▽ GROUNDWATER GAUGED ON 6/22/99

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185606

AMERICAN HYDROGEOLOGY CORPORATION

SME MW105

WELL/BORING LOG

PROJECT #: 26-1729

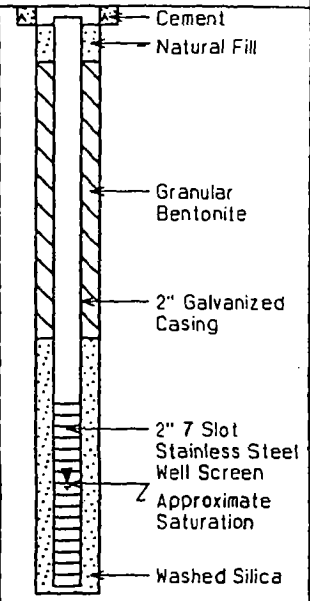
Project: Pharmacia and Upjohn - Portage and South
Location: North of building 214
Date (s) Drilled: September 11, 1996
Logged By: Jason J. Ollila
Drilling Co.: Stearns
Weather Conditions: ≈80°, sunny

Well/Boring ID: MW-10s
Page: 1 of 1
Boring Depth: 16.0'
Boring Diameter: 8.25"
Drilling Method: Hollow stem auger
Drilling Equipment: Mobile Drill B-59
Top of Slots: 10.8' bgs
Bottom of Slots: 15.8' bgs

DEPTH feet (bgl)	SAMPLE DEPTH	SAMPLE BLOWS COUNTS	SAMPLE RECOVERY	PID	STRATA	DESCRIPTION
						Brown medium to coarse GRAVEL, some fine to medium Sand. Gravel angular to subangular. Dry.
						Red-brown fine to coarse SAND and SILT, little Clay, trace fine to medium Gravel. Sand subrounded to subangular, gravel subrounded to subangular. Dry.
5						Very loose red-brown SAND, trace fine to medium Gravel. Gravel subrounded to subangular. Slightly moist.
10						
						Very loose brown SILT, some fine to medium Sand. Saturated.
						Very loose brown SILT and CLAY, trace Sand. Low plasticity. Saturated.
15						Very loose brown SILT, some fine to medium Sand. Saturated.
20						
25						
30						
35						

GAMMA LOG COUNTS PER MINUTE: 0, 500, 1000, 1500

WELL CONSTRUCTION DETAIL



ELEV. (feet)

KR059B029583

Notes:

00185607

AMERICAN HYDROGEOLOGY CORPORATION

SME MW105D

WELL/BORING LOG

PROJECT #: 26-1729

Project: Pharmacia and Upjohn - Portage and South
Location: North of building 214
Date (s) Drilled: September 10, 1998
Logged By: Jason J. Ollila
Drilling Co.: Stearns
Weather Conditions: ≈85°, partly sunny

Well/Boring ID: MW-10d
Page: 1 of 2
Boring Depth: 49.0'
Boring Diameter: 8.25"
Drilling Method: Hollow stem auger
Drilling Equipment: Mobile Drill B-59
Top of Slots: 41.0' bgs
Bottom of Slots: 44.0' bgs

DEPTH feet (bgl)	SAMPLE DEPTH	BLOWS COUNTS	RECOVERY	PID	STRATA	DESCRIPTION
						Brown medium to coarse GRAVEL, some fine to medium Sand. Gravel angular to subangular. Dry.
						Red-brown fine to coarse SAND and SILT, little Clay, trace fine to medium Gravel. Sand subrounded to subangular, gravel subrounded to subangular. Dry.
5						Very loose red-brown SAND, trace fine to medium Gravel. Gravel subrounded to subangular. Slightly moist.
	X	2 3 3 4	1.3'	72		
10						
	X	2 2 3 3	2.0'	>2000*		Very loose brown SILT, some fine to medium Sand. Saturated.
						Very loose brown SILT and CLAY, trace fine to medium Sand. Low plasticity. Saturated.
15						Very loose brown SILT, some fine to medium Sand. Saturated.
	X	2 7 11 10	2.0'	>2000*		Loose brown very fine to medium SAND, trace fine Gravel. Gravel subrounded to subangular. Saturated.
20						
	X	1 1 2 6	2.0'	>2000*		Very loose brown fine to coarse SAND, trace fine Gravel. Gravel subrounded to subangular. Saturated.
25						
	X	6 7 11 13	2.0'	350		Loose brown very fine to medium SAND, Saturated.
30						
	X	3 5 9 10	2.0'	112		
35						Loose gray-brown very fine to fine SAND, little Silt. Saturated.

GAMMA LOG COUNTS PER MINUTE: 0, 500, 1000, 1500

WELL CONSTRUCTION DETAIL: Cement; Natural Fill; Granular Bentonite; Approximate Saturation; 2" Galvanized Casing; Bentonite Slurry

ELEV. (feet)

Notes: Water samples collected at 25' and 34' bgl. * Over range of PID.

00185608

KR059B029584

AMERICAN HYDROGEOLOGY CORPORATION
WELL/BORING LOG
PROJECT #: 26-1729

SME MW105D

Project: Pharmacia and Upjohn - Portage and South Well/Boring ID: MW-10d Page: 2 of 2

Depth feet (bgl)	SAMPLE DEPTH	SAMPLE BLOWS COUNTS	SAMPLE RECOVERY	PID	STRATA	DESCRIPTION	GAMMA LOG COUNTS PER MINUTE (0, 500, 1000, 1500)	WELL CONSTRUCTION DETAIL	ELEV. (feet)
		3 2 3 7	2.0'	21		Very loose gray-brown fine to coarse SAND, trace fine to medium Gravel. Sand subrounded to aubangular, gravel subrounded to subangular. Saturated. Medium dense at 42'.			
40									
		7 17 26 29	1.8'	3				2" 7 Slot Stainless Steel Well Screen	
45								Natural Collapse	
		7 9 9 11	1.4'	1		Loose brown medium to very coarse SAND, trace fine to medium Gravel. Sand subrounded to subangular, gravel subrounded to subangular. Saturated.			
50									
55									
60									
65									
70									
75									

KR059B029585

Notes: Water samples collected at 25' and 34' bgl. * Over range of PID.

00185609

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/15/99
JOB NUMBER: KE31823

BORING PB201
SHEET: 1/2

WELL DIAGRAM

DRILLER: Stearns | RIG: HSA

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE ELEVATION = 762.74

Fine to Medium Sand- Trace to Some Gravel- Trace Silt- Brown- Moist (SP/Fill)

Fine Sand- Trace Silt, Gravel & Coal Pieces at 3.75 Feet- Brown- Moist to Wet (SP/Fill)

Fine to Coarse Sand- Trace Gravel, Silt, Brick & Limestone Pieces- Black- Wet (SP/Fill)

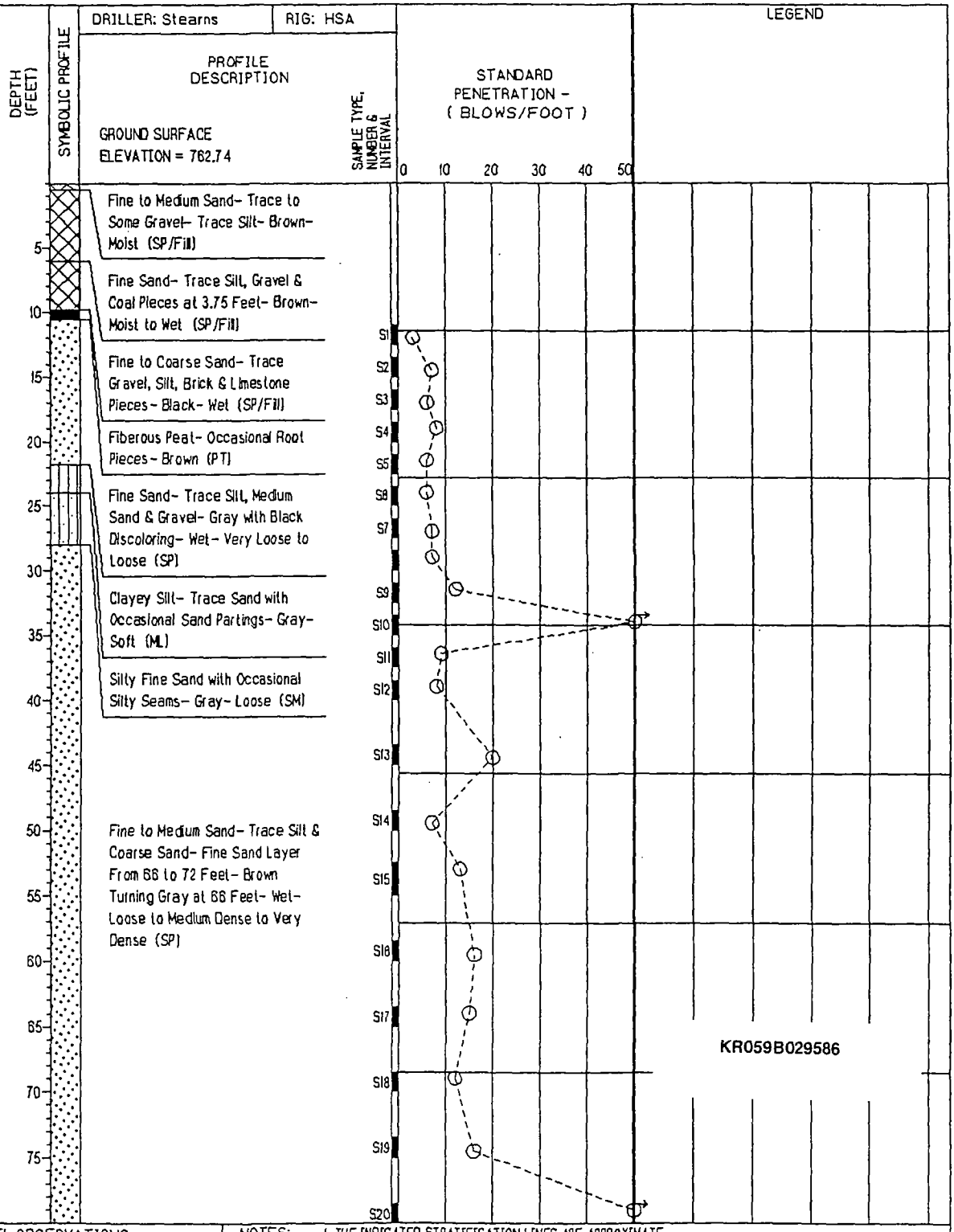
Fiberous Peat- Occasional Root Pieces- Brown (PT)

Fine Sand- Trace Silt, Medium Sand & Gravel- Gray with Black Discoloring- Wet- Very Loose to Loose (SP)

Clayey Silt- Trace Sand with Occasional Sand Partings- Gray- Soft (ML)

Silty Fine Sand with Occasional Silty Seams- Gray- Loose (SM)

Fine to Medium Sand- Trace Silt & Coarse Sand- Fine Sand Layer From 66 to 72 Feet- Brown Turning Gray at 66 Feet- Wet- Loose to Medium Dense to Very Dense (SP)



KR059B029586

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185610

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 6/15/99
JOB NUMBER: KE31823

BORING PB201
SHEET: 2/2

WELL DIAGRAM

DRILLER: Stearns | RIG: HSA

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE
ELEVATION = 782.74

Fine to Medium Sand- Trace Silt & Coarse Sand- Fine Sand Layer From 66 to 72 Feet- Brown Turning Gray at 68 Feet- Wet- Loose to Medium Dense to Very Dense (SP)

Clayey Sand- Trace to Some Silt- Trace Gravel- Occasional Fine Sand Partings & Sandy Clay Layers- Gray- Wet- Very Dense (SC)

Sandy Clay- Trace to Some Silt- Trace Gravel & Root Fragments- Gray- Hard (CL)

Fiberous Peat- Occasional Root Fragments- Brown (PT)

Silty Clay- Trace Sand & Gravel with Occasional Fine Sand & Silt Partings- Gray- Hard (CL)

Fine to Medium Sand- Trace to Some Silt- Trace Gravel- Gray- Wet- Very Dense to Extremely Dense (SP-SM)

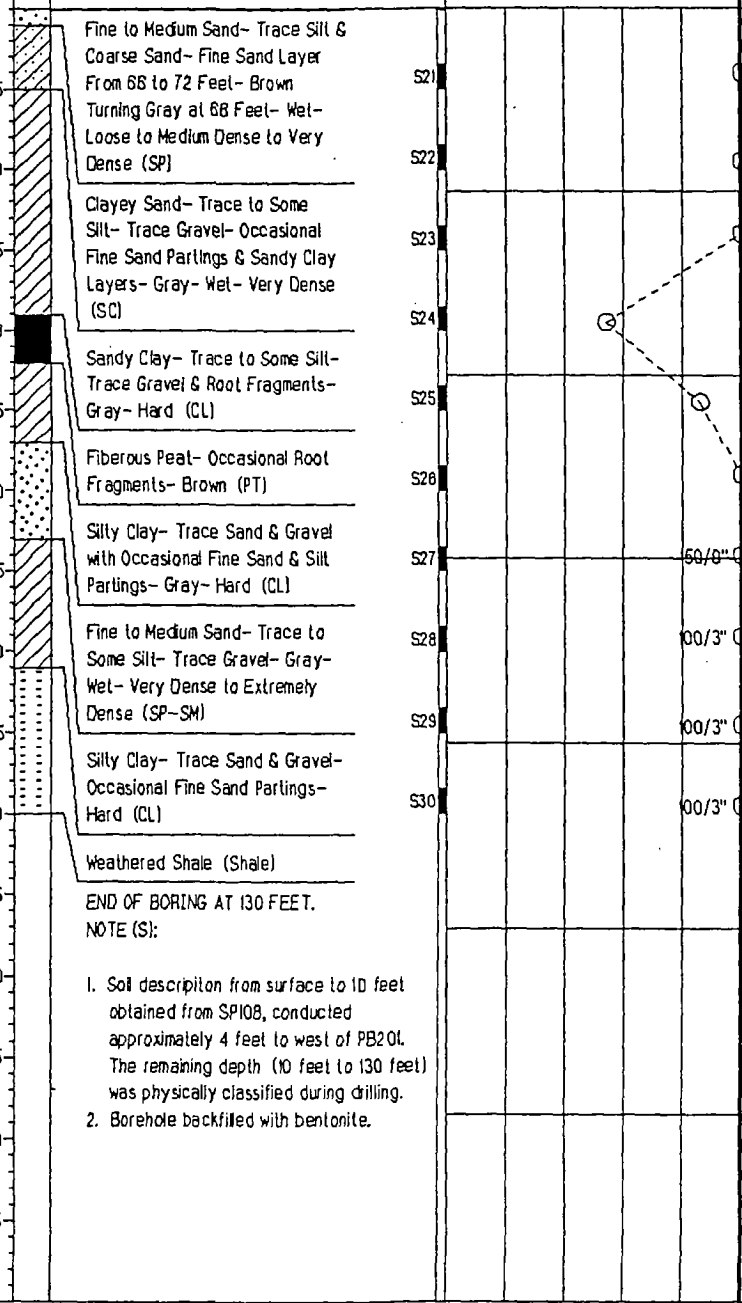
Silty Clay- Trace Sand & Gravel- Occasional Fine Sand Partings- Hard (CL)

Weathered Shale (Shale)

END OF BORING AT 130 FEET.

NOTE (S):

1. Soil descripiton from surface to 10 feet obtained from SP108, conducted approximately 4 feet to west of PB201. The remaining depth (10 feet to 130 feet) was physically classified during drilling.
2. Borehole backfilled with bentonite.



KR059B029587

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00185611

APPENDIX C

POROSITY LAB DATA WITH CALCULATIONS

KR059B029589

00185613

soil and materials engineers, inc

specific gravity of soils — ASTM D 854

Job Name Kalamazoo MGP / GWP Date 9/24/99 Job No. KE1823B-2

Technician KML Boring No. MW101D Sample No. 3, 16

P2D 16

Pycnometer Bottle Number A Tare No. G-5

Wt. of Bottle + Water & Sample : Wb 726.89 g Wt. of Dry Soil & Tare: g

Temperature of Suspension: Tx = 23.5 g Tare Wt. g

Wt. of Bottle & Water at Temp. Tx: Wa* 664.66 g Dry Soil Wt: Wo 100 g

K = 0.9992

SPECIFIC GRAVITY AT TEMP. Tx	SPECIFIC GRAVITY AT 20°C
$G_{S_{Tx}} = \frac{Wo}{Wo + Wa - Wb} = 2.65$	$G_{S_{20}} = G_{S_{Tx}} \times K^* = 2.65$
Sample No. 3 Depth 13.5-15'	

Pycnometer Bottle Number 3 Tare No. C-3

Wt. of Bottle + Water + Sample: Wb 716.20 g Wt. of Dry Soil & Tare g

Temperature of Suspension: Tx 23.5 g Tare Wt. g

Wt. of Bottle + Water at Temp. Tx: Wa* 653.22 g Dry Soil Wt.: Wo 100 g

K = 0.9992

SPECIFIC GRAVITY AT TEMP. Tx	SPECIFIC GRAVITY AT 20°C
$G_{S_{Tx}} = \frac{Wo}{Wo + Wa - Wb} = 2.70$	$G_{S_{20}} = G_{S_{Tx}} \times K^* = 2.70$
Sample No. 16 Depth 36-37.5'	

Pycnometer Bottle Number 6 Tare No. F-1

Wt. of Bottle + Water + Sample : Wb = 716.03 g Wt. of Dry Soil & Tare - g

Temperature of Suspension: Tx 23.0 g Tare Wt. - g

Wt. of Bottle + Water at Temp. Tx: Wa* 653.53 g Dry Soil Wt.: Wo = 100 g

K = 0.9993

P2D SPECIFIC GRAVITY AT TEMP. Tx	SPECIFIC GRAVITY AT 20°C
$G_{S_{Tx}} = \frac{Wo}{Wo = Wa - Wb} = 2.67$	$G_{S_{20}} = G_{S_{Tx}} \times K^* = 2.67$
Sample No. 16 Depth 38.5-40'	

*Note: Obtain Wa from Calibration Curve and K from ASTM D 854, Table 1

00185614

KR059B029590

soil and materials engineers, inc

unconfined compression test

PROJECT NAME Kalamazoo MGP/GWP DATE 9/28/99 SME JOB NO. KE31823B-2

BORING NO. MW101D SAMPLE NO. 16 DEPTH 46-47.5

SAMPLE DESCRIPTION

WATER CONTENT DETERMINATION

TARE NO.	C-6
WT. SPECIMEN WET + TARE	178.0
WT. SPECIMEN DRY + TARE	169.72
WT. TARE	32.5
WT. WATER	
WT. SPECIMEN DRY	
WATER CONTENT	6.05 %

DENSITY DETERMINATION

SAMPLE DIAMETER	1.5	3.81
SAMPLE AREA	1.77	11.40
INITIAL HEIGHT	3.04	7.72
INITIAL VOLUME	5.37	88.03
WGT. OF SAMPLE	164.2 - 17.9 =	146.3
UNIT WET WEIGHT	103.70	
UNIT DRY WEIGHT	97.74	

LENGTH OF RECOVERY Qp

5" 10" 15" 20" 25" 30" 35"

TOP TIP

TEST DATA

LOAD P/KG.	FINAL HEIGHT	UNIT STRAIN	CORRECTED AREA	STRESS (TSF)

REMARKS:

00185615

KR059B029591

soil and materials engineers, inc

unconfined compression test

PROJECT NAME Kalamazoo MGP/GWP DATE 9/28/99 SME JOB NO. KE 318238-2

B. .NG NO. MW101D SAMPLE NO. 3 DEPTH 13.5-15

SAMPLE DESCRIPTION

WATER CONTENT DETERMINATION

TARE NO.	F-1
WT. SPECIMEN WET + TARE	186.7
WT. SPECIMEN DRY + TARE	177.1
WT. TARE	36.2
WT. WATER	
WT. SPECIMEN DRY	
WATER CONTENT	6.81%

DENSITY DETERMINATION

SAMPLE DIAMETER	1.50	3.81 cm
SAMPLE AREA	1.77	11.40
INITIAL HEIGHT	2.95	7.49
INITIAL VOLUME	5.21	85.38
WGT. OF SAMPLE	172.0 - 18.3 - 153.7	
UNIT WET WEIGHT		112.4
UNIT DRY WEIGHT		105.2

1+6.8 = 1.068

LENGTH OF RECOVERY Qp

5" 10" 15" 20" 25" 30" 35"

TOP TIP

TEST DATA

LOAD P/KG.	FINAL HEIGHT	UNIT STRAIN	CORRECTED AREA	STRESS (TSF)

'ARKS:

00185616

KR059B029592

soil and materials engineers, inc

unconfined compression test

PROJECT NAME Kalamazoo MGP/GWP DATE 9/27/99 SME JOB NO. KE31823 B-2

BORING NO. P2D SAMPLE NO. 16 DEPTH 38.5-40

SAMPLE DESCRIPTION

WATER CONTENT DETERMINATION

TARE NO.	E-9
WT. SPECIMEN WET + TARE	156.6
WT. SPECIMEN DRY + TARE	140.2
WT. TARE	35.9
WT. WATER	
WT. SPECIMEN DRY	
WATER CONTENT	13.55%

DENSITY DETERMINATION

SAMPLE DIAMETER	1.50	3.81
SAMPLE AREA	1.77	11.40
INITIAL HEIGHT	2.73	6.93
INITIAL VOLUME	4.82	79.05
WGT. OF SAMPLE	137.02 - 16.2 = 120.8	
UNIT WET WEIGHT	95.1	
UNIT DRY WEIGHT	83.65	

LENGTH OF RECOVERY Qp

5" 10" 15" 20" 25" 30" 35"

TOP TIP

TEST DATA

LOAD P/KG.	FINAL HEIGHT	UNIT STRAIN	CORRECTED AREA	STRESS (TSF)

ARKS:

00185617

KR059B029593

KALAMAZOO MGP
POROSITY CALCULATIONS
SME Project No. KE31823

$n = e/(1 + e)$ $\quad e = ((G_s \times \gamma_w)/ \gamma_d) - 1$

where,

n = porosity
e = void ratio
G_s = specific gravity
γ_w = unit weight of water (pounds per cubic foot) = 62.4
γ_d = unit dry weight (pounds per cubic foot)

	MW101D S3 13.5 - 15	MW101D S16 46 - 47.5	P2D S16 36 - 37.5
Specific Gravity (G_s)	2.65	2.70	2.67
Unit Weight of Water (γ_w) (pounds per cubic foot)	62.4	62.4	62.4
Unit Dry Weight (γ_d) (pounds per cubic foot)	105.2	97.74	83.65
Void Ratio (e)	0.57	0.72	.99
Porosity (n)	0.36	0.42	0.5

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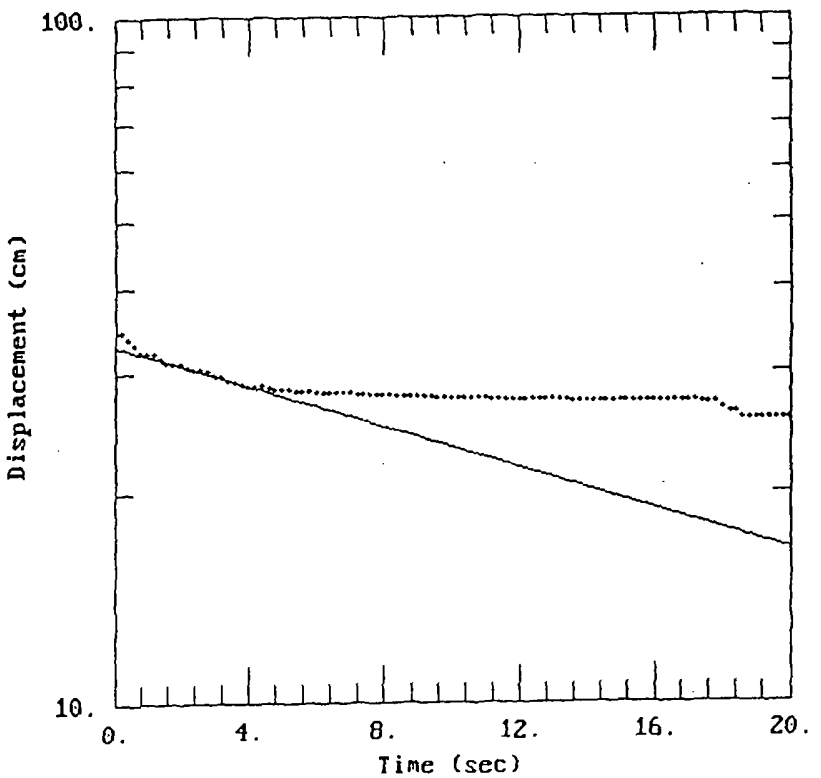
APPENDIX D

SLUG TEST OUTPUT SHEETS AND GROUNDWATER VELOCITY CALCULATIONS



DATA SET:
MW-10UTF.DAT
07/12/99

AQUIFER MODEL:
Unconfined

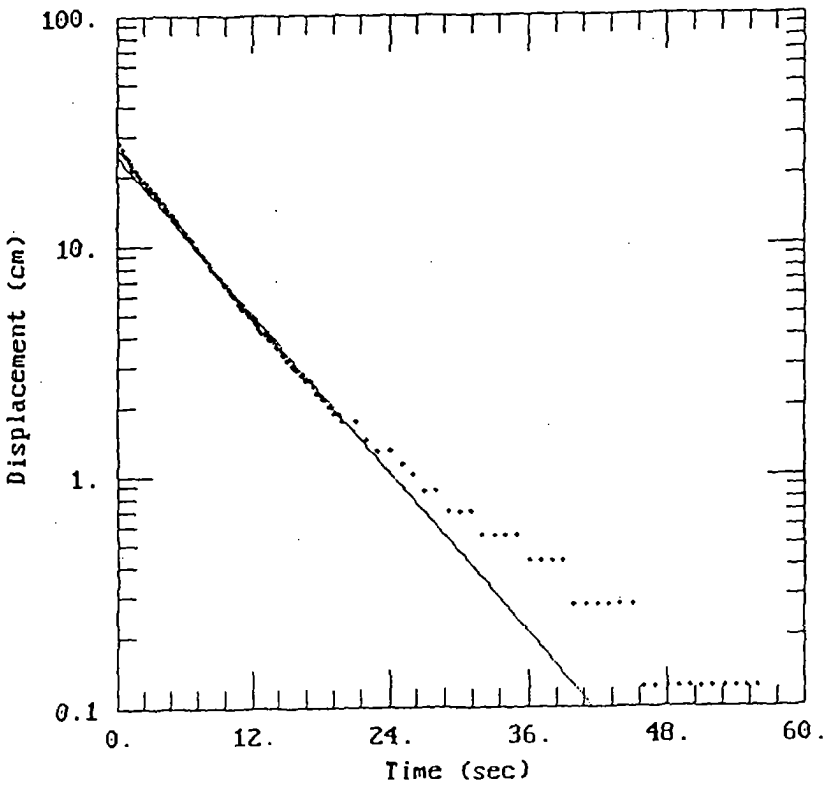
SOLUTION METHOD:
Bouwer-Rice

TEST DATA:
H0= 34.53 cm
r_c= 2.54 cm
r_w= 11.43 cm
L = 82. cm
b = 2286. cm
H = 82. cm

PARAMETER ESTIMATES:
K = 0.00789 cm/sec
y0 = 32.75 cm

00185621

KR059B029597



DATA SET:
MW-2OUTF.DAT
07/12/99

AQUIFER MODEL:
Unconfined

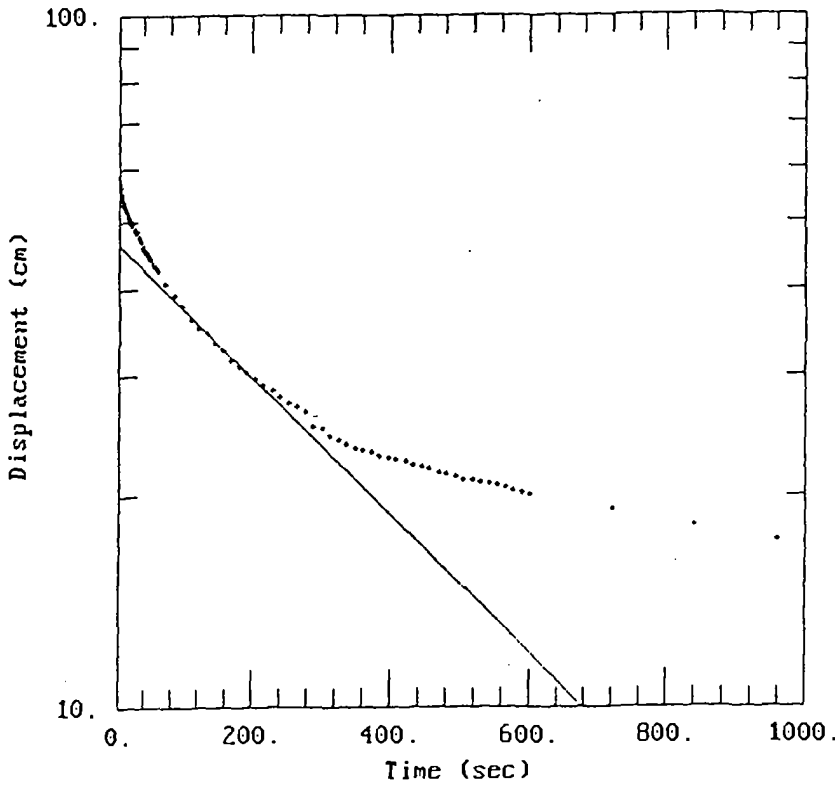
SOLUTION METHOD:
Bouwer-Rice

TEST DATA:
H0= 27.58 cm
r_c= 2.54 cm
r_w= 11.43 cm
L = 83. cm
b = 2286. cm
H = 83. cm

PARAMETER ESTIMATES:
K = 0.03023 cm/sec
y0 = 24.35 cm

00185622

KR059B029598



DATA SET:
P-2OUTF.DAT
07/13/99

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

TEST DATA:
H0= 58.09 cm
r_c= 2.54 cm
r_w= 11.43 cm
L = 109. cm
b = 2286. cm
H = 109. cm

PARAMETER ESTIMATES:
K = 0.0004741 cm/sec
y0 = 46.69 cm

00185623

KR059B029599

KALAMAZOO MGP
GROUNDWATER FLOW VELOCITY CALCULATIONS
SME Project No. KE31823

$$v = (K \times I)/n$$

where,

v = groundwater flow velocity (feet per day)
K = hydraulic conductivity (feet per day)
n = effective porosity
I = hydraulic gradient

Hydraulic Conductivity (K) (feet/day)	85	23
Hydraulic Gradient	0.004	0.004
Effective Porosity	0.42	0.42
Groundwater Flow Velocity (feet/day)	0.8	0.2

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APPENDIX E

TABULATED WATER LEVEL AND ANALYTICAL DATA

KR059B029602

00185626

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823
Page 1 of 1

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	2/8/99 Depth to Water from TOC (ft.)	2/8/99 Static Groundwater Elevation (ft.)	2/25/99 Depth to Water from TOC (ft.)	2/25/99 Static Groundwater Elevation (ft.)	6/22/99 (See 5) Depth to Water from TOC (ft.)	6/22/99 (See 5) Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	8.47	758.04	8.77	757.74	9.13	757.38
MW-2	763.00	762.56	759.6 - 754.6	4.89	757.67	5.27	757.29	5.66	756.90
MW-3	761.43	760.86	758.2 - 753.2	3.63	757.23	3.82	757.04	4.32	756.54
MW-4	761.70	760.99	759.2 - 754.2	2.68	758.31	3.02	757.97	3.45	757.54
P-1	768.91	768.38	762.4 - 757.4	NI	NI	10.44	757.94	10.50	757.88
P-2	766.95	766.35	759.4 - 754.4	8.17	758.18	8.38	757.97	8.87	757.48
P-2D	766.84	766.61	731.7 - 726.7	NI	NI	NI	NI	9.61	757.00
P-3	761.87	761.35	758.6 - 753.6	3.82	757.53	4.16	757.19	4.61	756.74
P-4	761.95	761.51	758.7 - 753.7	3.39	758.12	3.95	757.56	4.46	757.05
MW101	771.74	771.41	759.6 - 754.6	NI	NI	NI	NI	13.28	758.13
MW101D	771.59	770.91	736.5 - 731.5	NI	NI	NI	NI	13.19	757.72
MW102	770.02	769.88	760.1 - 755.1	NI	NI	NI	NI	11.32	758.56
MW103	771.99	771.52	761.3 - 756.3	NI	NI	NI	NI	11.42	760.10
MW104	763.07	762.74	758.4 - 753.4	NI	NI	NI	NI	6.04	756.70
MW104D	762.92	762.66	732.8 - 727.8	NI	NI	NI	NI	5.81	756.85
MW105	770.61	770.31	760.1 - 755.1	NG	NG	NG	NG	11.77	758.54
MW105D	770.61	770.20	731.9 - 726.9	NG	NG	NG	NG	12.85	757.35

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) NG = Groundwater elevation not gauged.
(5) Groundwater elevations for MW105 and MW105D were gauged on June 23, 1999.

00185627

TA. .E 2
KALAMAZOO MGP
SURFACE SOIL ANALYTICAL RESULTS
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	IA-1	IA-2	IA-3	IA-4	IA-5	IA-6	IA-7	IA-8
Sample Number					IA-1	IA-2	IA-3	IA-4	IA-5	IA-6	IA-7	IA-8
Sample ID					S1	S1	S1	S1	S1	S1	S1	S1
Depth (feet)					0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Date Collected					2/3/99	1/19/99	1/19/99	1/19/99	2/3/99	1/19/99	1/19/99	2/3/99
BTEX												
Benzene	100	4,000	8,400	400,000	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	16,000	2,800	250,000	250,000	ND	ND	ND	ND	ND	73	ND	ND
Ethylbenzene	1,500	360	140,000	140,000	ND	ND	ND	ND	ND	88	ND	ND
Xylenes	5,600	700	150,000	150,000	ND	ND	ND	ND	ND	230	ND	ND
PNAs												
Naphthalene	50,000	850	77,000,000	160,000,000	ND	1,700	ND	ND	ND	ND	2,500	ND
2-Methylnaphthalene	170,000	ID	ID	160,000,000	ND	510	ND	ND	ND	ND	760	ND
Acenaphthylene	8,500	ID	3,000,000	16,000,000	ND	ND	ND	ND	ND	330	950	ND
Acenaphthene	870,000	4,300	350,000,000	810,000,000	ND	ND	ND	ND	ND	ND	410	ND
Fluorene	890,000	NA	1,000,000,000	540,000,000	ND	ND	ND	ND	ND	ND	350	ND
Phenanthrene	34,000	2,300	28,000,000	160,000,000	ND	ND	ND	ND	ND	350	1,500	ND
Anthracene	41,000	NA	1,000,000,000	1,000,000,000	ND	ND	ND	ND	ND	ND	580	ND
Fluoranthene	720,000	IP	1,000,000,000	540,000,000	ND	ND	ND	ND	900	480	3,900	ND
Pyrene	470,000	IP	1,000,000,000	340,000,000	ND	ND	ND	ND	750	510	2,600	ND
Benzo(a)anthracene	NLL	NLL	NLV	210,000	ND	ND	ND	ND	ND	340	2,300	ND
Chrysene	NLL	NLL	ID	21,000,000	ND	ND	ND	ND	ND	ND	1,800	ND
Benzo(b)fluoranthene	NLL	NLL	ID	210,000	ND	ND	ND	ND	ND	530	2,000	ND
Benzo(k)fluoranthene	NLL	NLL	NLV	2,100,000	ND	ND	ND	ND	ND	460	1,600	ND
Benzo(a)pyrene	NLL	NLL	NLV	21,000	ND	ND	ND	ND	ND	410	2,200	ND
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLV	210,000	ND	ND	ND	ND	ND	ND	1,100	ND
Dibenzo(a,h)anthracene	NLL	NLL	ID	21,000	ND	ND	ND	ND	ND	ND	360	ND
Benzo(g,h,i)perylene	NLL	NLL	NLV	16,000,000	ND	ND	ND	ND	ND	340	1,000	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NA = Criterion or value is not available.
(4) IP = A literature search has not been completed for the given parameter.
(5) NLL = Chemical is not likely to leach under most soil conditions.
(6) NLV= Chemical is not likely to volatilize under most conditions.
(7) ID = Inadequate data to develop criterion.
(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) The above data was compared to criteria for groundwater contact protection, ambient air inhalation and soil saturation and did not exceed these criteria.

KR059B029604

TA E 2
KALAMAZOO MGP
SURFACE SOIL ANALYTICAL RESULTS
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	IA-9 S1 0-0.5 1/18/99	IA-10 S1 0-0.5 1/18/99	IA-11 S1 0-0.5 1/18/99	IA-12 S1 0-0.5 1/18/99	MW-1 S1 0-0.5 2/3/99	MW-2 S1 0-0.5 2/3/99	MW-3 S1 0-0.5 2/1/99	MW4 S1 0-0.5 2/1/99
Sample Number / Sample ID / Depth (feet) / Date Collected												
BTEX												
Benzene	100	4,000	8,400	400,000	ND	80	70	ND	ND	ND	ND	ND
Toluene	16,000	2,800	250,000	250,000	ND	ND	87	ND	ND	110	ND	ND
Ethylbenzene	1,500	360	140,000	140,000	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	5,600	700	150,000	150,000	ND	288	131	ND	ND	310	ND	ND
PNAs												
Naphthalene	50,000	850	77,000,000	160,000,000	ND	700	350	ND	ND	410	ND	ND
2-Methylnaphthalene	170,000	ID	ID	160,000,000	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	8,500	ID	3,000,000	16,000,000	ND	1,500	700	ND	ND	860	ND	ND
Acenaphthene	870,000	4,300	350,000,000	810,000,000	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	890,000	NA	1,000,000,000	540,000,000	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	34,000	2,300	28,000,000	160,000,000	ND	2,800	1,600	550	ND	1,600	650	620
Anthracene	41,000	NA	1,000,000,000	1,000,000,000	ND	1,200	630	ND	ND	920	ND	ND
Fluoranthene	720,000	IP	1,000,000,000	540,000,000	350	11,000	4,500	1,300	ND	3,600	1,100	830
Pyrene	470,000	IP	1,000,000,000	340,000,000	410	8,600	3,400	980	ND	3,700	8,200	710
Benzo(a)anthracene	NLL	NLL	NLV	210,000	ND	7,100	3,300	810	ND	2,900	620	570
Chrysene	NLL	NLL	ID	21,000,000	ND	6,200	2,900	830	ND	2,900	650	540
Benzo(b)fluoranthene	NLL	NLL	ID	210,000	ND	8,800	2,500	580	ND	2,500	550	600
Benzo(k)fluoranthene	NLL	NLL	NLV	2,100,000	ND	7,500	2,300	490	ND	2,200	490	500
Benzo(a)pyrene	NLL	NLL	NLV	21,000	ND	5,700	3,500	630	ND	2,800	380	710
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLV	210,000	ND	2,700	1,600	410	ND	2,100	500	560
Dibenzo(a,h)anthracene	NLL	NLL	ID	21,000	ND	810	510	ND	ND	610	ND	ND
Benzo(g,h,i)perylene	NLL	NLL	NLV	16,000,000	ND	3,000	1,500	380	ND	1,900	410	540

NOTES:

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(5) NLL = Chemical is not likely to leach under most soil conditions.
(6) NLV= Chemical is not likely to volatilize under most conditions.
(7) ID = Inadequate data to develop criterion.
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(9) The above data was compared to criteria for groundwater contact protection, ambient air inhalation and soil saturation and did not exceed these criteria.

KR059B029605

TA .E 2
KALAMAZOO MGP
SURFACE SOIL ANALYTICAL RESULTS
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	P-1	P-2	P-3	P-4	SP101	SP102	SP103	SP104
Sample Number					P-1	P-2	P-3	P-4	SP101	SP102	SP103	SP104
Sample ID					S1	S1	S1	S1	S1	S1	S1	S1
Depth (feet)					0-0.5	0-0.5	0-0.5	0-0.5	0.5-1	0-1	0.5-1	0-1
Date Collected					2/3/99	2/1/99	2/3/99	2/1/99	6/3/99	6/3/99	6/3/99	6/3/99
BTEX												
Benzene	100	4,000	8,400	400,000	ND	ND	93	ND	ND	ND	ND	ND
Toluene	16,000	2,800	250,000	250,000	ND	73	690	ND	ND	120	70	ND
Ethylbenzene	1,500	360	140,000	140,000	ND	ND	140	ND	ND	50	150	ND
Xylenes	5,600	700	150,000	150,000	ND	228	1,240	ND	ND	310	410	ND
PNAs												
Naphthalene	50,000	850	77,000,000	160,000,000	ND	ND	1,800	6,500	ND	1,600	ND	ND
2-Methylnaphthalene	170,000	ID	ID	160,000,000	ND	ND	690	2,100	ND	410	ND	ND
Acenaphthylene	8,500	ID	3,000,000	16,000,000	ND	ND	1,800	790	ND	ND	ND	ND
Acenaphthene	870,000	4,300	350,000,000	810,000,000	ND	ND	ND	5,400	ND	ND	ND	ND
Fluorene	890,000	NA	1,000,000,000	540,000,000	ND	ND	350	5,200	ND	ND	ND	ND
Phenanthrene	34,000	2,300	28,000,000	160,000,000	590	390	4,000	29,000	ND	340	ND	ND
Anthracene	41,000	NA	1,000,000,000	1,000,000,000	ND	ND	3,700	9,000	ND	ND	ND	ND
Fluoranthene	720,000	IP	1,000,000,000	540,000,000	1,900	1,000	3,100	18,000	ND	360	ND	ND
Pyrene	470,000	IP	1,000,000,000	340,000,000	1,500	820	5,700	13,000	ND	350	ND	ND
Benzo(a)anthracene	NLL	NLL	NLV	210,000	700	730	2,700	21,000	ND	ND	ND	ND
Chrysene	NLL	NLL	ID	21,000,000	8,900	610	2,200	20,000	ND	ND	ND	ND
Benzo(b)fluoranthene	NLL	NLL	ID	210,000	750	850	1,900	14,000	ND	ND	ND	ND
Benzo(k)fluoranthene	NLL	NLL	NLV	2,100,000	650	700	990	12,000	ND	ND	ND	ND
Benzo(a)pyrene	NLL	NLL	NLV	21,000	720	550	2,100	9,000	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLV	210,000	510	600	1,700	6,100	ND	ND	ND	ND
Dibenzo(a,h)anthracene	NLL	NLL	ID	21,000	ND	ND	550	450	ND	ND	ND	ND
Benzo(g,h,i)perylene	NLL	NLL	NLV	16,000,000	440	590	1,100	7,700	ND	ND	ND	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
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(4) IP = A literature search has not been completed for the given parameter.
(5) NLL = Chemical is not likely to leach under most soil conditions.
(6) NLV= Chemical is not likely to volatilize under most conditions.
(7) ID = Inadequate data to develop criterion.
(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) The above data was compared to criteria for groundwater contact protection, ambient air inhalation and soil saturation and did not exceed these criteria.

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TABLE 2
KALAMAZOO MGP
SURFACE SOIL ANALYTICAL RESULTS
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	SP105	SP106	SP110	SP111	SP112	SP113	SP114	SP115
Sample Number					SP105	SP106	SP110	SP111	SP112	SP113	SP114	SP115
Sample ID					S1	S1	S1	S1	S1	S1	S1	S1
Depth (feet)					0-1	0-1	0-0.5	0-0.5	0-0.5	0-0.5	0-05	0-0.5
Date Collected					6/3/99	6/3/99	6/4/99	6/4/99	6/4/99	6/4/99	6/4/99	6/4/99
BTEX												
Benzene	100	4,000	8,400	400,000	69	70	ND	88	ND	ND	ND	ND
Toluene	16,000	2,800	250,000	250,000	260	270	ND	50	ND	ND	ND	ND
Ethylbenzene	1,500	360	140,000	140,000	57	50	ND	ND	ND	ND	ND	ND
Xylenes	5,600	700	150,000	150,000	520	670	ND	164	ND	ND	ND	ND
PNAs												
Naphthalene	50,000	850	77,000,000	160,000,000	840	3,500	ND	ND	ND	ND	ND	510
2-Methylnaphthalene	170,000	ID	ID	160,000,000	330	400	ND	ND	ND	ND	ND	ND
Acenaphthylene	8,500	ID	3,000,000	16,000,000	ND	750	ND	ND	380	ND	ND	ND
Acenaphthene	870,000	4,300	350,000,000	810,000,000	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	890,000	NA	1,000,000,000	540,000,000	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	34,000	2,300	28,000,000	160,000,000	1,200	3,300	710	590	2,500	ND	ND	1,000
Anthracene	41,000	NA	1,000,000,000	1,000,000,000	480	1,000	530	ND	720	ND	ND	900
Fluoranthene	720,000	IP	1,000,000,000	540,000,000	1,800	6,000	2,800	880	8,000	ND	ND	2,100
Pyrene	470,000	IP	1,000,000,000	340,000,000	2,500	6,100	1,700	620	4,800	ND	ND	1,400
Benzo(a)anthracene	NLL	NLL	NLV	210,000	2,900	7,500	740	1,200	4,400	ND	ND	1,500
Chrysene	NLL	NLL	ID	21,000,000	2,600	6,800	760	1,100	4,100	ND	ND	1,600
Benzo(b)fluoranthene	NLL	NLL	ID	210,000	2,100	4,800	690	990	3,800	ND	ND	1,100
Benzo(k)fluoranthene	NLL	NLL	NLV	2,100,000	1,700	3,600	510	790	3,000	ND	ND	1,000
Benzo(a)pyrene	NLL	NLL	NLV	21,000	1,800	6,000	1,100	810	2,600	ND	ND	1,500
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLV	210,000	990	2,800	ND	ND	1,000	ND	ND	510
Dibenzo(a,h)anthracene	NLL	NLL	ID	21,000	360	1,400	ND	ND	590	ND	ND	ND
Benzo(g,h,i)perylene	NLL	NLL	NLV	16,000,000	610	1,600	ND	ND	1,100	ND	ND	400

NOTES:

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(5) NLL = Chemical is not likely to leach under most soil conditions.
(6) NLV= Chemical is not likely to volatilize under most conditions.
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(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
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TA E 2
KALAMAZOO MGP
SURFACE SOIL ANALYTICAL RESULTS
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	SP116 S1 0-0.5 6/4/99	SP117 S1 0-0.5 6/4/99	SP118 S1 0-0.5 6/4/99	SP119 S1 0-0.5 6/4/99	SP120 S1 0-0.5 6/4/99	SP122 S1 0-0.5 6/4/99	SP123 S1 0-0.5 6/4/99	SP124 S1 0-0.5 6/4/99
BTEX												
Benzene	100	4,000	8,400	400,000	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	16,000	2,800	250,000	250,000	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	1,500	360	140,000	140,000	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	5,600	700	150,000	150,000	ND	ND	ND	ND	ND	ND	ND	ND
PNAs												
Naphthalene	50,000	850	77,000,000	160,000,000	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	170,000	ID	ID	160,000,000	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	8,500	ID	3,000,000	16,000,000	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	870,000	4,300	350,000,000	810,000,000	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	890,000	NA	1,000,000,000	540,000,000	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	34,000	2,300	28,000,000	160,000,000	480	ND	ND	660	ND	ND	ND	ND
Anthracene	41,000	NA	1,000,000,000	1,000,000,000	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	720,000	IP	1,000,000,000	540,000,000	1,000	500	ND	1,100	ND	1,100	720	830
Pyrene	470,000	IP	1,000,000,000	340,000,000	750	340	ND	770	ND	630	440	450
Benzo(a)anthracene	NLL	NLL	NLV	210,000	880	ND	ND	830	ND	630	510	440
Chrysene	NLL	NLL	ID	21,000,000	750	ND	ND	740	ND	580	450	410
Benzo(b)fluoranthene	NLL	NLL	ID	210,000	690	ND	ND	660	ND	410	400	390
Benzo(k)fluoranthene	NLL	NLL	NLV	2,100,000	500	ND	ND	550	ND	350	340	350
Benzo(a)pyrene	NLL	NLL	NLV	21,000	1,000	350	ND	460	ND	ND	340	400
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLV	210,000	410	ND	ND	500	ND	ND	ND	ND
Dibenzo(a,h)anthracene	NLL	NLL	ID	21,000	ND	ND	ND	340	ND	ND	ND	ND
Benzo(g,h,i)perylene	NLL	NLL	NLV	16,000,000	350	ND	ND	400	ND	ND	ND	ND

NOTES:
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(4) IP = A literature search has not been completed for the given parameter.
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(6) NLV= Chemical is not likely to volatilize under most conditions.
(7) ID = Inadequate data to develop criterion.
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TA .E 2
KALAMAZOO MGP
SURFACE SOIL ANALYTICAL RESULTS
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria		
				Sample Number	SP125	HA-1
				Sample ID	S1	S1
				Depth (feet)	0-0.5	0-0.5
				Date Collected	6/4/99	7/26/99
BTEX						
Benzene	100	4,000	8,400	400,000	ND	600
Toluene	16,000	2,800	250,000	250,000	ND	2,000
Ethylbenzene	1,500	360	140,000	140,000	ND	720
Xylenes	5,600	700	150,000	150,000	ND	5,000
PNAs						
Naphthalene	50,000	850	77,000,000	160,000,000	ND	31,000
2-Methylnaphthalene	170,000	ID	ID	160,000,000	ND	7,100
Acenaphthylene	8,500	ID	3,000,000	16,000,000	ND	13,000
Acenaphthene	870,000	4,300	350,000,000	810,000,000	ND	1,900
Fluorene	890,000	NA	1,000,000,000	540,000,000	ND	8,900
Phenanthrene	34,000	2,300	28,000,000	160,000,000	ND	44,000
Anthracene	41,000	NA	1,000,000,000	1,000,000,000	ND	9,200
Fluoranthene	720,000	IP	1,000,000,000	540,000,000	430	27,000
Pyrene	470,000	IP	1,000,000,000	340,000,000	350	62,000
Benzo(a)anthracene	NLL	NLL	NLV	210,000	430	11,000
Chrysene	NLL	NLL	ID	21,000,000	400	9,700
Benzo(b)fluoranthene	NLL	NLL	ID	210,000	380	16,000
Benzo(k)fluoranthene	NLL	NLL	NLV	2,100,000	340	11,000
Benzo(a)pyrene	NLL	NLL	NLV	21,000	550	17,000
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLV	210,000	ND	6,200
Dibenzo(a,h)anthracene	NLL	NLL	ID	21,000	ND	2,700
Benzo(g,h,i)perylene	NLL	NLL	NLV	16,000,000	ND	5,800

NOTES:
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(6) NLV= Chemical is not likely to volatilize under most conditions.
(7) ID = Inadequate data to develop criterion.
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BLE 3
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	IA-1 S2 7-8 2/3/99	IA-1 S3 12-14 2/22/99	IA-2 S2 10-12 1/19/99	IA-3 S2 10-12 1/19/99	IA-4 S3 9-10 1/19/99	IA-5 S2 1.5-2.5 2/3/99	IA-6 S2 3-4 1/19/99	IA-8 S2 5-6 2/3/99
Sample Number / Sample ID / Depth (feet) / Date Collected												
BTEX												
Benzene	100	4,000	8,400	400,000	ND	1,500	ND	ND	ND	3,100	ND	ND
Toluene	16,000	2,800	250,000	250,000	ND	35,000	ND	ND	ND	1,000	ND	ND
Ethylbenzene	1,500	360	140,000	140,000	ND	39,000	ND	ND	ND	110	ND	ND
Xylenes	5,600	700	150,000	150,000	ND	63,000	ND	ND	ND	940	ND	184
PNAs												
Naphthalene	50,000	850	77,000,000	160,000,000	ND	76,000	ND	ND	ND	2,900	ND	ND
2-Methylnaphthalene	170,000	ID	ID	160,000,000	ND	5,700	ND	ND	ND	750	ND	ND
Acenaphthylene	8,500	ID	3,000,000	16,000,000	ND	8,200	ND	ND	ND	3,600	810	ND
Acenaphthene	870,000	4,300	350,000,000	810,000,000	ND	1,300	ND	ND	ND	650	ND	ND
Fluorene	890,000	NA	1,000,000,000	540,000,000	ND	720	ND	ND	ND	360	ND	ND
Phenanthrene	34,000	2,300	28,000,000	160,000,000	ND	17,000	ND	ND	ND	9,800	510	ND
Anthracene	41,000	NA	1,000,000,000	1,000,000,000	ND	15,000	ND	ND	ND	4,600	370	ND
Fluoranthene	720,000	IP	1,000,000,000	540,000,000	ND	9,300	ND	ND	ND	19,000	340	ND
Pyrene	470,000	IP	1,000,000,000	340,000,000	ND	11,000	ND	ND	ND	18,000	360	ND
Benzo(a)anthracene	NLL	NLL	NLV	210,000	ND	5,100	ND	ND	ND	15,000	ND	ND
Chrysene	NLL	NLL	ID	21,000,000	ND	4,900	ND	ND	ND	14,000	ND	ND
Benzo(b)fluoranthene	NLL	NLL	ID	210,000	ND	2,500	ND	ND	ND	16,000	440	ND
Benzo(k)fluoranthene	NLL	NLL	NLV	2,100,000	ND	2,300	ND	ND	ND	14,000	390	ND
Benzo(a)pyrene	NLL	NLL	NLV	21,000	ND	2,300	ND	ND	ND	13,000	490	ND
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLV	210,000	ND	960	ND	ND	ND	7,100	570	ND
Dibenzo(a,h)anthracene	NLL	NLL	ID	21,000	ND	ND	ND	ND	ND	2,200	ND	ND
Benzo(g,h,i)perylene	NLL	NLL	NLV	16,000,000	ND	860	ND	ND	ND	6,500	800	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NA = Criterion or value is not available.
(4) IP = A literature search has not been completed for the given parameter.
(5) NLL = Chemical is not likely to leach under most soil conditions.
(6) NLV= Chemical is not likely to volatilize under most conditions.
(7) ID = Inadequate data to develop criterion.
(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) The above data was compared to criteria for groundwater contact protection and and ambient air inhalation and did not exceed these criteria.

00185634

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BLE 3
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria								
Sample Number					IA-9	IA-9	IA-10	IA-11	IA-12	MW-1	MW-2	P-1
Sample ID					S2	S3	S2	S2	S2	S4	S3	S2
Depth (feet)					3-4	6.5-7.5	6-7	3-4	3-4	6-8	4-6	4-5
Date Collected					1/18/99	1/18/99	1/18/99	1/18/99	1/18/99	2/3/99	2/3/99	2/3/99
BTEX												
Benzene	100	4,000	8,400	400,000	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	16,000	2,800	250,000	250,000	ND	ND	50	ND	ND	ND	130	ND
Ethylbenzene	1,500	360	140,000	140,000	ND	ND	ND	ND	ND	ND	61	ND
Xylenes	5,600	700	150,000	150,000	ND	ND	154	ND	ND	ND	260	ND
PNAs												
Naphthalene	50,000	850	77,000,000	160,000,000	340	ND	ND	470	ND	ND	1,100	ND
2-Methylnaphthalene	170,000	ID	ID	160,000,000	ND	ND	ND	ND	ND	ND	610	ND
Acenaphthylene	8,500	ID	3,000,000	16,000,000	1,500	ND	ND	ND	ND	ND	1,100	ND
Acenaphthene	870,000	4,300	350,000,000	810,000,000	ND	ND	ND	ND	ND	ND	360	ND
Fluorene	890,000	NA	1,000,000,000	540,000,000	ND	ND	ND	ND	ND	ND	410	ND
Phenanthrene	34,000	2,300	28,000,000	160,000,000	840	ND	ND	2,700	ND	ND	3,600	ND
Anthracene	41,000	NA	1,000,000,000	1,000,000,000	720	ND	ND	700	ND	ND	1,400	ND
Fluoranthene	720,000	IP	1,000,000,000	540,000,000	2,100	ND	ND	3,700	ND	ND	7,300	ND
Pyrene	470,000	IP	1,000,000,000	340,000,000	2,400	ND	ND	2,500	ND	ND	5,300	500
Benzo(a)anthracene	NLL	NLL	NLV	210,000	1,400	ND	ND	1,900	ND	ND	6,800	350
Chrysene	NLL	NLL	ID	21,000,000	1,400	ND	ND	1,800	ND	ND	6,500	ND
Benzo(b)fluoranthene	NLL	NLL	ID	210,000	2,400	ND	ND	2,200	ND	ND	12,000	ND
Benzo(k)fluoranthene	NLL	NLL	NLV	2,100,000	1,200	ND	ND	1,100	ND	ND	10,000	ND
Benzo(a)pyrene	NLL	NLL	NLV	21,000	1,200	ND	ND	1,700	ND	ND	12,000	ND
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLV	210,000	900	ND	ND	800	ND	ND	6,100	ND
Dibenzo(a,h)anthracene	NLL	NLL	ID	21,000	ND	ND	ND	ND	ND	ND	2,700	ND
Benzo(g,h,i)perylene	NLL	NLL	NLV	16,000,000	840	ND	ND	700	ND	ND	5,700	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
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(3) NA = Criterion or value is not available.
(4) IP = A literature search has not been completed for the given parameter.
(5) NLL = Chemical is not likely to leach under most soil conditions.
(6) NLV= Chemical is not likely to volatilize under most conditions.
(7) ID = Inadequate data to develop criterion.
(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) The above data was compared to criteria for groundwater contact protection and and ambient air inhalation and did not exceed these criteria.

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BLE 3
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria								
Sample Number					P-2	IA-7A	SP101	SP102	SP103	SP103	SP104	SP107
Sample ID					S3	S2	S3	S2	S2	S3	S3	S3
Depth (feet)					5-6	11-12	11-12	2-3	4-5	7-8	4-5	5-7
Date Collected					2/1/99	6/3/99	6/9/99	6/3/99	6/3/99	6/3/99	6/3/99	6/3/99
BTEX												
Benzene	100	4,000	8,400	400,000	ND	160,000	180	ND	ND	ND	-	ND
Toluene	16,000	2,800	250,000	250,000	ND	190,000	930	ND	ND	ND	-	ND
Ethylbenzene	1,500	360	140,000	140,000	ND	21,000	380	ND	ND	ND	-	ND
Xylenes	5,600	700	150,000	150,000	ND	260,000	2,400	ND	ND	ND	-	ND
PNAs												
Naphthalene	50,000	850	77,000,000	160,000,000	ND	5,600,000	6,100	ND	ND	ND	1,300	ND
2-Methylnaphthalene	170,000	ID	ID	160,000,000	ND	830,000	1,100	ND	ND	ND	490	ND
Acenaphthylene	8,500	ID	3,000,000	16,000,000	ND	680,000	3,500	ND	ND	ND	600	ND
Acenaphthene	870,000	4,300	350,000,000	810,000,000	ND	330,000	ND	ND	ND	ND	480	ND
Fluorene	890,000	NA	1,000,000,000	540,000,000	ND	660,000	1,300	ND	ND	ND	340	ND
Phenanthrene	34,000	2,300	28,000,000	160,000,000	ND	1,300,000	3,500	ND	ND	ND	4,300	ND
Anthracene	41,000	NA	1,000,000,000	1,000,000,000	ND	1,200,000	3,200	ND	ND	ND	1,400	ND
Fluoranthene	720,000	IP	1,000,000,000	540,000,000	ND	320,000	8,100	ND	ND	ND	6,500	ND
Pyrene	470,000	IP	1,000,000,000	340,000,000	ND	1,000,000	9,000	ND	ND	ND	8,800	ND
Benzo(a)anthracene	NLL	NLL	NLV	210,000	ND	1,300,000	7,400	ND	ND	ND	10,000	ND
Chrysene	NLL	NLL	ID	21,000,000	ND	1,100,000	6,900	ND	ND	ND	9,000	ND
Benzo(b)fluoranthene	NLL	NLL	ID	210,000	ND	770,000	3,700	ND	ND	ND	6,100	ND
Benzo(k)fluoranthene	NLL	NLL	NLV	2,100,000	ND	610,000	3,200	ND	ND	ND	4,100	ND
Benzo(a)pyrene	NLL	NLL	NLV	21,000	ND	720,000	6,200	ND	ND	ND	9,300	ND
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLV	210,000	ND	370,000	960	ND	ND	ND	2,500	ND
Dibenzo(a,h)anthracene	NLL	NLL	ID	21,000	ND	90,000	510	ND	ND	ND	1,000	ND
Benzo(g,h,i)perylene	NLL	NLL	NLV	16,000,000	ND	410,000	690	ND	ND	ND	1,700	ND

NOTES:
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(4) IP = A literature search has not been completed for the given parameter.
(5) NLL = Chemical is not likely to leach under most soil conditions.
(6) NLV= Chemical is not likely to volatilize under most conditions.
(7) ID = Inadequate data to develop criterion.
(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) - = Parameter not analyzed.
(10) The above data was compared to criteria for groundwater contact protection and and ambient air inhalation and did not exceed these criteria.

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BLE 3
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	SP108	SP109	SP112	SP113	SP114	SP115	SP117	SP118
Sample Number					SP108	SP109	SP112	SP113	SP114	SP115	SP117	SP118
Sample ID					S3	S2	S2	S2	S2	S2	S2	S2
Depth (feet)					4-5	3-4	2-4	2-4	2-4	2-4	2-4	2-4
Date Collected					6/3/99	6/3/99	6/4/99	6/4/99	6/4/99	6/4/99	6/4/99	6/4/99
BTEX												
Benzene	100	4,000	8,400	400,000	ND	ND	ND	ND	50	ND	ND	70
Toluene	16,000	2,800	250,000	250,000	ND	ND	ND	ND	240	ND	ND	100
Ethylbenzene	1,500	360	140,000	140,000	ND	ND	ND	ND	50	ND	ND	ND
Xylenes	5,600	700	150,000	150,000	ND	ND	ND	ND	360	ND	ND	172
PNAs												
Naphthalene	50,000	850	77,000,000	160,000,000	ND	1,100	ND	ND	ND	ND	730	ND
2-Methylnaphthalene	170,000	ID	ID	160,000,000	ND	ND	ND	ND	ND	ND	350	ND
Acenaphthylene	8,500	ID	3,000,000	16,000,000	ND	ND	400	ND	ND	ND	4,500	ND
Acenaphthene	870,000	4,300	350,000,000	810,000,000	ND	ND	ND	ND	ND	ND	410	ND
Fluorene	890,000	NA	1,000,000,000	540,000,000	ND	ND	ND	ND	ND	ND	500	ND
Phenanthrene	34,000	2,300	28,000,000	160,000,000	ND	ND	1,400	910	370	500	2,500	1,300
Anthracene	41,000	NA	1,000,000,000	1,000,000,000	ND	ND	470	ND	ND	420	5,000	500
Fluoranthene	720,000	IP	1,000,000,000	540,000,000	ND	450	2,800	1,600	810	400	6,800	3,800
Pyrene	470,000	IP	1,000,000,000	340,000,000	ND	330	2,400	1,200	560	600	14,000	3,000
Benzo(a)anthracene	NLL	NLL	NLV	210,000	ND	720	2,500	1,100	550	ND	13,000	3,400
Chrysene	NLL	NLL	ID	21,000,000	ND	650	2,400	990	500	ND	12,000	3,000
Benzo(b)fluoranthene	NLL	NLL	ID	210,000	ND	670	1,400	850	510	ND	7,000	2,800
Benzo(k)fluoranthene	NLL	NLL	NLV	2,100,000	ND	510	900	680	490	ND	5,500	2,200
Benzo(a)pyrene	NLL	NLL	NLV	21,000	ND	ND	1,200	500	440	ND	6,300	1,800
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLV	210,000	ND	ND	670	410	ND	ND	3,100	1,000
Dibenzo(a,h)anthracene	NLL	NLL	ID	21,000	ND	ND	ND	nd	ND	ND	880	700
Benzo(g,h,i)perylene	NLL	NLL	NLV	16,000,000	ND	ND	710	400	ND	ND	3,800	1,100

NOTES:
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(4) IP = A literature search has not been completed for the given parameter.
(5) NLL = Chemical is not likely to leach under most soil conditions.
(6) NLV= Chemical is not likely to volatilize under most conditions.
(7) ID = Inadequate data to develop criterion.
(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) The above data was compared to criteria for groundwater contact protection and and ambient air inhalation and did not exceed these criteria.

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3LE 3
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	SP119 S2 2-4 6/4/99	SP120 S2 2-4 6/4/99	SP121 S2 1.5-2.5 6/4/99	SP122 S2 2-4 6/4/99	SP123 S2 2-4 6/4/99	SP124 S2 2-4 6/4/99	SP125 S2 2-4 6/4/99	MW102 S3 6-7.5 6/18/99
BTEX												
Benzene	100	4,000	8,400	400,000	ND	ND	190	50	ND	ND	ND	ND
Toluene	16,000	2,800	250,000	250,000	ND	ND	200	120	130	ND	ND	ND
Ethylbenzene	1,500	360	140,000	140,000	ND	ND	95	ND	ND	ND	ND	ND
Xylenes	5,600	700	150,000	150,000	ND	ND	440	370	370	ND	ND	ND
PNAs												
Naphthalene	50,000	850	77,000,000	160,000,000	ND	ND	350	1,900	1,400	ND	1,800	ND
2-Methylnaphthalene	170,000	ID	ID	160,000,000	ND	ND	ND	340	350	ND	410	ND
Acenaphthylene	8,500	ID	3,000,000	16,000,000	ND	ND	350	650	530	ND	7,200	ND
Acenaphthene	870,000	4,300	350,000,000	810,000,000	ND	ND	ND	330	ND	ND	410	ND
Fluorene	890,000	NA	1,000,000,000	540,000,000	ND	ND	500	1,100	350	ND	840	ND
Phenanthrene	34,000	2,300	28,000,000	160,000,000	700	1,700	3,500	4,000	4,000	ND	3,900	ND
Anthracene	41,000	NA	1,000,000,000	1,000,000,000	ND	480	920	1,500	1,300	ND	2,600	ND
Fluoranthene	720,000	IP	1,000,000,000	540,000,000	900	3,000	6,000	6,000	6,800	350	9,600	ND
Pyrene	470,000	IP	1,000,000,000	340,000,000	500	3,300	7,300	7,800	950	340	10,000	ND
Benzo(a)anthracene	NLL	NLL	NLV	210,000	550	4,500	8,800	7,700	9,800	400	12,000	ND
Chrysene	NLL	NLL	ID	21,000,000	600	4,000	8,000	7,000	9,000	400	13,000	ND
Benzo(b)fluoranthene	NLL	NLL	ID	210,000	510	5,000	6,000	6,000	9,300	ND	8,300	ND
Benzo(k)fluoranthene	NLL	NLL	NLV	2,100,000	510	4,000	4,700	5,000	7,500	ND	5,200	ND
Benzo(a)pyrene	NLL	NLL	NLV	21,000	450	3,300	3,700	4,500	6,500	340	7,800	ND
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLV	210,000	410	900	2,100	2,100	2,100	ND	2,500	ND
Dibenzo(a,h)anthracene	NLL	NLL	ID	21,000	ND	380	980	650	830	ND	720	ND
Benzo(g,h,i)perylene	NLL	NLL	NLV	16,000,000	350	700	1,800	1,800	1,700	ND	1,700	ND

NOTES:
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(3) NA = Criterion or value is not available.
(4) IP = A literature search has not been completed for the given parameter.
(5) NLL = Chemical is not likely to leach under most soil conditions.
(6) NLV= Chemical is not likely to volatilize under most conditions.
(7) ID = Inadequate data to develop criterion.
(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) The above data was compared to criteria for groundwater contact protection and and ambient air inhalation and did not exceed these criteria.

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ɜLE 3
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	MW103 S4 8.5-10 6/17/99	MW103 S5 11-12.5 6/17/99	HA-1 S2 1-2 7/26/99	X1 West Floo 7 10/12/99	X2 East Floor 7 10/12/99	X3 West SW 4-5 10/12/99	X4 North SW 4-5 10/12/99	X5 East SW 4-5 10/12/99
BTEX												
Benzene	100	4,000	8,400	400,000	ND	ND	2,600	ND	ND	ND	ND	ND
Toluene	16,000	2,800	250,000	250,000	ND	ND	3,700	ND	ND	ND	ND	ND
Ethylbenzene	1,500	360	140,000	140,000	ND	24	1,100	ND	ND	ND	ND	ND
Xylenes	5,600	700	150,000	150,000	ND	203	9,900	ND	ND	ND	ND	73
PNAs												
Naphthalene	50,000	850	77,000,000	160,000,000	ND	ND	310,000	ND	ND	ND	ND	ND
2-Methylnaphthalene	170,000	ID	ID	160,000,000	ND	ND	98,000	NE	NE	NE	NE	NE
Acenaphthylene	8,500	ID	3,000,000	16,000,000	ND	ND	110,000	ND	ND	ND	350	ND
Acenaphthene	870,000	4,300	350,000,000	810,000,000	ND	430	20,000	ND	ND	ND	ND	ND
Fluorene	890,000	NA	1,000,000,000	540,000,000	ND	ND	110,000	ND	ND	ND	ND	ND
Phenanthrene	34,000	2,300	28,000,000	160,000,000	ND	550	380,000	ND	ND	ND	2,100	ND
Anthracene	41,000	NA	1,000,000,000	1,000,000,000	ND	540	220,000	ND	ND	ND	560	ND
Fluoranthene	720,000	IP	1,000,000,000	540,000,000	ND	ND	350,000	ND	ND	ND	5,300	ND
Pyrene	470,000	IP	1,000,000,000	340,000,000	ND	ND	700,000	ND	ND	ND	3,700	ND
Benzo(a)anthracene	NLL	NLL	NLV	210,000	ND	ND	170,000	ND	ND	ND	3,700	ND
Chrysene	NLL	NLL	ID	21,000,000	ND	ND	160,000	ND	ND	ND	1,900	ND
Benzo(b)fluoranthene	NLL	NLL	ID	210,000	ND	ND	560,000	ND	ND	ND	5,800	ND
Benzo(k)fluoranthene	NLL	NLL	NLV	2,100,000	ND	ND	450,000	ND	ND	ND	2,900	ND
Benzo(a)pyrene	NLL	NLL	NLV	21,000	ND	ND	280,000	ND	ND	ND	4,900	ND
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLV	210,000	ND	ND	97,000	ND	ND	ND	1,700	ND
Dibenzo(a,h)anthracene	NLL	NLL	ID	21,000	ND	ND	37,000	ND	ND	ND	1,600	ND
Benzo(g,h,i)perylene	NLL	NLL	NLV	16,000,000	ND	ND	61,000	ND	ND	ND	920	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
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(4) IP = A literature search has not been completed for the given parameter.
(5) NLL = Chemical is not likely to leach under most soil conditions.
(6) NLV= Chemical is not likely to volatilize under most conditions.
(7) ID = Inadequate data to develop criterion.
(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) The above data was compared to criteria for groundwater contact protection and and ambient air inhalation and did not exceed these criteria.
(10) NE = Parameter not evaluated.

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LE 3
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	X6 South SW 4-5 10/12/99
				Sample Number Sample ID Depth (feet) Date Collected	
BTEX					
Benzene	100	4,000	8,400	400,000	ND
Toluene	16,000	2,800	250,000	250,000	ND
Ethylbenzene	1,500	360	140,000	140,000	ND
Xylenes	5,600	700	150,000	150,000	ND
PNAs					
Naphthalene	50,000	850	77,000,000	160,000,000	ND
2-Methylnaphthalene	170,000	ID	ID	160,000,000	NE
Acenaphthylene	8,500	ID	3,000,000	16,000,000	ND
Acenaphthene	870,000	4,300	350,000,000	810,000,000	ND
Fluorene	890,000	NA	1,000,000,000	540,000,000	ND
Phenanthrene	34,000	2,300	28,000,000	160,000,000	370
Anthracene	41,000	NA	1,000,000,000	1,000,000,000	ND
Fluoranthene	720,000	IP	1,000,000,000	540,000,000	390
Pyrene	470,000	IP	1,000,000,000	340,000,000	ND
Benzo(a)anthracene	NLL	NLL	NLV	210,000	ND
Chrysene	NLL	NLL	ID	21,000,000	ND
Benzo(b)fluoranthene	NLL	NLL	ID	210,000	330
Benzo(k)fluoranthene	NLL	NLL	NLV	2,100,000	ND
Benzo(a)pyrene	NLL	NLL	NLV	21,000	420
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLV	210,000	ND
Dibenzo(a,h)anthracene	NLL	NLL	ID	21,000	ND
Benzo(g,h,i)perylene	NLL	NLL	NLV	16,000,000	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NA = Criterion or value is not available.
(4) IP = A literature search has not been completed for the given parameter.
(5) NLL = Chemical is not likely to leach under most soil conditions.
(6) NLV= Chemical is not likely to volatilize under most conditions.
(7) ID = Inadequate data to develop criterion.
(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) The above data was compared to criteria for groundwater contact protection and and ambient air inhalation and did not exceed these criteria.
(10) NE = Parameter not evaluated.

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TABLE 4
KALAMAZOO MGP
SURFACE SOIL ANALYTICAL RESULTS
METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	IA-1 S1 0-0.5 2/3/99	IA-2 S1 0-0.5 1/19/99	IA-3 S1 0-0.5 1/19/99	IA-4 S1 0-0.5 1/19/99	IA-5 S1 0-0.5 2/3/99	IA-6 S1 0-0.5 1/19/99	IA-7 S1 0-0.5 1/19/99
Arsenic	23,000	70,000	NLV	100,000	9,500	5,900	7,800	3,600	9,100	10,000	4,700
Barium	1,300,000	130,000	NLV	320,000,000	31,000	24,000	35,000	75,000	32,000	29,000	19,000
Cadmium	6,000	1,200 (5)	NLV	2,300,000	ND	ND	86	120	52	95	52
Chromium (total)	30,000 (6)	18,000 (5)	NLV	22,000,000 (6)	18,000	6,800	11,000	9,100	14,000	6,000	4,500
Copper	160,000,000	32,000 (5)	NLV	170,000,000	11,000	5,800	8,100	5,800	11,000	12,000	4,200
Lead	21,000 (5)	21,000 (5)	NLV	900,000	8,600	16,000	4,500	9,200	6,500	8,000	6,200
Mercury	1,700	170	NLV	1,400,000	ND	ND	ND	ND	ND	ND	770
Selenium	4,000	410 (5)	NLV	23,000,000	ND	ND	ND	ND	ND	ND	ND
Silver	13,000	1,000 (5)	NLV	21,000,000	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000,000	47,000 (5)	NLV	1,000,000,000	40,000	24,000	27,000	36,000	42,000	32,000	23,000
Cyanide (total)	4,000	400	NLV	250,000	ND	380	ND	ND	ND	300	250
Cyanide (amenable)	4,000	400	NLV	250,000	ND	NE	NE	NE	ND	NE	NE
Cyanide (free)	4,000	400	NLV	250,000	NE	NE	NE	NE	NE	NE	NE

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NLV = Chemical is not likely to volatilize under most conditions.
(4) NE = Chemical not evaluated by analytical laboratory.
(5) Cleanup criteria defaults to Statewide Default Background Concentration.
(6) Hexavalent chromium used for comparison.
(7) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) The above data was compared to criteria for groundwater contact protection and ambient air inhalation and did not exceed these criteria.

00185641

TABLE 4
KALAMAZOO MGP
SURFACE SOIL ANALYTICAL RESULTS
METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria							
				Sample Number	IA-8	IA-9	IA-10	IA-11	IA-12	MW-1	MW-2
				Sample ID	S1	S1	S1	S1	S1	S1	S1
				Depth (feet)	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
				Date Collected	2/3/99	1/18/99	1/18/99	1/18/99	1/18/99	2/3/99	2/3/99
Arsenic	23,000	70,000	NLV	100,000	5,000	3,600	5,200	7,200	7,000	3,500	18,000
Barium	1,300,000	130,000	NLV	320,000,000	38,000	130,000	48,000	40,000	46,000	15,000	49,000
Cadmium	6,000	1,200 (5)	NLV	2,300,000	52	180	240	110	230	190	170
Chromium (total)	30,000 (6)	18,000 (5)	NLV	22,000,000 (6)	6,700	11,000	11,000	10,000	9,900	6,100	11,000
Copper	160,000,000	32,000 (5)	NLV	170,000,000	8,500	11,000	15,000	34,000	15,000	5,700	14,000
Lead	21,000 (5)	21,000 (5)	NLV	900,000	10,000	9,000	110,000	450,000	97,000	2,600	60,000
Mercury	1,700	170	NLV	1,400,000	ND	ND	270	ND	120	ND	140
Selenium	4,000	410 (5)	NLV	23,000,000	ND	ND	ND	ND	ND	ND	ND
Silver	13,000	1,000 (5)	NLV	21,000,000	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000,000	47,000 (5)	NLV	1,000,000,000	36,000	45,000	58,000	60,000	58,000	21,000	53,000
Cyanide (total)	4,000	400	NLV	250,000	ND	340	300	690	210	ND	310
Cyanide (amenable)	4,000	400	NLV	250,000	ND	NE	NE	ND	NE	ND	ND
Cyanide (free)	4,000	400	NLV	250,000	NE	NE	NE	NE	NE	NE	NE

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NLV = Chemical is not likely to volatilize under most conditions.
(4) NE = Chemical not evaluated by analytical laboratory.
(5) Cleanup criteria defaults to Statewide Default Background Concentration.
(6) Hexavalent chromium used for comparison.
(7) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) The above data was compared to criteria for groundwater contact protection and ambient air inhalation and did not exceed these criteria.

00185642

TABLE 4
KALAMAZOO MGP
SURFACE SOIL ANALYTICAL RESULTS
METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria							
				Sample Number	MW-3	MW-4	P-1	P-2	P-3	P-4	SP101
				Sample ID	S1	S1	S1	S1	S1	S1	S1
				Depth (feet)	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0.5-1
				Date Collected	2/1/99	2/1/99	2/3/99	2/1/99	2/3/99	2/1/99	6/3/99
Arsenic	23,000	70,000	NLV	100,000	2,800	4,400	6,800	8,400	15,000	11,000	7,500
Barium	1,300,000	130,000	NLV	320,000,000	23,000	39,000	47,000	31,000	43,000	58,000	18,000
Cadmium	6,000	1,200 (5)	NLV	2,300,000	ND	610	79	98	210	420	71
Chromium (total)	30,000 (6)	18,000 (5)	NLV	22,000,000 (6)	5,800	9,700	8,300	8,700	12,000	10,000	4,100
Copper	160,000,000	32,000 (5)	NLV	170,000,000	4,400	80,000	11,000	6,600	33,000	190,000	7,100
Lead	21,000 (5)	21,000 (5)	NLV	900,000	14,000	45,000	25,000	12,000	64,000	91,000	13,000
Mercury	1,700	170	NLV	1,400,000	ND	ND	100	ND	230	150	ND
Selenium	4,000	410 (5)	NLV	23,000,000	ND	ND	ND	ND	9,300	410	ND
Silver	13,000	1,000 (5)	NLV	21,000,000	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000,000	47,000 (5)	NLV	1,000,000,000	18,000	15,000	39,000	40,000	74,000	310,000	26,000
Cyanide (total)	4,000	400	NLV	250,000	ND	320	ND	ND	6,800	25,000	ND
Cyanide (amenable)	4,000	400	NLV	250,000	ND	ND	ND	ND	ND	ND	ND
Cyanide (free)	4,000	400	NLV	250,000	NE	NE	NE	NE	NE	NE	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NLV = Chemical is not likely to volatilize under most conditions.
(4) NE = Chemical not evaluated by analytical laboratory.
(5) Cleanup criteria defaults to Statewide Default Background Concentration.
(6) Hexavalent chromium used for comparison.
(7) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) The above data was compared to criteria for groundwater contact protection and ambient air inhalation and did not exceed these criteria.

00185643

TABLE 4
KALAMAZOO MGP
SURFACE SOIL ANALYTICAL RESULTS
METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	SP102	SP103	SP104	SP105	SP106	SP110	SP111
Sample Number					SP102	SP103	SP104	SP105	SP106	SP110	SP111
Sample ID					S1	S1	S1	S1	S1	S1	S1
Depth (feet)					0-1	0.5-1	0-1	0-1	0-1	0-0.5	0-0.5
Date Collected					6/3/99	6/3/99	6/3/99	6/3/99	6/3/99	6/4/99	6/4/99
Arsenic	23,000	70,000	NLV	100,000	15,000	5,700	10,000	11,000	8,800	9,600	8,000
Barium	1,300,000	130,000	NLV	320,000,000	38,000	43,000	36,000	50,000	57,000	72,000	57,000
Cadmium	6,000	1,200 (5)	NLV	2,300,000	50	81	150	200	180	810	550
Chromium (total)	30,000 (6)	18,000 (5)	NLV	22,000,000 (6)	8,400	4,800	9,900	8,100	7,300	14,000	8,200
Copper	160,000,000	32,000 (5)	NLV	170,000,000	13,000	6,500	13,000	15,000	19,000	85,000	79,000
Lead	21,000 (5)	21,000 (5)	NLV	900,000	34,000	7,800	75,000	59,000	81,000	230,000	85,000
Mercury	1,700	170	NLV	1,400,000	ND	ND	100	ND	390	1,300	ND
Selenium	4,000	410 (5)	NLV	23,000,000	ND	ND	ND	ND	480	200	ND
Silver	13,000	1,000 (5)	NLV	21,000,000	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000,000	47,000 (5)	NLV	1,000,000,000	42,000	20,000	46,000	66,000	60,000	71,000	77,000
Cyanide (total)	4,000	400	NLV	250,000	ND	430	4,700	2,200	3,000	620	790
Cyanide (amenable)	4,000	400	NLV	250,000	ND	ND	4,500	ND	ND	ND	ND
Cyanide (free)	4,000	400	NLV	250,000	ND	ND	ND	ND	ND	ND	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NLV = Chemical is not likely to volatilize under most conditions.
(4) NE = Chemical not evaluated by analytical laboratory.
(5) Cleanup criteria defaults to Statewide Default Background Concentration.
(6) Hexavalent chromium used for comparison.
(7) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) The above data was compared to criteria for groundwater contact protection and ambient air inhalation and did not exceed these criteria.

00185644

TABLE 4
KALAMAZOO MGP
SURFACE SOIL ANALYTICAL RESULTS
METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	SP112 S1 0-0.5 6/4/99	SP113 S1 0-0.5 6/4/99	SP114 S1 0-05 6/4/99	SP115 S1 0-0.5 6/4/99	SP116 S1 0-0.5 6/4/99	SP117 S1 0-0.5 6/4/99	SP118 S1 0-0.5 6/4/99
Arsenic	23,000	70,000	NLV	100,000	12,000	13,000	8,100	9,000	11,000	7,100	5,900
Barium	1,300,000	130,000	NLV	320,000,000	63,000	61,000	44,000	33,000	60,000	36,000	46,000
Cadmium	6,000	1,200 (5)	NLV	2,300,000	9,800	320	160	150	830	110	91
Chromium (total)	30,000 (6)	18,000 (5)	NLV	22,000,000 (6)	19,000	16,000	25,000	12,000	14,000	12,000	13,000
Copper	160,000,000	32,000 (5)	NLV	170,000,000	44,000	47,000	13,000	10,000	20,000	8,900	10,000
Lead	21,000 (5)	21,000 (5)	NLV	900,000	220,000	35,000	38,000	99,000	130,000	45,000	19,000
Mercury	1,700	170	NLV	1,400,000	ND	ND	ND	ND	ND	ND	ND
Selenium	4,000	410 (5)	NLV	23,000,000	ND	ND	ND	ND	ND	ND	ND
Silver	13,000	1,000 (5)	NLV	21,000,000	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000,000	47,000 (5)	NLV	1,000,000,000	230,000	160,000	45,000	26,000	98,000	27,000	28,000
Cyanide (total)	4,000	400	NLV	250,000	650	ND	ND	ND	6,300	ND	ND
Cyanide (amenable)	4,000	400	NLV	250,000	ND	ND	ND	ND	900	ND	ND
Cyanide (free)	4,000	400	NLV	250,000	ND	ND	ND	ND	ND	ND	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NLV = Chemical is not likely to volatilize under most conditions.
(4) NE = Chemical not evaluated by analytical laboratory.
(5) Cleanup criteria defaults to Statewide Default Background Concentration.
(6) Hexavalent chromium used for comparison.
(7) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) The above data was compared to criteria for groundwater contact protection and ambient air inhalation and did not exceed these criteria.

00185645

TABLE 4
KALAMAZOO MGP
SURFACE SOIL ANALYTICAL RESULTS
METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	SP119	SP120	SP122	SP123	SP124	SP125	HA-1
Sample Number					SP119	SP120	SP122	SP123	SP124	SP125	HA-1
Sample ID					S1	S1	S1	S1	S1	S1	S1
Depth (feet)					0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Date Collected					6/4/99	6/4/99	6/4/99	6/4/99	6/4/99	6/4/99	7/26/99
Arsenic	23,000	70,000	NLV	100,000	8,100	6,200	6,300	6,400	6,700	5,300	30,000
Barium	1,300,000	130,000	NLV	320,000,000	42,000	41,000	55,000	44,000	67,000	32,000	58,000
Cadmium	6,000	1,200 (5)	NLV	2,300,000	190	160	570	500	620	160	230
Chromium (total)	30,000 (6)	18,000 (5)	NLV	22,000,000 (6)	11,000	12,000	13,000	12,000	17,000	7,800	12,000
Copper	160,000,000	32,000 (5)	NLV	170,000,000	22,000	12,000	17,000	11,000	27,000	15,000	24,000
Lead	21,000 (5)	21,000 (5)	NLV	900,000	47,000	29,000	81,000	48,000	120,000	44,000	24,000
Mercury	1,700	170	NLV	1,400,000	ND	ND	130	100	ND	ND	ND
Selenium	4,000	410 (5)	NLV	23,000,000	ND	ND	ND	ND	ND	ND	770
Silver	13,000	1,000 (5)	NLV	21,000,000	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000,000	47,000 (5)	NLV	1,000,000,000	49,000	31,000	57,000	47,000	130,000	26,000	110,000
Cyanide (total)	4,000	400	NLV	250,000	ND	ND	260	ND	430	ND	ND
Cyanide (amenable)	4,000	400	NLV	250,000	ND	ND	ND	ND	ND	ND	ND
Cyanide (free)	4,000	400	NLV	250,000	ND	ND	ND	ND	ND	ND	NE

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NLV = Chemical is not likely to volatilize under most conditions.
(4) NE = Chemical not evaluated by analytical laboratory.
(5) Cleanup criteria defaults to Statewide Default Background Concentration.
(6) Hexavalent chromium used for comparison.
(7) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) The above data was compared to criteria for groundwater contact protection and ambient air inhalation and did not exceed these criteria.

00185646

TABLE 5
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
METALS AND CYANIDE
SME Project No. KE31823
Page 1 of 7

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria							
				Sample Number	IA-1	IA-1	IA-2	IA-3	IA-4	IA-5	IA-6
				Sample ID	S2	S3	S2	S2	S3	S2	S2
				Depth (feet)	7-8	12-14	10-12	10-12	9-10	1.5-2.5	3-4
				Date Collected	2/3/99	2/22/99	1/19/99	1/19/99	1/19/99	2/3/99	1/19/99
Arsenic	23,000	70,000	NLV	100,000	2,900	3,400	3,900	4,200	6,600	4,000	4,200
Barium	1,300,000	130,000	NLV	320,000,000	10,000	44,000	19,000	32,000	35,000	45,000	25,000
Cadmium	6,000	1,200 (5)	NLV	2,300,000	ND	130	62	53	ND	52	60
Chromium (total)	30,000 (6)	18,000 (5)	NLV	22,000,000 (6)	6,100	12,000	5,200	10,000	9,000	2,900	4,300
Copper	160,000,000	32,000 (5)	NLV	170,000,000	5,100	6,700	5,000	5,600	6,100	13,000	3,700
Lead	21,000 (5)	21,000 (5)	NLV	900,000	4,100	11,000	3,200	2,600	5,100	18,000	4,500
Mercury	1,700	170	NLV	1,400,000	ND	ND	ND	ND	ND	900	ND
Selenium	4,000	410 (5)	NLV	23,000,000	ND	ND	ND	ND	ND	ND	ND
Silver	13,000	1,000 (5)	NLV	21,000,000	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000,000	47,000 (5)	NLV	1,000,000,000	15,000	37,000	20,000	19,000	290,000	4,600	22,000
Cyanide (total)	4,000	400	NLV	250,000	ND	2,000	ND	370	ND	6,000,000	ND
Cyanide (amenable)	4,000	400	NLV	250,000	ND	ND	NE	NE	NE	<11,000	NE
Cyanide (free)	4,000	400	NLV	250,000	NE	NE	NE	NE	NE	NE	NE

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NLV = Chemical is not likely to volatilize under most conditions.
(4) NE = Chemical not evaluated by analytical laboratory.
(5) Cleanup criteria defaults to Statewide Default Background Concentration.
(6) Hexavalent chromium used for comparison.
(7) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) The above data was compared to criteria for groundwater contact protection and ambient air inhalation and did not exceed these criteria.

TABLE 5
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
METALS AND CYANIDE
SME Project No. KE31823

				Sample Number	IA-8	IA-9	IA-9	IA-10	IA-11	IA-12	MW-1
				Sample ID	S2	S2	S3	S2	S2	S2	S4
				Depth (feet)	5-6	3-4	6.5-7.5	6-7	3-4	3-4	6-8
				Date Collected	2/3/99	1/18/99	1/18/99	1/18/99	1/18/99	1/18/99	2/3/99
Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria							
Arsenic	23,000	70,000	NLV	100,000	5,000	7,500	35,000	2,600	41,000	5,400	5,800
Barium	1,300,000	130,000	NLV	320,000,000	17,000	69,000	10,000	33,000	36,000	46,000	32,000
Cadmium	6,000	1,200 (5)	NLV	2,300,000	ND	120	51	ND	120	50	50
Chromium (total)	30,000 (6)	18,000 (5)	NLV	22,000,000 (6)	5,400	13,000	12,000	6,500	8,900	15,000	9,500
Copper	160,000,000	32,000 (5)	NLV	170,000,000	4,900	18,000	120,000	2,900	89,000	7,400	7,900
Lead	21,000 (5)	21,000 (5)	NLV	900,000	10,000	80,000	12,000	4,300	21,000	4,400	8,300
Mercury	1,700	170	NLV	1,400,000	ND	260	ND	ND	ND	ND	ND
Selenium	4,000	410 (5)	NLV	23,000,000	ND	ND	ND	ND	ND	ND	ND
Silver	13,000	1,000 (5)	NLV	21,000,000	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000,000	47,000 (5)	NLV	1,000,000,000	20,000	47,000	4,500	20,000	33,000	23,000	29,000
Cyanide (total)	4,000	400	NLV	250,000	ND	420	ND	370	320	ND	ND
Cyanide (amenable)	4,000	400	NLV	250,000	ND	NE	NE	NE	NE	NE	ND
Cyanide (free)	4,000	400	NLV	250,000	NE	NE	NE	NE	NE	NE	NE

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NLV = Chemical is not likely to volatilize under most conditions.
(4) NE = Chemical not evaluated by analytical laboratory.
(5) Cleanup criteria defaults to Statewide Default Background Concentration.
(6) Hexavalent chromium used for comparison.
(7) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) The above data was compared to criteria for groundwater contact protection and ambient air inhalation and did not exceed these criteria.

00185648

TABLE 5
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria							
				Sample Number	MW-2	P-1	P-2	IA-7A	SP101	SP102	SP103
				Sample ID	S3	S2	S3	S2	S3	S2	S2
				Depth (feet)	4-6	4-5	5-6	11-12	11-12	2-3	4-5
				Date Collected	2/3/99	2/3/99	2/1/99	6/3/99	6/9/99	6/3/99	6/3/99
Arsenic	23,000	70,000	NLV	100,000	12,000	5,900	2,200	9,700	18,000	41,000	4,700
Barium	1,300,000	130,000	NLV	320,000,000	63,000	21,000	8,100	51,000	75,000	13,000	14,000
Cadmium	6,000	1,200 (5)	NLV	2,300,000	88	96	ND	190	99	370	69
Chromium (total)	30,000 (6)	18,000 (5)	NLV	22,000,000 (6)	11,000	6,100	3,600	6,400	5,700	13,000	2,500
Copper	160,000,000	32,000 (5)	NLV	170,000,000	23,000	6,000	2,800	6,600	18,000	50,000	4,700
Lead	21,000 (5)	21,000 (5)	NLV	900,000	51,000	11,000	2,400	81,000	12,000	41,000	4,200
Mercury	1,700	170	NLV	1,400,000	150	ND	ND	260	ND	ND	ND
Selenium	4,000	410 (5)	NLV	23,000,000	580	ND	ND	700	570	ND	ND
Silver	13,000	1,000 (5)	NLV	21,000,000	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000,000	47,000 (5)	NLV	1,000,000,000	36,000	27,000	10,000	22,000	34,000	96,000	12,000
Cyanide (total)	4,000	400	NLV	250,000	2,200	ND	ND	76,000	1,800	ND	ND
Cyanide (amenable)	4,000	400	NLV	250,000	ND	ND	ND	1,200	ND	ND	ND
Cyanide (free)	4,000	400	NLV	250,000	NE	NE	NE	500	ND	ND	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NLV = Chemical is not likely to volatilize under most conditions.
(4) NE = Chemical not evaluated by analytical laboratory.
(5) Cleanup criteria defaults to Statewide Default Background Concentration.
(6) Hexavalent chromium used for comparison.
(7) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) The above data was compared to criteria for groundwater contact protection and ambient air inhalation and did not exceed these criteria.

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TABLE 5
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria							
				Sample Number	SP103	SP104	SP107	SP108	SP109	SP112	SP113
				Sample ID	S3	S3	S3	S3	S2	S2	S2
				Depth (feet)	7-8	4-5	5-7	4-5	3-4	2-4	2-4
				Date Collected	6/3/99	6/3/99	6/3/99	6/3/99	6/3/99	6/4/99	6/4/99
Arsenic	23,000	70,000	NLV	100,000	5,100	-	8,200	3,500	16,000	9,400	9,300
Barium	1,300,000	130,000	NLV	320,000,000	14,000	-	60,000	14,000	190,000	33,000	34,000
Cadmium	6,000	1,200 (5)	NLV	2,300,000	ND	-	150	ND	510	200	100
Chromium (total)	30,000 (6)	18,000 (5)	NLV	22,000,000 (6)	3,300	-	16,000	4,900	16,000	6,700	96,000
Copper	160,000,000	32,000 (5)	NLV	170,000,000	4,200	-	14,000	3,400	96,000	10,000	27,000
Lead	21,000 (5)	21,000 (5)	NLV	900,000	4,000	-	12,000	4,200	270,000	30,000	51,000
Mercury	1,700	170	NLV	1,400,000	ND	-	ND	ND	1,200	1,400	ND
Selenium	4,000	410 (5)	NLV	23,000,000	ND	-	ND	ND	630	ND	ND
Silver	13,000	1,000 (5)	NLV	21,000,000	ND	-	ND	ND	420	ND	ND
Zinc	5,000,000	47,000 (5)	NLV	1,000,000,000	11,000	-	38,000	10,000	250,000	34,000	36,000
Cyanide (total)	4,000	400	NLV	250,000	4,800	4,000	ND	ND	ND	ND	860
Cyanide (amenable)	4,000	400	NLV	250,000	ND	ND	ND	ND	ND	ND	ND
Cyanide (free)	4,000	400	NLV	250,000	ND	ND	ND	ND	ND	ND	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NLV = Chemical is not likely to volatilize under most conditions.
(4) NE = Chemical not evaluated by analytical laboratory.
(5) Cleanup criteria defaults to Statewide Default Background Concentration.
(6) Hexavalent chromium used for comparison.
(7) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) - = Parameter not analyzed.
(9) The above data was compared to criteria for groundwater contact protection and ambient air inhalation and did not exceed these criteria.

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TABLE 5
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	SP114	SP115	SP117	SP118	SP119	SP120	SP121
Sample Number					SP114	SP115	SP117	SP118	SP119	SP120	SP121
Sample ID					S2	S2	S2	S2	S2	S2	S2
Depth (feet)					2-4	2-4	2-4	2-4	2-4	2-4	1.5-2.5
Date Collected					6/4/99	6/4/99	6/4/99	6/4/99	6/4/99	6/4/99	6/4/99
Arsenic	23,000	70,000	NLV	100,000	10,000	10,000	5,700	28,000	6,100	20,000	11,000
Barium	1,300,000	130,000	NLV	320,000,000	140,000	35,000	130,000	71,000	44,000	100,000	250,000
Cadmium	6,000	1,200 (5)	NLV	2,300,000	940	56	210	390	78	290	350
Chromium (total)	30,000 (6)	18,000 (5)	NLV	22,000,000 (6)	9,800	21,000	8,900	22,000	12,000	36,000	24,000
Copper	160,000,000	32,000 (5)	NLV	170,000,000	76,000	44,000	1,200,000	68,000	11,000	62,000	38,000
Lead	21,000 (5)	21,000 (5)	NLV	900,000	90,000	80,000	380,000	76,000	21,000	220,000	170,000
Mercury	1,700	170	NLV	1,400,000	160	100	ND	ND	ND	210	250
Selenium	4,000	410 (5)	NLV	23,000,000	ND	ND	ND	ND	ND	360	200
Silver	13,000	1,000 (5)	NLV	21,000,000	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000,000	47,000 (5)	NLV	1,000,000,000	66,000	35,000	570,000	290,000	34,000	78,000	79,000
Cyanide (total)	4,000	400	NLV	250,000	ND	ND	11,000	9,900	ND	ND	2,900
Cyanide (amenable)	4,000	400	NLV	250,000	ND	ND	4,900	4,200	ND	ND	2,000
Cyanide (free)	4,000	400	NLV	250,000	ND	ND	ND	ND	ND	ND	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NLV = Chemical is not likely to volatilize under most conditions.
(4) NE = Chemical not evaluated by analytical laboratory.
(5) Cleanup criteria defaults to Statewide Default Background Concentration.
(6) Hexavalent chromium used for comparison.
(7) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) The above data was compared to criteria for groundwater contact protection and ambient air inhalation and did not exceed these criteria.

TABLE 5
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria							
				Sample Number	SP122	SP123	SP124	SP125	MW102	MW103	MW103
				Sample ID	S2	S2	S2	S2	S3	S4	S5
				Depth (feet)	2-4	2-4	2-4	2-4	6-7.5	8.5-10	11-12.5
				Date Collected	6/4/99	6/4/99	6/4/99	6/4/99	6/18/99	6/17/99	6/17/99
Arsenic	23,000	70,000	NLV	100,000	17,000	13,000	14,000	8,700	3,900	4,100	7,300
Barium	1,300,000	130,000	NLV	320,000,000	88,000	100,000	440,000	66,000	8,800	13,000	32,000
Cadmium	6,000	1,200 (5)	NLV	2,300,000	84	180	140	150	ND	ND	110
Chromium (total)	30,000 (6)	18,000 (5)	NLV	22,000,000 (6)	7,600	7,300	15,000	12,000	1,900	5,200	8,700
Copper	160,000,000	32,000 (5)	NLV	170,000,000	23,000	49,000	150,000	13,000	2,300	3,300	7,400
Lead	21,000 (5)	21,000 (5)	NLV	900,000	66,000	39,000	490,000	26,000	3,200	2,400	5,900
Mercury	1,700	170	NLV	1,400,000	ND	150	130	260	ND	ND	ND
Selenium	4,000	410 (5)	NLV	23,000,000	ND	420	620	ND	ND	ND	ND
Silver	13,000	1,000 (5)	NLV	21,000,000	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000,000	47,000 (5)	NLV	1,000,000,000	32,000	23,000	330,000	39,000	7,700	8,800	26,000
Cyanide (total)	4,000	400	NLV	250,000	62,000	34,000	560	50,000	ND	ND	ND
Cyanide (amenable)	4,000	400	NLV	250,000	*1,400	ND	ND	6,800	ND	ND	ND
Cyanide (free)	4,000	400	NLV	250,000	ND	ND	ND	ND	ND	ND	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NLV = Chemical is not likely to volatilize under most conditions.
(4) NE = Chemical not evaluated by analytical laboratory.
(5) Cleanup criteria defaults to Statewide Default Background Concentration.
(6) Hexavalent chromium used for comparison.
(7) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) * = Indeterminate value.
(9) The above data was compared to criteria for groundwater contact protection and ambient air inhalation and did not exceed these criteria.

TABLE 5
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
METALS AND CYANIDE
SME Project No. KE31823

				Sample Number	HA-1	X1	X2	X3	X4	X5	X6
				Sample ID	S2	West Floor	East Floor	West SW	North SW	East SW	South SW
				Depth (feet)	1-2	7	7	4-5	4-5	4-5	4-5
				Date Collected	7/26/99	10/12/99	10/12/99	10/12/99	10/12/99	10/12/99	10/12/99
Constituent	Commercial II Drinking Water Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria							
Arsenic	23,000	70,000	NLV	100,000	35,000	10,000	4,000	17,900	17,500	9,200	22,700
Barium	1,300,000	130,000	NLV	320,000,000	64,000	NE	NE	NE	NE	NE	NE
Cadmium	6,000	1,200 (5)	NLV	2,300,000	88	ND	ND	ND	ND	ND	ND
Chromium (total)	30,000 (6)	18,000 (5)	NLV	22,000,000 (6)	8,800	7,000	4,000	13,000	24,000	12,000	10,000
Copper	160,000,000	32,000 (5)	NLV	170,000,000	24,000	NE	NE	NE	NE	NE	NE
Lead	21,000 (5)	21,000 (5)	NLV	900,000	49,000	45,000	9,000	221,000	167,000	73,000	109,000
Mercury	1,700	170	NLV	1,400,000	140	NE	NE	NE	NE	NE	NE
Selenium	4,000	410 (5)	NLV	23,000,000	1,800	NE	NE	NE	NE	NE	NE
Silver	13,000	1,000 (5)	NLV	21,000,000	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000,000	47,000 (5)	NLV	1,000,000,000	16,000	NE	NE	NE	NE	NE	NE
Cyanide (total)	4,000	400	NLV	250,000	31,000	ND	200	1,500	ND	600	300
Cyanide (amenable)	4,000	400	NLV	250,000	ND	NE	NE	NE	NE	NE	NE
Cyanide (free)	4,000	400	NLV	250,000	NE	NE	NE	NE	NE	NE	NE

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NLV = Chemical is not likely to volatilize under most conditions.
(4) NE = Chemical not evaluated by analytical laboratory.
(5) Cleanup criteria defaults to Statewide Default Background Concentration.
(6) Hexavalent chromium used for comparison.
(7) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) * = Indeterminate value.
(9) The above data was compared to criteria for groundwater contact protection and ambient air inhalation and did not exceed these criteria.

TABLE 6
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
TOC
SME Project No. KE31823
Page 1 of 1

Sample Number	IA-12	IA-12	MW-3	MW-3	P-4	P-4	SP108
Depth (feet)	5 - 6	8 - 9	6 - 7	7 - 8	5 - 6	6 - 7	6 - 8
Soil Type	F. to Med. Sand (Native)	Peat (Native)	F. to Cor. Sand (Fill)	Peat (Native)	F. Sand (Native)	Peat (Native)	F. to Cor. Sand (Fill)
Date Collected	3/29/99	3/29/99	3/29/99	3/29/99	3/29/99	3/29/99	6/3/99
Constituent							
TOC	930	249,000	670	115,000	5,150	87,100	66,000

Sample Number	PB-201	MW-101D	MW-101D	MW-102	MW-103	P-2D
Depth (feet)	33.5 - 35	13.5 - 15	46-47.5	13.5 - 15	13.5 -15	36 - 37.5
Soil Type	F. to Med. Sand (Native)	Clayey Silt (Native)	F. to Med. Sand (Native)	F. Sand (Native)	Sandy Silt (Native)	F. to Med. Sand (Native)
Date Collected	6/16/99	6/17/99	6/17/99	6/17/99	6/17/99	6/18/99
Constituent						
TOC	5,900	930	12,000	2,900	4,100	19,000

NOTES:
(1) Concentrations reported in ppb (parts per million or mg/kg).
(2) TOC is not a Part 201 regulated constiuent.
(3) F. = Fine Grained, Med. = Medium Grained and Cor. = Coarse Grained.

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TABLE 7
KALAMAZOO MGP
SOIL VAPOR ANALYTICAL RESULTS
BTEX
SME Project No. KE31823
Page 1 of 1

Constituent	Sample Location Sample ID Sample Depth (feet) Date Collected	SV-1 SV-1 (6-8') 6 - 8 7/20/99	SV-2 SV-2 (6-8') 6 - 8 7/20/99	SV-3 SV-3 (6-8') 6 - 8 7/20/99	SV-4 SV-4 (6-8') 6 - 8 7/20/99	SV-5 SV-5 (8 - 10') 8 - 10 7/20/99
	Soil Gas Concentrations Protective of Unacceptable Indoor Air Inhalation Health Risks (See (3))					
Benzene	2,824	0.19	0.068	0.024	1	0.034
Toluene	140,701	0.071	0.06	0.043	0.13	0.052
Ethylbenzene	351,755	0.016	0.012	0.015	0.1	0.02
Xylenes	1,547,728	0.086	0.057	0.085	0.17	0.07

NOTES:
(1) Concentrations reported in mg/m3 (milligrams per cubic meter).
(2) Calculations performed using the method described in Attachment C of the "Part 201 Generic Groundwater and Soil Volatilization to Indoor Air Inhalation Criteria: Technical Support Document," MDEQ-ERD, August 31, 1998. The calculations were based on commercial/industrial usage at the site.

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TABLE 8
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air *Inhalation* Criteria	Commercial II Groundwater *Contact* Criteria	IA-1 GW 14-16 2/22/99	IA-2 GW 13-15 1/19/99	IA-4 GW 12-14 1/19/99	IA-6 GW 3-8 1/19/99	IA-7 GW 7-12 1/19/99	IA-8 GW 12-15 2/22/99	IA-9 GW 5-10 1/18/99
Sample Location / Sample ID / Screen Depth (feet) / Date Collected											
BTEX											
Benzene	5	200	36,000	9,400	110	12	2	3,200	4,900	6	ND
Toluene	790	140	530,000	530,000	6,300	3	1	40	1,400	32	ND
Ethylbenzene	74	18	170,000	170,000	2,100	ND	ND	190	39	14	ND
Xylenes	280	35	190,000	190,000	12,900	ND	1	250	540	65	ND
PNAs											
Naphthalene	750	13	31,000	31,000	1,900	15	12	1,900	5,100	6	ND
2-Methylnaphthalene	750	ID	ID	32,000	630	ND	5	590	2,100	ND	ND
Acenaphthylene	75	ID	3,900	3,900	150	ND	ND	ND	160	ND	ND
Acenaphthene	3,800	19	4,200	4,200	6	ND	5	340	81	8	ND
Fluorene	2,000	NA	2,000	2,000	31	ND	ND	120	99	ND	ND
Phenanthrene	75	5	1,000	1,000	47	ND	ND	160	140	5	ND
Anthracene	43	NA	43	43	11	ND	ND	23	37	ND	ND
Fluoranthene	210	IP	210	210	6	ND	ND	14	19	ND	ND
Pyrene	140	IP	140	140	11	ND	ND	5	15	ND	ND
Benzo(a)anthracene	5	NA	NLV	5	ND	ND	ND	5	5	ND	ND
INORGANICS											
Arsenic	50	150	NLV	4,700	18	ND	6	8	9	ND	ND
Barium	2,000	190	NLV	15,000,000	210	ND	ND	ND	ND	ND	ND
Selenium	50	5	NLV	1,100,000	ND	ND	ND	ND	ND	ND	ND
Cyanide (total)	200	20	NLV	650,000	20	160	61	140	860	100	ND
Cyanide (amenable)	200	20	NLV	650,000	ND	ND	40	80	ND	ND	NE
Cyanide (free)	200	20	NLV	650,000	NE	NE	NE	NE	NE	NE	NE

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) ND= Analytical result was less than method detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) IP = Development of generic GSI value in process but not yet complete.
(6) NLV = Chemical is not likely to volatilize under most conditions.
(7) NE = Chemical not evaluated by analytical laboratory.
(8) Constituents listed are limited to those constituents that indicated detectable concentrations for at least one sample.
(9) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(10) The above date was compared to criteria for flammability/explosivity and acute inhalation and did not exceed these criteria.

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TABLE 8
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Contact Criteria	IA-10 GW 10-12 1/18/99	IA-11 GW 6-8 1/18/99	IA-12 GW 5-7 1/18/99	SP-102 GW 4.5-9 6/4/99	SP-103 GW 7-10 6/4/99	SP-104 GW 6.5-10 6/4/99	SP-105 GW 5-10 6/3/99
BTEX											
Benzene	5	200	36,000	9,400	ND	ND	ND	ND	ND	360	ND
Toluene	790	140	530,000	530,000	ND	ND	ND	ND	ND	3	ND
Ethylbenzene	74	18	170,000	170,000	ND	ND	ND	ND	ND	5	ND
Xylenes	280	35	190,000	190,000	ND	ND	ND	ND	ND	11	ND
PNAs											
Naphthalene	750	13	31,000	31,000	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ID	32,000	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	75	ID	3,900	3,900	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	4,200	4,200	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	NA	2,000	2,000	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	75	5	1,000	1,000	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	NA	43	43	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	IP	210	210	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	IP	140	140	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	5	NA	NLV	5	ND	ND	ND	ND	ND	ND	ND
INORGANICS											
Arsenic	50	150	NLV	4,700	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	190	NLV	15,000,000	ND	300	ND	ND	ND	ND	ND
Selenium	50	5	NLV	1,100,000	ND	ND	ND	ND	ND	ND	ND
Cyanide (total)	200	20	NLV	650,000	29	ND	ND	ND	620	170	190
Cyanide (amenable)	200	20	NLV	650,000	ND	NE	NE	ND	42	ND	38
Cyanide (free)	200	20	NLV	650,000	NE	NE	NE	ND	36	ND	ND

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) ND= Analytical result was less than method detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) IP = Development of generic GSI value in process but not yet complete.
(6) NLV = Chemical is not likely to volatilize under most conditions.
(7) NE = Chemical not evaluated by analytical laboratory.
(8) Constituents listed are limited to those constituents that indicated detectable concentrations for at least one sample.
(9) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(10) The above date was compared to criteria for flammability/explosivity and acute inhalation and did not exceed these criteria.

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TABLE 8
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria	SP-106 GW 5.5-10 6/3/99	SP-107 GW 7.5-10 6/3/99	SP-108 GW 6-10 6/3/99	SP-109 GW 5-8 6/3/99	MW-1 GW 7-12 2/8/99	MW-1 GW 7-12 6/22/99
BTEX										
Benzene	5	200	36,000	9,400	250	ND	ND	ND	13	10
Toluene	790	140	530,000	530,000	150	ND	ND	ND	540	520
Ethylbenzene	74	18	170,000	170,000	650	ND	ND	ND	910	280
Xylenes	280	35	190,000	190,000	1,200	ND	ND	ND	1,730	920
PNAs										
Naphthalene	750	13	31,000	31,000	300	410	ND	5	120	50
2-Methylnaphthalene	750	ID	ID	32,000	16	ND	ND	ND	21	7
Acenaphthylene	75	ID	3,900	3,900	12	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	4,200	4,200	34	ND	ND	ND	ND	ND
Fluorene	2,000	NA	2,000	2,000	9	ND	ND	ND	ND	ND
Phenanthrene	75	5	1,000	1,000	11	ND	ND	ND	ND	ND
Anthracene	43	NA	43	43	ND	ND	ND	ND	ND	ND
Fluoranthene	210	IP	210	210	ND	ND	ND	ND	ND	ND
Pyrene	140	IP	140	140	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	5	NA	NLV	5	ND	ND	ND	ND	ND	ND
INORGANICS										
Arsenic	50	150	NLV	4,700	NA	ND	12	ND	ND	8
Barium	2,000	190	NLV	15,000,000	NA	240	300	100	ND	190
Selenium	50	5	NLV	1,100,000	NA	ND	ND	ND	ND	ND
Cyanide (total)	200	20	NLV	650,000	160	ND	16	ND	ND	8
Cyanide (amenable)	200	20	NLV	650,000	60	ND	ND	ND	ND	ND
Cyanide (free)	200	20	NLV	650,000	ND	ND	ND	ND	NE	ND

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) ND= Analytical result was less than method detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) IP = Development of generic GSI value in process but not yet complete.
(6) NLV = Chemical is not likely to volatilize under most conditions.
(7) NE = Chemical not evaluated by analytical laboratory.
(8) Constituents listed are limited to those constituents that indicated detectable concentrations for at least one sample.
(9) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(10) The above date was compared to criteria for flammability/explosivity and acute inhalation and did not exceed these criteria.

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T .E 8
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria	MW-2 GW 3-8 2/8/99	MW-2 GW 3-8 6/22/99	MW-3 GW 3-8 2/8/99	MW-3 GW 3-8 6/22/99	MW-4 GW 3-8 2/8/99	MW-4 GW 3-8 6/22/99
Sample Location / Sample ID / Screen Depth (feet) / Date Collected										
BTEX										
Benzene	5	200	36,000	9,400	1	ND	3	ND	ND	ND
Toluene	790	140	530,000	530,000	4	ND	1	ND	ND	ND
Ethylbenzene	74	18	170,000	170,000	1	ND	1	ND	ND	ND
Xylenes	280	35	190,000	190,000	7	ND	3	ND	2	ND
PNAs										
Naphthalene	750	13	31,000	31,000	6	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ID	32,000	ND	ND	ND	ND	ND	ND
Acenaphthylene	75	ID	3,900	3,900	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	4,200	4,200	ND	ND	ND	ND	ND	ND
Fluorene	2,000	NA	2,000	2,000	ND	ND	ND	ND	ND	ND
Phenanthrene	75	5	1,000	1,000	ND	ND	ND	ND	ND	ND
Anthracene	43	NA	43	43	ND	ND	ND	ND	ND	ND
Fluoranthene	210	IP	210	210	ND	ND	ND	ND	ND	ND
Pyrene	140	IP	140	140	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	5	NA	NLV	5	ND	ND	ND	ND	ND	ND
INORGANICS										
Arsenic	50	150	NLV	4,700	ND	ND	13	8	ND	ND
Barium	2,000	190	NLV	15,000,000	ND	ND	ND	ND	ND	ND
Selenium	50	5	NLV	1,100,000	ND	ND	ND	ND	ND	ND
Cyanide (total)	200	20	NLV	650,000	150	ND	16	ND	ND	ND
Cyanide (amenable)	200	20	NLV	650,000	ND	ND	ND	ND	ND	ND
Cyanide (free)	200	20	NLV	650,000	NE	ND	NE	ND	NE	ND

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) ND= Analytical result was less than method detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) IP = Development of generic GSI value in process but not yet complete.
(6) NLV = Chemical is not likely to volatilize under most conditions.
(7) NE = Chemical not evaluated by analytical laboratory.
(8) Constituents listed are limited to those constituents that indicated detectable concentrations for at least one sample.
(9) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(10) The above date was compared to criteria for flammability/explosivity and acute inhalation and did not exceed these criteria.

00185659

KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
BTEX, PNAs, METALS AND CYANIDE

SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria	P-1 GW 7-12 See (11)	P-1 GW 7-12 6/22/99	P-2 GW 8-13 2/8/99	P-2 GW 8-13 6/23/99	P-2D GW 35-40 6/23/99	P-3 GW 3-8 2/8/99	P-3 GW 3-8 6/22/99
Sample Location / Sample ID / Screen Depth (feet) / Date Collected											
BTEX											
Benzene	5	200	36,000	9,400	ND	ND	480	140	ND	3	90
Toluene	790	140	530,000	530,000	ND	ND	280	160	ND	5	21
Ethylbenzene	74	18	170,000	170,000	ND	ND	320	130	ND	13	330
Xylenes	280	35	190,000	190,000	ND	ND	1,590	610	ND	31	298
PNAs											
Naphthalene	750	13	31,000	31,000	ND	NE	2,900	200	ND	24	24
2-Methylnaphthalene	750	ID	ID	32,000	ND	NE	59	15	ND	ND	5
Acenaphthylene	75	ID	3,900	3,900	ND	NE	ND	8	ND	ND	ND
Acenaphthene	3,800	19	4,200	4,200	ND	NE	65	38	ND	ND	9
Fluorene	2,000	NA	2,000	2,000	ND	NE	32	23	ND	ND	10
Phenanthrene	75	5	1,000	1,000	ND	NE	46	24	5	ND	16
Anthracene	43	NA	43	43	ND	NE	ND	8	6	ND	5
Fluoranthene	210	IP	210	210	ND	NE	ND	10	ND	ND	ND
Pyrene	140	IP	140	140	ND	NE	ND	5	ND	ND	ND
Benzo(a)anthracene	5	NA	NLV	5	ND	NE	ND	ND	ND	ND	ND
INORGANICS											
Arsenic	50	150	NLV	4,700	ND	NE	8	8	ND	ND	ND
Barium	2,000	190	NLV	15,000,000	ND	NE	ND	ND	ND	ND	150
Selenium	50	5	NLV	1,100,000	6	NE	ND	ND	ND	29	ND
Cyanide (total)	200	20	NLV	650,000	90	NE	77	460	ND	16	66
Cyanide (amenable)	200	20	NLV	650,000	ND	NE	ND	31	ND	ND	ND
Cyanide (free)	200	20	NLV	650,000	NE	NE	NE	ND	ND	NE	ND

NOTES:

(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) ND= Analytical result was less than method detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) IP = Development of generic GSI value in process but not yet complete.
(6) NLV = Chemical is not likely to volatilize under most conditions.
(7) NE = Chemical not evaluated by analytical laboratory.
(8) Constituents listed are limited to those constituents that indicated detectable concentrations for at least one sample.
(9) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(10) The above date was compared to criteria for flammability/explosivity and acute inhalation and did not exceed these criteria.
(11) BTEX and cyanide collected on 2/25, PNAs collected on 2/27 and metals collected on 3/1. Multilple sample dates due to slow well recovery.

00185660

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T E 8
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria	P-4 GW 3-8 2/8/99	P-4 GW 3-8 6/22/99	MW-101 GW 12-17 6/23/99	MW-101D GW 35-40 6/23/99	MW-102 GW 10-15 6/22/99	MW-103 GW 11-16 6/22/99
Sample Location / Sample ID / Screen Depth (feet) / Date Collected										
BTEX										
Benzene	5	200	36,000	9,400	ND	ND	62	2	ND	ND
Toluene	790	140	530,000	530,000	ND	ND	4,100	12	ND	ND
Ethylbenzene	74	18	170,000	170,000	ND	ND	760	170	ND	2
Xylenes	280	35	190,000	190,000	ND	ND	5,600	872	ND	2
PNAs										
Naphthalene	750	13	31,000	31,000	ND	ND	2,800	3,100	ND	ND
2-Methylnaphthalene	750	ID	ID	32,000	ND	ND	55	210	ND	ND
Acenaphthylene	75	ID	3,900	3,900	ND	ND	75	190	ND	ND
Acenaphthene	3,800	19	4,200	4,200	ND	ND	ND	65	ND	ND
Fluorene	2,000	NA	2,000	2,000	ND	ND	25	25	ND	ND
Phenanthrene	75	5	1,000	1,000	ND	ND	24	ND	ND	ND
Anthracene	43	NA	43	43	ND	ND	ND	ND	ND	ND
Fluoranthene	210	IP	210	210	ND	ND	ND	ND	ND	ND
Pyrene	140	IP	140	140	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	5	NA	NLV	5	ND	ND	ND	ND	ND	ND
INORGANICS										
Arsenic	50	150	NLV	4,700	ND	ND	7	16	ND	ND
Barium	2,000	190	NLV	15,000,000	ND	ND	760	420	ND	ND
Selenium	50	5	NLV	1,100,000	ND	ND	ND	ND	ND	ND
Cyanide (total)	200	20	NLV	650,000	ND	ND	46	ND	ND	14
Cyanide (amenable)	200	20	NLV	650,000	ND	ND	ND	ND	ND	ND
Cyanide (free)	200	20	NLV	650,000	NE	ND	ND	ND	ND	ND

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) ND= Analytical result was less than method detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) IP = Development of generic GSI value in process but not yet complete.
(6) NLV = Chemical is not likely to volatilize under most conditions.
(7) NE = Chemical not evaluated by analytical laboratory.
(8) Constituents listed are limited to those constituents that indicated detectable concentrations for at least one sample.
(9) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(10) The above date was compared to criteria for flammability/explosivity and acute inhalation and did not exceed these criteria.

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1 .E 8

KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria	MW-104 GW 5-10 6/23/99	MW-104D GW 30-35 6/23/99	MW-105 GW 11-16 6/24/99	MW-105D GW 39-44 6/24/99
BTEX								
Benzene	5	200	36,000	9,400	ND	ND	ND	ND
Toluene	790	140	530,000	530,000	ND	1	ND	ND
Ethylbenzene	74	18	170,000	170,000	ND	1	ND	ND
Xylenes	280	35	190,000	190,000	ND	ND	ND	2
PNAs								
Naphthalene	750	13	31,000	31,000	ND	16	6	ND
2-Methylnaphthalene	750	ID	ID	32,000	ND	ND	ND	ND
Acenaphthylene	75	ID	3,900	3,900	ND	ND	ND	ND
Acenaphthene	3,800	19	4,200	4,200	ND	ND	ND	ND
Fluorene	2,000	NA	2,000	2,000	ND	ND	ND	ND
Phenanthrene	75	5	1,000	1,000	ND	ND	ND	ND
Anthracene	43	NA	43	43	ND	ND	ND	ND
Fluoranthene	210	IP	210	210	ND	ND	ND	ND
Pyrene	140	IP	140	140	ND	ND	ND	ND
Benzo(a)anthracene	5	NA	NLV	5	ND	ND	ND	ND
INORGANICS								
Arsenic	50	150	NLV	4,700	5	16	ND	ND
Barium	2,000	190	NLV	15,000,000	340	230	ND	150
Selenium	50	5	NLV	1,100,000	NA	ND	ND	ND
Cyanide (total)	200	20	NLV	650,000	28	5	ND	ND
Cyanide (amenable)	200	20	NLV	650,000	ND	ND	ND	ND
Cyanide (free)	200	20	NLV	650,000	ND	ND	ND	ND

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) ND= Analytical result was less than method detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) IP = Development of generic GSI value in process but not yet complete.
(6) NLV = Chemical is not likely to volatilize under most conditions.
(7) NE = Chemical not evaluated by analytical laboratory.
(8) Constituents listed are limited to those constituents that indicated detectable concentrations for at least one sample.
(9) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(10) The above date was compared to criteria for flammability/explosivity and acute inhalation and did not exceed these criteria.

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APPENDIX F

LABORATORY ANALYTICAL REPORTS FOR SOIL AND GROUNDWATER SAMPLES COLLECTED IN JANUARY, FEBRUARY AND MARCH, 1999

KR059B029640

00185664

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: HWVoigt, T-260

Date: February 18, 1999

Subject: KALAMAZOO, Former MGP
SME Project # KE31823
- Sampling Date Of January 18, 1999
- Sampling Date Of January 19, 1999

File Index No.
519917-450-072
519917-450-080

CC: GLKelterborn, T-258

CC: Pat Baresse
Soil & Materials Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

On January 19 and January 20, 1999 the Chemistry Section (CHEM) of Laboratory Services received soil and groundwater samples collected at KALAMAZOO, Former MGP by Soil and Material Engineers (SME)..

The samples were returned to CHEM for the determination of

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Michigan 10-Metals
Cyanide, Total and Amenable

Analytical results are attached for your review.

00185665

KR059B029641

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Commercial Services for analysis.

VOC Sample Collection - VOC soil samples were collected by DEQ-ORGLAB-11, Methanol Preservation Protocol (Method 5035).

Aromatic Volatile Organics (BTEX) - Method 8021, Halogenated And Aromatic Volatiles By Gas Chromatography Using Electrolytic Conductivity And Photoionization Detectors In Series: Capillary Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Total and Amenable - Method 9011, Cyanide Extraction Procedure For Solids and Oils. Method 9010, Total and Amenable Cyanide. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Total Metals Preparation - Soils - Method 3051, Microwave Assisted Digestion Of Sediments, Sludges, Soils and Oils. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	SW-846 Method
Arsenic	7060
Barium	7081
Cadmium	7131
Chromium	7191
Copper	7211
Lead	7421
Mercury	7470
Selenium	7740
Silver	7661
Zinc	7950

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

KR059B029643

00185667

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-12 S1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	93
Methanol Preservation Date	01-19-99
Analysis Date	01-25-99
Control Number	990072-01

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	IA-12 S1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	93
Extraction Date	01-21-99
Analysis Date	02-05-99
Control Number	990072-01

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphtalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	550	330
Anthracene	nd	330
Fluoranthene	1,300	330
Pyrene	980	330
Benzo(a)anthracene	810	330
Chrysene	830	330
Benzo(b)fluoranthene	580	330
Benzo(k)fluoranthene	490	330
Benzo(a)pyrene	630	330
Indeno(1,2,3-cd)pyrene	410	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	380	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	91	23-120
2-Fluorobiphenyl	96	30-115
p-Terphenyl-d14	97	18-137

KR059B029644

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By KWJ Date 02/FEB Data File 990072
IA-12 - S1 | 0"-6"

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00185668

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-12 S2
Sample Depth, ft (in=")	3-4
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	95
Methanol Preservation Date	01-19-99
Analysis Date	01-25-99
Control Number	990072-02

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	95	80-120

Sample Identification	IA-12 S2
Sample Depth, ft (in=")	3-4
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	95
Extraction Date	01-21-99
Analysis Date	02-05-99
Control Number	990072-02

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphtalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	90	23-120
2-Fluorobiphenyl	96	30-115
p-Terphenyl-d14	100	18-137

KR059B029645

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HWC Date 02/8/99 Data File 990072

IA-12 - S2	3-4

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00185669

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-12 GW
Sample Depth, ft (in=")	2-7
Sample Type	water
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	-
HCL Preservation Date	at collection
Analysis Date	01-24-99
Control Number	990072-03

BTEX - Method 8021	**ug/L**	**TMDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	102	80-120

Sample Identification	IA-12 GW
Sample Depth, ft (in=")	2-7
Sample Type	water
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	-
Extraction Date	01-21-99
Analysis Date	02-06-99
Control Number	990072-03

PAHs - Method 8270	**ug/L**	**TMDL**
Naphthalene	nd	5
2-Methylnaphtalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	96	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	102	33-141

KR059B029646

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

Reviewed By _____ Date 02/18/99 Data File 990072
IA-12 - GW | 2-7

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00185670

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-11 S1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	87
Methanol Preservation Date	01-19-99
Analysis Date	01-25-99
Control Number	990072-04

BTEX - Method 8021	**ug/kg**	**TMDL**
Benzene	70	50
Toluene	87	50
Ethylbenzene	nd	50
m/p-Xylene	81	100
o-Xylene	50	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	97	80-120

Sample Identification	IA-11 S1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	87
Extraction Date	01-21-99
Analysis Date	02-05-99
Control Number	990072-04

PAHs - Method 8270	**ug/kg**	**TMDL**
Naphthalene	350	330
2-Methylnaphtalene	nd	330
Acenaphthylene	700	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	1,600	330
Anthracene	630	330
Fluoranthene	4,500	330
Pyrene	3,400	330
Benzo(a)anthracene	3,300	330
Chrysene	2,900	330
Benzo(b)fluoranthene	2,500	330
Benzo(k)fluoranthene	2,300	330
Benzo(a)pyrene	3,500	330
Indeno(1,2,3-cd)pyrene	1,600	330
Dibenzo(a,h)anthracene	510	330
Benzo(g,h,i)perylene	1,500	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	89	23-120
2-Fluorobiphenyl	92	30-115
p-Terphenyl-d14	97	18-137

KR059B029647

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HLW Date 02/FF9 Data File 990072
IA-11 - S1 0"-6"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-11 S2
Sample Depth, ft (in=")	3-4
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	88
Methanol Preservation Date	01-19-99
Analysis Date	01-25-99
Control Number	990072-05

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	97	80-120

Sample Identification	IA-11 S2
Sample Depth, ft (in=")	3-4
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	88
Extraction Date	01-21-99
Analysis Date	02-05-99
Control Number	990072-05

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	470	330
2-Methylnaphtalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	2,700	330
Anthracene	700	330
Fluoranthene	3,700	330
Pyrene	2,500	330
Benzo(a)anthracene	1,900	330
Chrysene	1,800	330
Benzo(b)fluoranthene	2,200	330
Benzo(k)fluoranthene	1,100	330
Benzo(a)pyrene	1,700	330
Indeno(1,2,3-cd)pyrene	800	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	700	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	90	23-120
2-Fluorobiphenyl	95	30-115
p-Terphenyl-d14	98	18-137

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NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HWJ Date 02/8/99 Data File 990072
IA-11 - S2 3-4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-11 GW
Sample Depth, ft (in=")	6-8
Sample Type	water
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	-
HCL Preservation Date	at collection
Analysis Date	01-24-99
Control Number	990072-06

BTEX - Method 8021	ug/L	TMDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	100	80-120

Sample Identification	IA-11 GW
Sample Depth, ft (in=")	6-8
Sample Type	water
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	-
Extraction Date	01-21-99
Analysis Date	02-06-99
Control Number	990072-06

PAHs - Method 8270	ug/L	TMDL
Naphthalene	nd	5
2-Methylnaphtalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	92	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	101	33-141

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NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

Reviewed By HWO Date 02/FEB Data File 990072
IA-11 - GW 6-8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-10 S1	Sample Identification	IA-10 S1
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	01/18/99	Sample Date	01/18/99
Received Date	01/19/99	Received Date	01/19/99
Report Date	02/18/99	Report Date	02/18/99
Percent Solids, %w/w	88	Percent Solids, %w/w	88
Methanol Preservation Date	01-19-99	Extraction Date	01-21-99
Analysis Date	01-25-99	Analysis Date	02-05-99
Control Number	990072-07	Control Number	990072-07

BTEX - Method 8021	ug/kg	TMDL
Benzene	80	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	190	100
o-Xylene	98	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	94	80-120

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	700	330
2-Methylnaphtalene	nd	330
Acenaphthylene	1,500	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	2,800	330
Anthracene	1,200	330
Fluoranthene	11,000	330
Pyrene	8,600	330
Benzo(a)anthracene	7,100	330
Chrysene	6,200	330
Benzo(b)fluoranthene	8,800	330
Benzo(k)fluoranthene	7,500	330
Benzo(a)pyrene	5,700	330
Indeno(1,2,3-cd)pyrene	2,700	330
Dibenzo(a,h)anthracene	810	330
Benzo(g,h,i)perylene	3,000	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	82	23-120
2-Fluorobiphenyl	91	30-115
p-Terphenyl-d14	95	18-137

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By [signature] Date 02/FEB Data File 990072
IA-10 - S1 0"-6"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-10 S2
Sample Depth, ft (in=")	6-7
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	88
Methanol Preservation Date	01-19-99
Analysis Date	01-25-99
Control Number	990072-08

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	50	50
Ethylbenzene	nd	50
m/p-Xylene	73	100
o-Xylene	81	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	IA-10 S2
Sample Depth, ft (in=")	6-7
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	88
Extraction Date	01-21-99
Analysis Date	02-05-99
Control Number	990072-08

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphtalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	75	23-120
2-Fluorobiphenyl	82	30-115
p-Terphenyl-d14	87	18-137

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NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HWJ Date 02/18/99 Data File 990072

IA-10 - S2	6-7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-10 GW		Sample Identification	IA-10 GW	
Sample Depth, ft (in=")	10-12		Sample Depth, ft (in=")	10-12	
Sample Type	water		Sample Type	water	
Sample Date	01/18/99		Sample Date	01/18/99	
Received Date	01/19/99		Received Date	01/19/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
HCL Preservation Date	at collection		Extraction Date	01-21-99	
Analysis Date	01-24-99		Analysis Date	02-06-99	
Control Number	990072-09		Control Number	990072-09	

BTEX - Method 8021	ug/L	TMDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	100	80-120

PAHs - Method 8270	ug/L	TMDL
Naphthalene	nd	5
2-Methylnaphtalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	90	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	98	33-141

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

Reviewed By _____ Date 02/18/99 Data File 990072
IA-10 - GW 10-12

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-9 S1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	80
Methanol Preservation Date	01-19-99
Analysis Date	01-25-99
Control Number	990072-10

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	94	80-120

Sample Identification	IA-9 S1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	80
Extraction Date	01-21-99
Analysis Date	02-05-99
Control Number	990072-10

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphtalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	350	330
Pyrene	410	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	91	23-120
2-Fluorobiphenyl	94	30-115
p-Terphenyl-d14	96	18-137

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By _____ Date 2/18/99 Data File 990072
IA-9 - S1 0"-6"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-9 S2
Sample Depth, ft (in=")	3-4
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	87
Methanol Preservation Date	01-19-99
Analysis Date	01-25-99
Control Number	990072-11

BTEX - Method 8021	**ug/kg**	**TMDL**
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	95	80-120

Sample Identification	IA-9 S2
Sample Depth, ft (in=")	3-4
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	87
Extraction Date	01-21-99
Analysis Date	02-05-99
Control Number	990072-11

PAHs - Method 8270	**ug/kg**	**TMDL**
Naphthalene	340	330
2-Methylnaphtalene	nd	330
Acenaphthylene	1,500	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	840	330
Anthracene	720	330
Fluoranthene	2,100	330
Pyrene	2,400	330
Benzo(a)anthracene	1,400	330
Chrysene	1,400	330
Benzo(b)fluoranthene	2,400	330
Benzo(k)fluoranthene	1,200	330
Benzo(a)pyrene	1,200	330
Indeno(1,2,3-cd)pyrene	900	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	840	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	85	23-120
2-Fluorobiphenyl	89	30-115
p-Terphenyl-d14	93	18-137

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HLW Date 02/1/99 Data File 990072
IA-9 - S2 3-4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-9 S3		Sample Identification	IA-9 S3	
Sample Depth, ft (in=")	6.5-7.5		Sample Depth, ft (in=")	6.5-7.5	
Sample Type	soil		Sample Type	soil	
Sample Date	01/18/99		Sample Date	01/18/99	
Received Date	01/19/99		Received Date	01/19/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	79		Percent Solids, %w/w	79	
Methanol Preservation Date	01-19-99		Extraction Date	01-21-99	
Analysis Date	01-25-99		Analysis Date	02-05-99	
Control Number	990072-12		Control Number	990072-12	
BTEX - Method 8021	**ug/kg**	**TMDL**	**PAHs - Method 8270**	**ug/kg**	**TMDL**
Benzene	nd	50	Naphthalene	nd	330
Toluene	nd	50	2-Methylnaphtalene	nd	330
Ethylbenzene	nd	50	Acenaphthylene	nd	330
m/p-Xylene	nd	100	Acenaphthene	nd	330
o-Xylene	nd	50	Fluorene	nd	330
Surrogate Recovery	% Recovery	Criteria	Phenanthrene	nd	330
4-Bromofluorobenzene	96	80-120	Anthracene	nd	330
			Fluoranthene	nd	330
			Pyrene	nd	330
			Benzo(a)anthracene	nd	330
			Chrysene	nd	330
			Benzo(b)fluoranthene	nd	330
			Benzo(k)fluoranthene	nd	330
			Benzo(a)pyrene	nd	330
			Indeno(1,2,3-cd)pyrene	nd	330
			Dibenzo(a,h)anthracene	nd	330
			Benzo(g,h,i)perylene	nd	330
			Surrogate Recovery	% Recovery	Criteria
			Nitrobenzene-d5	84	23-120
			2-Fluorobiphenyl	87	30-115
			p-Terphenyl-d14	95	18-137

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HWJ Date 02/18/99 Data File 990072
IA-9 - S3 6.5-7.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-9 GW
Sample Depth, ft (in=")	5-10
Sample Type	water
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	-
HCL Preservation Date	at collection
Analysis Date	01-24-99
Control Number	990072-13

BTEX - Method 8021	ug/L	TMDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	99	80-120

Sample Identification	IA-9 GW
Sample Depth, ft (in=")	5-10
Sample Type	water
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	-
Extraction Date	01-21-99
Analysis Date	02-06-99
Control Number	990072-13

PAHs - Method 8270	ug/L	TMDL
Naphthalene	nd	5
2-Methylnaphtalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	103	33-141

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

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IA-9 - GW 5-10

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-12 S1		**Sample Identification**	IA-12 S1	
Sample Depth, ft (in=")	0"-6"		Sample Depth, ft (in=")	0"-6"	
Sample Type	soil		Sample Type	soil	
Sample Date	01/18/99		Sample Date	01/18/99	
Received Date	01/19/99		Received Date	01/19/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	93		Percent Solids, %w/w	93	
Preparation Date	01-24-99		Extraction Date	01-25-99	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	-	
Control Number	990072-01		Control Number	990072-01	

TOTAL METALS	**ug/kg**	**TMDL**
Arsenic - 7060	7,000	100
Barium, 7081	46,000	1,000
Cadmium - 7131	230	50
Chromium (total) - 7191	9,900	2,500
Copper - 7211	15,000	1,000
Lead - 7421	97,000	1,000
Mercury - 7470	120	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	58,000	1,000

INORGANICS	**ug/kg**	**TMDL**
Cyanide, Total - 9011/9010	210	200
Cyanide, Amenable - 9011/ 9010	-	500

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HWW Date 02/28/99 Data File 990072
IA-12 - S1 0"-6"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-12 S2	**Sample Identification**	IA-12 S2
Sample Depth, ft (in=")	3-4	Sample Depth, ft (in=")	3-4
Sample Type	soil	Sample Type	soil
Sample Date	01/18/99	Sample Date	01/18/99
Received Date	01/19/99	Received Date	01/19/99
Report Date	02/18/99	Report Date	02/18/99
Percent Solids, %w/w	95	Percent Solids, %w/w	95
Preparation Date	01-24-99	Extraction Date	01-25-99
Analysis Date, Start	01-26-99	Analysis Date, Total	01-29-99
Analysis Date, End	02-12-99	Analysis Date, Amenable	-
Control Number	990072-02	Control Number	990072-02

TOTAL METALS	**ug/kg**	**TMDL**
Arsenic - 7060	5,400	100
Barium, 7081	46,000	1,000
Cadmium - 7131	50	50
Chromium (total) - 7191	15,000	2,500
Copper - 7211	7,400	1,000
Lead - 7421	4,400	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	23,000	1,000

INORGANICS	**ug/kg**	**TMDL**
Cyanide, Total - 9011/9010	nd	200
Cyanide, Amenable - 9011/ 9010	-	500

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By _____ Date 02/28/99 Data File 990072
IA-12 - S2 | 3-4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-12 GW		Sample Identification	IA-12 GW	
Sample Depth, ft (in=")	2-7		Sample Depth, ft (in=")	2-7	
Sample Type	water		Sample Type	water	
Sample Date	01/18/99		Sample Date	01/18/99	
Received Date	01/19/99		Received Date	01/19/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
Preparation Date	-		Extraction Date	-	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	-	
Control Number	990072-03		Control Number	990072-03	
DISSOLVED METALS	**ug/L**	**TMDL**	**INORGANICS**	**ug/L**	**TMDL**
Arsenic - 7060	nd	5.0	Cyanide, Total - 9010	nd	5
Barium, 7081	nd	200.0	Cyanide, Amenable - 9010	-	20
Cadmium - 7131	nd	0.5			
Chromium (total) - 7191	nd	50.0			
Copper - 7211	nd	25.0			
Lead - 7421	nd	3.0			
Mercury - 7470	nd	0.2			
Selenium - 7740	nd	5.0			
Silver - 7761	nd	0.5			
Zinc - 7950	nd	20.0			

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

Reviewed By [signature] Date 02/18/99 Data File 990072

IA-12 - GW	2-7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-11 S1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	87
Preparation Date	01-24-99
Analysis Date, Start	01-26-99
Analysis Date, End	02-12-99
Control Number	990072-04

TOTAL METALS	**ug/kg**	**TMDL**
Arsenic - 7060	7,200	100
Barium, 7081	40,000	1,000
Cadmium - 7131	110	50
Chromium (total) - 7191	10,000	2,500
Copper - 7211	34,000	1,000
Lead - 7421	450,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	60,000	1,000

Sample Identification	IA-11 S1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	01/18/99
Received Date	01/19/99
Report Date	02/18/99
Percent Solids, %w/w	87
Extraction Date	01-25-99
Analysis Date, Total	01-29-99
Analysis Date, Amenable	02-03-99
Control Number	990072-04

INORGANICS	**ug/kg**	**TMDL**
Cyanide, Total - 9011/9010	690	200
Cyanide, Amenable - 9011/ 9010	nd	500

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By [signature] Date 02/18/99 Data File 990072
IA-11 - S1 0"-6"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-11 S2	Sample Identification	IA-11 S2
Sample Depth, ft (in=")	3-4	Sample Depth, ft (in=")	3-4
Sample Type	soil	Sample Type	soil
Sample Date	01/18/99	Sample Date	01/18/99
Received Date	01/19/99	Received Date	01/19/99
Report Date	02/18/99	Report Date	02/18/99
Percent Solids, %w/w	88	Percent Solids, %w/w	88
Preparation Date	01-24-99	Extraction Date	01-25-99
Analysis Date, Start	01-26-99	Analysis Date, Total	01-29-99
Analysis Date, End	02-12-99	Analysis Date, Amenable	-
Control Number	990072-05	Control Number	990072-05

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	4,100	100
Barium, 7081	36,000	1,000
Cadmium - 7131	120	50
Chromium (total) - 7191	8,900	2,500
Copper - 7211	89,000	1,000
Lead - 7421	21,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	33,000	1,000

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	320	200
Cyanide, Amenable - 9011/ 9010	-	500

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By [illegible] Date 021899 Data File 990072

IA-11 - S2	3-4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP · SME# KE 31823 · Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-11 GW		Sample Identification	IA-11 GW	
Sample Depth, ft (in=")	6-8		Sample Depth, ft (in=")	6-8	
Sample Type	water		Sample Type	water	
Sample Date	01/18/99		Sample Date	01/18/99	
Received Date	01/19/99		Received Date	01/19/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
Preparation Date	-		Extraction Date	-	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	-	
Control Number	990072-06		Control Number	990072-06	
DISSOLVED METALS	**ug/L**	**TMDL**	**INORGANICS**	**ug/L**	**TMDL**
Arsenic - 7060	nd	5.0	Cyanide, Total - 9010	nd	5
Barium, 7081	300	200.0	Cyanide, Amenable - 9010	-	20
Cadmium - 7131	nd	0.5			
Chromium (total) - 7191	nd	50.0			
Copper - 7211	nd	25.0			
Lead - 7421	nd	3.0			
Mercury - 7470	nd	0.2			
Selenium - 7740	nd	5.0			
Silver - 7761	nd	0.5			
Zinc - 7950	nd	20.0			

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

Reviewed By Flude Date 02/25/99 Data File 990072
IA-11 - GW 6-8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-10 S1		Sample Identification	IA-10 S1	
Sample Depth, ft (in=")	0"-6"		Sample Depth, ft (in=")	0"-6"	
Sample Type	soil		Sample Type	soil	
Sample Date	01/18/99		Sample Date	01/18/99	
Received Date	01/19/99		Received Date	01/19/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	88		Percent Solids, %w/w	88	
Preparation Date	01-24-99		Extraction Date	01-25-99	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	-	
Control Number	990072-07		Control Number	990072-07	
TOTAL METALS	**ug/kg**	**TMDL**	**INORGANICS**	**ug/kg**	**TMDL**
Arsenic - 7060	5,200	100	Cyanide, Total - 9011/9010	300	200
Barium, 7081	48,000	1,000	Cyanide, Amenable - 9011/ 9010	-	500
Cadmium - 7131	240	50			
Chromium (total) - 7191	11,000	2,500			
Copper - 7211	15,000	1,000			
Lead - 7421	110,000	1,000			
Mercury - 7470	270	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	58,000	1,000			

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By *Allow* Date *02/FEB* Data File 990072

IA-10 - S1	0"-6"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-10 S2		**Sample Identification**	IA-10 S2	
Sample Depth, ft (in=")	6-7		Sample Depth, ft (in=")	6-7	
Sample Type	soil		Sample Type	soil	
Sample Date	01/18/99		Sample Date	01/18/99	
Received Date	01/19/99		Received Date	01/19/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	88		Percent Solids, %w/w	88	
Preparation Date	01-24-99		Extraction Date	01-25-99	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	-	
Control Number	990072-08		Control Number	990072-08	
TOTAL METALS	**ug/kg**	**TMDL**	**INORGANICS**	**ug/kg**	**TMDL**
Arsenic - 7060	2,600	100	Cyanide, Total - 9011/9010	370	200
Barium, 7081	33,000	1,000	Cyanide, Amenable - 9011/ 9010	-	500
Cadmium - 7131	nd	50			
Chromium (total) - 7191	6,500	2,500			
Copper - 7211	2,900	1,000			
Lead - 7421	4,300	1,000			
Mercury - 7470	nd	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	20,000	1,000			

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By Kew Date 02/18/99 Data File 990072
IA-10 - S2 6-7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-10 GW		**Sample Identification**	IA-10 GW	
Sample Depth, ft (in=")	10-12		Sample Depth, ft (in=")	10-12	
Sample Type	water		Sample Type	water	
Sample Date	01/18/99		Sample Date	01/18/99	
Received Date	01/19/99		Received Date	01/19/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
Preparation Date	-		Extraction Date	-	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	02-03-99	
Control Number	990072-09		Control Number	990072-09	
DISSOLVED METALS	**ug/L**	**TMDL**	**INORGANICS**	**ug/L**	**TMDL**
Arsenic - 7060	nd	5.0	Cyanide, Total - 9010	29	5
Barium, 7081	nd	200.0	Cyanide, Amenable - 9010	nd	20
Cadmium - 7131	nd	0.5			
Chromium (total) - 7191	nd	50.0			
Copper - 7211	nd	25.0			
Lead - 7421	nd	3.0			
Mercury - 7470	nd	0.2			
Selenium - 7740	nd	5.0			
Silver - 7761	nd	0.5			
Zinc - 7950	nd	20.0			

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

Reviewed By Kewd Date 02/18/99 Data File 990072
IA-10 - GW 10-12

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-9 S1		**Sample Identification**	IA-9 S1	
Sample Depth, ft (in=")	0"-6"		Sample Depth, ft (in=")	0"-6"	
Sample Type	soil		Sample Type	soil	
Sample Date	01/18/99		Sample Date	01/18/99	
Received Date	01/19/99		Received Date	01/19/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	80		Percent Solids, %w/w	80	
Preparation Date	01-24-99		Extraction Date	01-25-99	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	-	
Control Number	990072-10		Control Number	990072-10	
TOTAL METALS	**ug/kg**	**TMDL**	**INORGANICS**	**ug/kg**	**TMDL**
Arsenic - 7060	3,600	100	Cyanide, Total - 9011/9010	340	200
Barium, 7081	130,000	1,000	Cyanide, Amenable - 9011/ 9010	-	500
Cadmium - 7131	180	50			
Chromium (total) - 7191	11,000	2,500			
Copper - 7211	11,000	1,000			
Lead - 7421	9,000	1,000			
Mercury - 7470	nd	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	45,000	1,000			

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By Alewd Date 02/FEB Data File 990072
IA-9 - S1 | 0"-6"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-9 S2		**Sample Identification**	IA-9 S2	
Sample Depth, ft (in=")	3-4		Sample Depth, ft (in=")	3-4	
Sample Type	soil		Sample Type	soil	
Sample Date	01/18/99		Sample Date	01/18/99	
Received Date	01/19/99		Received Date	01/19/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	87		Percent Solids, %w/w	87	
Preparation Date	01-24-99		Extraction Date	01-25-99	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	-	
Control Number	990072-11		Control Number	990072-11	
TOTAL METALS	**ug/kg**	**TMDL**	**INORGANICS**	**ug/kg**	**TMDL**
Arsenic - 7060	7,500	100	Cyanide, Total - 9011/9010	420	200
Barium, 7081	69,000	1,000	Cyanide, Amenable - 9011/ 9010	-	500
Cadmium - 7131	120	50			
Chromium (total) - 7191	13,000	2,500			
Copper - 7211	18,000	1,000			
Lead - 7421	80,000	1,000			
Mercury - 7470	260	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	47,000	1,000			

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By MW Date 6 21 ES Data File 990072

IA-9 - S2	3-4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-9 S3		Sample Identification	IA-9 S3	
Sample Depth, ft (in=")	6.5-7.5		Sample Depth, ft (in=")	6.5-7.5	
Sample Type	soil		Sample Type	soil	
Sample Date	01/18/99		Sample Date	01/18/99	
Received Date	01/19/99		Received Date	01/19/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	79		Percent Solids, %w/w	79	
Preparation Date	01-24-99		Extraction Date	01-25-99	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	-	
Control Number	990072-12		Control Number	990072-12	
TOTAL METALS	**ug/kg**	**TMDL**	**INORGANICS**	**ug/kg**	**TMDL**
Arsenic - 7060	35,000	100	Cyanide, Total - 9011/9010	nd	200
Barium, 7081	10,000	1,000	Cyanide, Amenable - 9011/ 9010	-	500
Cadmium - 7131	51	50			
Chromium (total) - 7191	12,000	2,500			
Copper - 7211	120,000	1,000			
Lead - 7421	12,000	1,000			
Mercury - 7470	nd	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	4,500	1,000			

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By _____ Date 02/FEB Data File 990072
IA-9 - S3 | 6.5-7.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 18, 1999	Project Number CHEM-99-0072

Sample Identification	IA-9 GW		Sample Identification	IA-9 GW	
Sample Depth, ft (in=")	5-10		Sample Depth, ft (in=")	5-10	
Sample Type	water		Sample Type	water	
Sample Date	01/18/99		Sample Date	01/18/99	
Received Date	01/19/99		Received Date	01/19/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
Preparation Date	-		Extraction Date	-	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	-	
Control Number	990072-13		Control Number	990072-13	
DISSOLVED METALS	**ug/L**	**TMDL**	**INORGANICS**	**ug/L**	**TMDL**
Arsenic - 7060	nd	5.0	Cyanide, Total - 9010	nd	5
Barium, 7081	nd	200.0	Cyanide, Amenable - 9010	-	20
Cadmium - 7131	nd	0.5			
Chromium (total) - 7191	nd	50.0			
Copper - 7211	nd	25.0			
Lead - 7421	nd	3.0			
Mercury - 7470	nd	0.2			
Selenium - 7740	nd	5.0			
Silver - 7761	nd	0.5			
Zinc - 7950	nd	20.0			

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

Reviewed By MWJ Date 6/18/99 Data File 990072
IA-9 - GW 5-10

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CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N Lazarel

DATE SHIPPED: 1/19/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 2

SEND REPORT TO: Pat Barrasso, SMG – Plymouth, PHONE: 734-454-5560

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 Met Metals	Cyanide	Cl Tox	Amenable	REMARKS
99-0072-1	1/18/99	1015	S	JA-12 S1	0"-6"	2	X	X	X	X			
-2		1020	S	JA-12 S2	3'-4'	2	X	X	X	X			
-3		unknown	W	JA-12 GW	1'-7'	5	X	X	X	X			
-4		1055	S	JA-11 S1	0"-6"	2	X	X	X	X			
-5		1100	S	JA-11 S2	3'-4'	2	X	X	X	X			
-6		1125	W	JA-11 GW	6'-8'	5	X	X	X	X			
-7		1240	S	JA-10 S1	0"-6"	2	X	X	X	X			
-8		1250	S	JA-10 S2	6'-7'	2	X	X	X	X			
-9		1325	W	JA-10 GW	10'-12'	5	X	X	X	X			
-10		1415	S	JA-9 S1	0"-6"	2	X	X	X	X			
-11		1420	S	JA-9 S2	3'-4'	2	X	X	X	X			
-12		1425	S	JA-9 S3	6.5-7.5'	2	X	X	X	X			

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	1/18/99 1800	SMG Sample Room NC
SMG Sample Room NC	1/19/99 9:30	[signature]

COMMENTS
- MDEQ MRLs & methods
- Contact Pat Barrasso for Add. information Regarding Project
- Emailed and Faxed within 48hrs of collection

ORIGINAL TO LAB COPY TO CUSTOMER

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CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE 8023

SAMPLING TEAM: N. LARABEL

DATE SHIPPED: 1/19/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 2

SEND REPORT TO: [illegible]

PHONE: 734-654-5360

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNA	10 MS metals	Cyanide	CTAM 1	Ammonia		REMARKS
99-0072-13	1/18/99	1445	W	JA-9 GW	5'-10'	5	X	X	X	X				

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RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	1/18/99 1800	CMS Sample Rec
CMS Sample Rec	1/19/99 9:30	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS: * See Page 1 *

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-4 S1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	90
Methanol Preservation Date	01-20-99
Analysis Date	01-25-99
Control Number	990080-01

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	IA-4 S1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	90
Extraction Date	01-21-99
Analysis Date	02-05-99
Control Number	990080-01

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphtalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	82	23-120
2-Fluorobiphenyl	95	30-115
p-Terphenyl-d14	98	18-137

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NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By MWJ Date 021899 Data File 990080
IA-4 - S1 0"-6"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-4 S3
Sample Depth, ft (in=")	9-10
Sample Type	soil
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	91
Methanol Preservation Date	01-20-99
Analysis Date	01-25-99
Control Number	990080-03

BTEX - Method 8021	**ug/kg**	**TMDL**
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	IA-4 S3
Sample Depth, ft (in=")	9-10
Sample Type	soil
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	91
Extraction Date	01-21-99
Analysis Date	02-05-99
Control Number	990080-03

PAHs - Method 8270	**ug/kg**	**TMDL**
Naphthalene	nd	330
2-Methylnaphtalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	83	23-120
2-Fluorobiphenyl	96	30-115
p-Terphenyl-d14	95	18-137

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HGW Date 02/18/99 Data File 990080
IA-4 - S3 9-10

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-4 GW
Sample Depth, ft (in=")	12-14
Sample Type	water
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	-
HCL Preservation Date	at collection
Analysis Date	01-24-99
Control Number	990080-04

BTEX - Method 8021	ug/L	TMDL
Benzene	2	1
Toluene	1	1
Ethylbenzene	nd	1
m/p-Xylene	1	1
o-Xylene	nd	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	101	80-120

Sample Identification	IA-4 GW
Sample Depth, ft (in=")	12-14
Sample Type	water
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	-
Extraction Date	01-21-99
Analysis Date	02-06-99
Control Number	990080-04

PAHs - Method 8270	ug/L	TMDL
Naphthalene	12	5
2-Methylnaphtalene	5	5
Acenaphthylene	nd	5
Acenaphthene	5	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	96	35-114
2-Fluorobiphenyl	100	43-116
p-Terphenyl-d14	103	33-141

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

Reviewed By [illegible] Date 02/18/99 Data File 990080
IA-4 - GW 12-14

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-6 S1	Sample Identification	IA-6 S1
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	01/19/99	Sample Date	01/19/99
Received Date	01/20/99	Received Date	01/20/99
Report Date	02/18/99	Report Date	02/18/99
Percent Solids, %w/w	94	Percent Solids, %w/w	94
Methanol Preservation Date	01-20-99	Extraction Date	01-21-99
Analysis Date	01-25-99	Analysis Date	02-05-99
Control Number	990080-05	Control Number	990080-05

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	73	50
Ethylbenzene	88	50
m/p-Xylene	110	100
o-Xylene	120	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	95	80-120

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphtalene	nd	330
Acenaphthylene	330	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	350	330
Anthracene	nd	330
Fluoranthene	480	330
Pyrene	510	330
Benzo(a)anthracene	340	330
Chrysene	nd	330
Benzo(b)fluoranthene	530	330
Benzo(k)fluoranthene	460	330
Benzo(a)pyrene	410	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	340	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	83	23-120
2-Fluorobiphenyl	90	30-115
p-Terphenyl-d14	96	18-137

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By WWJ Date 02/6/99 Data File 990080
IA-6 - S1 0"-6"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-6 S2
Sample Depth, ft (in=")	3"-4"
Sample Type	soil
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	95
Methanol Preservation Date	01-20-99
Analysis Date	01-25-99
Control Number	990080-06

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	97	80-120

Sample Identification	IA-6 S2
Sample Depth, ft (in=")	3"-4"
Sample Type	soil
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	95
Extraction Date	01-21-99
Analysis Date	02-05-99
Control Number	990080-06

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphtalene	nd	330
Acenaphthylene	810	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	510	330
Anthracene	370	330
Fluoranthene	340	330
Pyrene	360	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	440	330
Benzo(k)fluoranthene	390	330
Benzo(a)pyrene	490	330
Indeno(1,2,3-cd)pyrene	570	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	800	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	86	23-120
2-Fluorobiphenyl	94	30-115
p-Terphenyl-d14	97	18-137

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By [illegible] Date 02/8/99 Data File 990080

IA-6 - S2	3"-4"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-6 GW
Sample Depth, ft (in=")	3-8
Sample Type	water
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	-
HCL Preservation Date	at collection
Analysis Date	01-24-99
Control Number	990080-07

BTEX - Method 8021	ug/L	TMDL
Benzene	3,200	1
Toluene	40	1
Ethylbenzene	190	1
m/p-Xylene	120	1
o-Xylene	130	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	93	80-120

Sample Identification	IA-6 GW
Sample Depth, ft (in=")	3-8
Sample Type	water
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	-
Extraction Date	01-21-99
Analysis Date	02-06-99
Control Number	990080-07

PAHs - Method 8270	ug/L	TMDL
Naphthalene	1,900	5
2-Methylnaphtalene	590	5
Acenaphthylene	nd	5
Acenaphthene	340	5
Fluorene	120	5
Phenanthrene	160	5
Anthracene	23	5
Fluoranthene	14	5
Pyrene	29	5
Benzo(a)anthracene	5	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	76	35-114
2-Fluorobiphenyl	81	43-116
p-Terphenyl-d14	84	33-141

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

Reviewed By [illegible] Date 02/18/99 Data File 990080
IA-6 - GW 3-8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-7 S1	Sample Identification	IA-7 S1
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	01/19/99	Sample Date	01/19/99
Received Date	01/20/99	Received Date	01/20/99
Report Date	02/18/99	Report Date	02/18/99
Percent Solids, %w/w	93	Percent Solids, %w/w	93
Methanol Preservation Date	01-20-99	Extraction Date	01-21-99
Analysis Date	01-25-99	Analysis Date	02-05-99
Control Number	990080-08	Control Number	990080-08

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	94	80-120

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	2,500	330
2-Methylnaphtalene	760	330
Acenaphthylene	950	330
Acenaphthene	410	330
Fluorene	350	330
Phenanthrene	1,500	330
Anthracene	580	330
Fluoranthene	3,900	330
Pyrene	2,600	330
Benzo(a)anthracene	2,300	330
Chrysene	1,800	330
Benzo(b)fluoranthene	2,000	330
Benzo(k)fluoranthene	1,600	330
Benzo(a)pyrene	2,200	330
Indeno(1,2,3-cd)pyrene	1,100	330
Dibenzo(a,h)anthracene	360	330
Benzo(g,h,i)perylene	1,000	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	83	23-120
2-Fluorobiphenyl	87	30-115
p-Terphenyl-d14	93	18-137

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By _____ Date 02/8/99 Data File 990080
IA-7 - S1 | 0"-6"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-7 S2
Sample Depth, ft (in=")	11-12
Sample Type	soil
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	77
Methanol Preservation Date	01-20-99
Analysis Date	02-03-99
Control Number	990080-09

BTEX - Method 8021	ug/kg	TMDL
Benzene	2,800	50
Toluene	2,900	50
Ethylbenzene	870	50
m/p-Xylene	2,500	100
o-Xylene	1,300	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	maskedout	80-120

Sample Identification	IA-7 S2
Sample Depth, ft (in=")	11-12
Sample Type	soil
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	77
Extraction Date	01-21-99
Analysis Date	02-05-99
Control Number	990080-09

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	570,000	330
2-Methylnaphtalene	120,000	330
Acenaphthylene	200,000	330
Acenaphthene	72,000	330
Fluorene	230,000	330
Phenanthrene	1,100,000	330
Anthracene	1,000,000	330
Fluoranthene	840,000	330
Pyrene	350,000	330
Benzo(a)anthracene	220,000	330
Chrysene	170,000	330
Benzo(b)fluoranthene	170,000	330
Benzo(k)fluoranthene	140,000	330
Benzo(a)pyrene	170,000	330
Indeno(1,2,3-cd)pyrene	54,000	330
Dibenzo(a,h)anthracene	9,000	330
Benzo(g,h,i)perylene	48,000	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	dilutedout	23-120
2-Fluorobiphenyl	dilutedout	30-115
p-Terphenyl-d14	dilutedout	18-137

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By [illegible] Date 021899 Data File 990080

IA-7 - S2	11-12

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-7 GW
Sample Depth, ft (in=")	7-12
Sample Type	water
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	-
HCL Preservation Date	at collection
Analysis Date	01-24-99
Control Number	990080-10

BTEX - Method 8021	ug/L	TMDL
Benzene	4,900	1
Toluene	1,400	1
Ethylbenzene	39	1
m/p-Xylene	390	1
o-Xylene	150	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	90	80-120

Sample Identification	IA-7 GW
Sample Depth, ft (in=")	7-12
Sample Type	water
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	-
Extraction Date	01-21-99
Analysis Date	02-06-99
Control Number	990080-10

PAHs - Method 8270	ug/L	TMDL
Naphthalene	5,100	5
2-Methylnaphtalene	2,100	5
Acenaphthylene	160	5
Acenaphthene	81	5
Fluorene	99	5
Phenanthrene	140	5
Anthracene	37	5
Fluoranthene	19	5
Pyrene	15	5
Benzo(a)anthracene	5	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd*	7
Benzo(k)fluoranthene	nd*	7
Benzo(a)pyrene	nd*	7
Indeno(1,2,3-cd)pyrene	nd*	10
Dibenzo(a,h)anthracene	nd*	10
Benzo(g,h,i)perylene	nd*	10
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	dilutedout	35-114
2-Fluorobiphenyl	dilutedout	43-116
p-Terphenyl-d14	dilutedout	33-141

* = elevated MDL

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

Reviewed By [illegible] Date 02/[illegible] Data File 990080
IA-7 - GW 7-12

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-2 S1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	97
Methanol Preservation Date	01-20-99
Analysis Date	01-25-99
Control Number	990080-11

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	**% Recovery**	**Criteria**
4-Bromofluorobenzene	97	80-120

Sample Identification	IA-2 S1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	97
Extraction Date	01-21-99
Analysis Date	02-05-99
Control Number	990080-11

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	1,700	330
2-Methylnaphtalene	510	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	**% Recovery**	**Criteria**
Nitrobenzene-d5	81	23-120
2-Fluorobiphenyl	86	30-115
p-Terphenyl-d14	91	18-137

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

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IA-2 - S1 0"-6"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-2 S2
Sample Depth, ft (in=")	10-12
Sample Type	soil
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	94
Methanol Preservation Date	01-20-99
Analysis Date	01-25-99
Control Number	990080-12

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	95	80-120

Sample Identification	IA-2 S2
Sample Depth, ft (in=")	10-12
Sample Type	soil
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	94
Extraction Date	01-21-99
Analysis Date	02-05-99
Control Number	990080-12

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphtalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	84	23-120
2-Fluorobiphenyl	90	30-115
p-Terphenyl-d14	98	18-137

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HWJ Date 02/18/99 Data File 990080
IA-2 - S2 10-12

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-2 GW
Sample Depth, ft (in=")	13-15
Sample Type	water
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	-
HCL Preservation Date	at collection
Analysis Date	01-24-99
Control Number	990080-13

BTEX - Method 8021	ug/L	TMDL
Benzene	12	1
Toluene	3	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	99	80-120

Sample Identification	IA-2 GW
Sample Depth, ft (in=")	13-15
Sample Type	water
Sample Date	01/19/99
Received Date	01/20/99
Report Date	02/18/99
Percent Solids, %w/w	-
Extraction Date	01-21-99
Analysis Date	02-06-99
Control Number	990080-13

PAHs - Method 8270	ug/L	TMDL
Naphthalene	15	5
2-Methylnaphtalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	100	33-141

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

Reviewed By [illegible] Date 02/18/99 Data File 990080
IA-2 - GW 13-15

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-3 S1	Sample Identification	IA-3 S1
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	01/19/99	Sample Date	01/19/99
Received Date	01/20/99	Received Date	01/20/99
Report Date	02/18/99	Report Date	02/18/99
Percent Solids, %w/w	95	Percent Solids, %w/w	95
Methanol Preservation Date	01-20-99	Extraction Date	01-21-99
Analysis Date	01-26-99	Analysis Date	02-05-99
Control Number	990080-14	Control Number	990080-14

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	95	80-120

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	580	330
2-Methylnaphtalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	87	23-120
2-Fluorobiphenyl	93	30-115
p-Terphenyl-d14	95	18-137

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HCW Date 02/08/99 Data File 990080

IA-3 - S1	0"-6"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-3 S2		Sample Identification	IA-3 S2	
Sample Depth, ft (in=")	10-12		Sample Depth, ft (in=")	10-12	
Sample Type	soil		Sample Type	soil	
Sample Date	01/19/99		Sample Date	01/19/99	
Received Date	01/20/99		Received Date	01/20/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	92		Percent Solids, %w/w	92	
Methanol Preservation Date	01-20-99		Extraction Date	01-21-99	
Analysis Date	01-26-99		Analysis Date	02-05-99	
Control Number	990080-15		Control Number	990080-15	

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	97	80-120

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphtalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	86	23-120
2-Fluorobiphenyl	91	30-115
p-Terphenyl-d14	93	18-137

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HWJ Date 021895 Data File 990080
IA-3 - S2 10-12

ORG

00185710

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-4 S1		Sample Identification	IA-4 S1	
Sample Depth, ft (in=")	0"-6"		Sample Depth, ft (in=")	0"-6"	
Sample Type	soil		Sample Type	soil	
Sample Date	01/19/99		Sample Date	01/19/99	
Received Date	01/20/99		Received Date	01/20/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	90		Percent Solids, %w/w	90	
Preparation Date	01-25-99		Extraction Date	01-26-99	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	-	
Control Number	990080-01		Control Number	990080-01	
TOTAL METALS	**ug/kg**	**TMDL**	**INORGANICS**	**ug/kg**	**TMDL**
Arsenic - 7060	3,600	100	Cyanide, Total - 9011/9010	nd	200
Barium, 7081	75,000	1,000	Cyanide, Amenable - 9011/ 9010	-	500
Cadmium - 7131	120	50			
Chromium (total) - 7191	9,100	2,500			
Copper - 7211	5,800	1,000			
Lead - 7421	9,200	1,000			
Mercury - 7470	nd	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	36,000	1,000			

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HWJ Date 02/8/98 Data File 990080
IA-4 - S1 0"-6"

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-4 S3		Sample Identification	IA-4 S3	
Sample Depth, ft (in=")	9-10		Sample Depth, ft (in=")	9-10	
Sample Type	soil		Sample Type	soil	
Sample Date	01/19/99		Sample Date	01/19/99	
Received Date	01/20/99		Received Date	01/20/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	91		Percent Solids, %w/w	91	
Preparation Date	01-25-99		Extraction Date	01-26-99	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	-	
Control Number	990080-03		Control Number	990080-03	
TOTAL METALS	**ug/kg**	**TMDL**	**INORGANICS**	**ug/kg**	**TMDL**
Arsenic - 7060	6,600	100	Cyanide, Total - 9011/9010	nd	200
Barium, 7081	35,000	1,000	Cyanide, Amenable - 9011/ 9010	-	500
Cadmium - 7131	nd	50			
Chromium (total) - 7191	9,000	2,500			
Copper - 7211	6,100	1,000			
Lead - 7421	5,100	1,000			
Mercury - 7470	nd	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	290,000	1,000			

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By [signature] Date 02/FEB Data File 990080

IA-4 - S3	9-10

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-4 GW	Sample Identification	IA-4 GW
Sample Depth, ft (in=")	12-14	Sample Depth, ft (in=")	12-14
Sample Type	water	Sample Type	water
Sample Date	01/19/99	Sample Date	01/19/99
Received Date	01/20/99	Received Date	01/20/99
Report Date	02/18/99	Report Date	02/18/99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	01-25-99	Extraction Date	-
Analysis Date, Start	01-26-99	Analysis Date, Total	01-29-99
Analysis Date, End	02-12-99	Analysis Date, Amenable	02-03-99
Control Number	990080-04	Control Number	990080-04

DISSOLVED METALS	ug/L	TMDL
Arsenic - 7060	6	5.0
Barium, 7081	nd	200.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	50.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TMDL
Cyanide, Total - 9010	61	5
Cyanide, Amenable - 9010	40	20

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

Reviewed By HWJ Date 02/18/99 Data File 990080
IA-4 - GW 12-14

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-6 S1	Sample Identification	IA-6 S1
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	01/19/99	Sample Date	01/19/99
Received Date	01/20/99	Received Date	01/20/99
Report Date	02/18/99	Report Date	02/18/99
Percent Solids, %w/w	94	Percent Solids, %w/w	94
Preparation Date	01-25-99	Extraction Date	01-26-99
Analysis Date, Start	01-26-99	Analysis Date, Total	01-29-99
Analysis Date, End	02-12-99	Analysis Date, Amenable	-
Control Number	990080-05	Control Number	990080-05

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	10,000	100
Barium, 7081	29,000	1,000
Cadmium - 7131	95	50
Chromium (total) - 7191	6,000	2,500
Copper - 7211	12,000	1,000
Lead - 7421	8,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	32,000	1,000

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	300	200
Cyanide, Amenable - 9011/ 9010	-	500

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By Allw Date 02/8/99 Data File 990080
IA-6 - S1 0"-6"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-6 S2		Sample Identification	IA-6 S2	
Sample Depth, ft (in=")	3"-4"		Sample Depth, ft (in=")	3"-4"	
Sample Type	soil		Sample Type	soil	
Sample Date	01/19/99		Sample Date	01/19/99	
Received Date	01/20/99		Received Date	01/20/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	95		Percent Solids, %w/w	95	
Preparation Date	01-25-99		Extraction Date	01-26-99	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	-	
Control Number	990080-06		Control Number	990080-06	
TOTAL METALS	**ug/kg**	**TMDL**	**INORGANICS**	**ug/kg**	**TMDL**
Arsenic - 7060	4,200	100	Cyanide, Total - 9011/9010	nd	200
Barium, 7081	25,000	1,000	Cyanide, Amenable - 9011/ 9010	-	500
Cadmium - 7131	60	50			
Chromium (total) - 7191	4,300	2,500			
Copper - 7211	3,700	1,000			
Lead - 7421	4,500	1,000			
Mercury - 7470	nd	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	22,000	1,000			

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HWJ Date 02/FEB Data File 990080
IA-6 - S2 3"-4"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-6 GW		Sample Identification	IA-6 GW	
Sample Depth, ft (in=")	3-8		Sample Depth, ft (in=")	3-8	
Sample Type	water		Sample Type	water	
Sample Date	01/19/99		Sample Date	01/19/99	
Received Date	01/20/99		Received Date	01/20/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
Preparation Date	01-25-99		Extraction Date	-	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	02-03-99	
Control Number	990080-07		Control Number	990080-07	
DISSOLVED METALS	**ug/L**	**TMDL**	**INORGANICS**	**ug/L**	**TMDL**
Arsenic - 7060	8	5.0	Cyanide, Total - 9010	140	5
Barium, 7081	nd	200.0	Cyanide, Amenable - 9010	80	20
Cadmium - 7131	nd	0.5			
Chromium (total) - 7191	nd	50.0			
Copper - 7211	nd	25.0			
Lead - 7421	nd	3.0			
Mercury - 7470	nd	0.2			
Selenium - 7740	nd	5.0			
Silver - 7761	nd	0.5			
Zinc - 7950	nd	20.0			

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

Reviewed By Hugo Date 02/8/99 Data File 990080

IA-6 - GW	3-8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-7 S1	Sample Identification	IA-7 S1
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	01/19/99	Sample Date	01/19/99
Received Date	01/20/99	Received Date	01/20/99
Report Date	02/18/99	Report Date	02/18/99
Percent Solids, %w/w	93	Percent Solids, %w/w	93
Preparation Date	01-25-99	Extraction Date	01-26-99
Analysis Date, Start	01-26-99	Analysis Date, Total	01-29-99
Analysis Date, End	02-12-99	Analysis Date, Amenable	-
Control Number	990080-08	Control Number	990080-08

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	4,700	100
Barium, 7081	19,000	1,000
Cadmium - 7131	52	50
Chromium (total) - 7191	4,500	2,500
Copper - 7211	4,200	1,000
Lead - 7421	6,200	1,000
Mercury - 7470	770	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	23,000	1,000

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	250	200
Cyanide, Amenable - 9011/ 9010	-	500

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By Allen Date 02/18/99 Data File 990080

IA-7 - S1	0"-6"

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-7 S2	**Sample Identification**	IA-7 S2
Sample Depth, ft (in=")	11-12	Sample Depth, ft (in=")	11-12
Sample Type	soil	Sample Type	soil
Sample Date	01/19/99	Sample Date	01/19/99
Received Date	01/20/99	Received Date	01/20/99
Report Date	02/18/99	Report Date	02/18/99
Percent Solids, %w/w	77	Percent Solids, %w/w	77
Preparation Date	01-25-99	Extraction Date	01-26-99
Analysis Date, Start	01-26-99	Analysis Date, Total	01-29-99
Analysis Date, End	02-12-99	Analysis Date, Amenable	02-03-99
Control Number	990080-09	Control Number	990080-09

TOTAL METALS	**ug/kg**	**TMDL**
Arsenic - 7060	10,000	100
Barium, 7081	72,000	1,000
Cadmium - 7131	85	50
Chromium (total) - 7191	6,800	2,500
Copper - 7211	6,200	1,000
Lead - 7421	52,000	1,000
Mercury - 7470	390	100
Selenium - 7740	1,400	500
Silver - 7761	nd	500
Zinc - 7950	25,000	1,000

INORGANICS	**ug/kg**	**TMDL**
Cyanide, Total - 9011/9010	130,000	200
Cyanide, Amenable - 9011/ 9010	*2,000	500

* = indeterminate value

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By _____ Date 02/18/99 Data File 990080
IA-7 - S2 11-12

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-7 GW		Sample Identification	IA-7 GW	
Sample Depth, ft (in=")	7-12		Sample Depth, ft (in=")	7-12	
Sample Type	water		Sample Type	water	
Sample Date	01/19/99		Sample Date	01/19/99	
Received Date	01/20/99		Received Date	01/20/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
Preparation Date	01-25-99		Extraction Date	-	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	02-03-99	
Control Number	990080-10		Control Number	990080-10	
DISSOLVED METALS	**ug/L**	**TMDL**	**INORGANICS**	**ug/L**	**TMDL**
Arsenic - 7060	9	5.0	Cyanide, Total - 9010	860	5
Barium, 7081	nd	200.0	Cyanide, Amenable - 9010	nd	20
Cadmium - 7131	nd	0.5			
Chromium (total) - 7191	nd	50.0			
Copper - 7211	nd	25.0			
Lead - 7421	nd	3.0			
Mercury - 7470	nd	0.2			
Selenium - 7740	nd	5.0			
Silver - 7761	nd	0.5			
Zinc - 7950	nd	20.0			

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

Reviewed By Klw Date 02 CF 98 Data File 990080
IA-7 - GW 7-12

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-2 S1	Sample Identification	IA-2 S1
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	01/19/99	Sample Date	01/19/99
Received Date	01/20/99	Received Date	01/20/99
Report Date	02/18/99	Report Date	02/18/99
Percent Solids, %w/w	97	Percent Solids, %w/w	97
Preparation Date	01-25-99	Extraction Date	01-26-99
Analysis Date, Start	01-26-99	Analysis Date, Total	01-29-99
Analysis Date, End	02-12-99	Analysis Date, Amenable	-
Control Number	990080-11	Control Number	990080-11

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	5,900	100
Barium, 7081	24,000	1,000
Cadmium - 7131	nd	50
Chromium (total) - 7191	6,800	2,500
Copper - 7211	5,800	1,000
Lead - 7421	16,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	24,000	1,000

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	380	200
Cyanide, Amenable - 9011/ 9010	-	500

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By Allen Date 02/F98 Data File 990080
IA-2 - S1 0"-6"

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-2 S2	Sample Identification	IA-2 S2
Sample Depth, ft (in=")	10-12	Sample Depth, ft (in=")	10-12
Sample Type	soil	Sample Type	soil
Sample Date	01/19/99	Sample Date	01/19/99
Received Date	01/20/99	Received Date	01/20/99
Report Date	02/18/99	Report Date	02/18/99
Percent Solids, %w/w	94	Percent Solids, %w/w	94
Preparation Date	01-25-99	Extraction Date	01-26-99
Analysis Date, Start	01-26-99	Analysis Date, Total	01-29-99
Analysis Date, End	02-12-99	Analysis Date, Amenable	-
Control Number	990080-12	Control Number	990080-12

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	3,900	100
Barium, 7081	19,000	1,000
Cadmium - 7131	62	50
Chromium (total) - 7191	5,200	2,500
Copper - 7211	5,000	1,000
Lead - 7421	3,200	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	20,000	1,000

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	nd	200
Cyanide, Amenable - 9011/ 9010	-	500

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By KWU Date 02/FE 5 Data File 990080
IA-2 - S2 10-12

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-2 GW		Sample Identification	IA-2 GW	
Sample Depth, ft (in=")	13-15		Sample Depth, ft (in=")	13-15	
Sample Type	water		Sample Type	water	
Sample Date	01/19/99		Sample Date	01/19/99	
Received Date	01/20/99		Received Date	01/20/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
Preparation Date	01-25-99		Extraction Date	-	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	02-03-99	
Control Number	990080-13		Control Number	990080-13	
DISSOLVED METALS	**ug/L**	**TMDL**	**INORGANICS**	**ug/L**	**TMDL**
Arsenic - 7060	nd	5.0	Cyanide, Total - 9010	160	5
Barium, 7081	nd	200.0	Cyanide, Amenable - 9010	nd	20
Cadmium - 7131	nd	0.5			
Chromium (total) - 7191	nd	50.0			
Copper - 7211	nd	25.0			
Lead - 7421	nd	3.0			
Mercury - 7470	nd	0.2			
Selenium - 7740	nd	5.0			
Silver - 7761	nd	0.5			
Zinc - 7950	nd	20.0			

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

Reviewed By KWD Date 02/FEB Data File 990080
IA-2 - GW 13-15

INORG

00185722

KR059B029698

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-3 S1	Sample Identification	IA-3 S1
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	01/19/99	Sample Date	01/19/99
Received Date	01/20/99	Received Date	01/20/99
Report Date	02/18/99	Report Date	02/18/99
Percent Solids, %w/w	95	Percent Solids, %w/w	95
Preparation Date	01-25-99	Extraction Date	01-26-99
Analysis Date, Start	01-26-99	Analysis Date, Total	01-29-99
Analysis Date, End	02-12-99	Analysis Date, Amenable	-
Control Number	990080-14	Control Number	990080-14

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	7,800	100
Barium, 7081	35,000	1,000
Cadmium - 7131	86	50
Chromium (total) - 7191	11,000	2,500
Copper - 7211	8,100	1,000
Lead - 7421	4,500	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	27,000	1,000

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	nd	200
Cyanide, Amenable - 9011/ 9010	-	500

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By MWC Date 02/FEB Data File 990080
IA-3 - S1 0"-6"

INORG

00185723

KR059B029699

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE 31823 - Sampling Date January 19, 1999	Project Number CHEM-99-0080

Sample Identification	IA-3 S2		Sample Identification	IA-3 S2	
Sample Depth, ft (in=")	10-12		Sample Depth, ft (in=")	10-12	
Sample Type	soil		Sample Type	soil	
Sample Date	01/19/99		Sample Date	01/19/99	
Received Date	01/20/99		Received Date	01/20/99	
Report Date	02/18/99		Report Date	02/18/99	
Percent Solids, %w/w	92		Percent Solids, %w/w	92	
Preparation Date	01-25-99		Extraction Date	01-26-99	
Analysis Date, Start	01-26-99		Analysis Date, Total	01-29-99	
Analysis Date, End	02-12-99		Analysis Date, Amenable	-	
Control Number	990080-15		Control Number	990080-15	
TOTAL METALS	**ug/kg**	**TMDL**	**INORGANICS**	**ug/kg**	**TMDL**
Arsenic - 7060	4,200	100	Cyanide, Total - 9011/9010	370	200
Barium, 7081	32,000	1,000	Cyanide, Amenable - 9011/ 9010	-	500
Cadmium - 7131	53	50			
Chromium (total) - 7191	10,000	2,500			
Copper - 7211	5,600	1,000			
Lead - 7421	2,600	1,000			
Mercury - 7470	nd	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	19,000	1,000			

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

Reviewed By HWJ Date 02/18/98 Data File 990080
IA-3 - S2 10-12

INORG

KR059B029700

00185724

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. Usagel

DATE SHIPPED: 1/20/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 2

SEND REPORT TO: Pat Bourque, Site - Plymouth

PHONE: 734-414-7350

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAHs	RCI no metals	CYANIDE	TEMP	Ammonia		REMARKS
99-0080-1	1/19/99	735	S	IA-4 S1	0"-6"	2	X	X	X	X				
-2		0800	S	IA-4 S2	3'-4'	2		HOLD						Contact Site Engineer
-3		0805	S	IA-4 S3	9'-10'	2	X	X	X	X				
-4		0830	W	IA-4 GW	12'-14'	5	X	X	X	X				SHOW
-5		0925	S	IA-6 S1	0"-6"	2	X	X	X	X				Depths
-6		0930	S	IA-6 S2	3"-4"	2	X	X	X	X				of
-7		0945	W	IA-6 GW	3'-8'	5	X	X	X	X				Samples
-8		1015	S	IA-7 S1	0"-6"	2	X	X	X	X				on
-9		1035	S	IA-7 S2	11'-12'	2	X	X	X	X				Reports for
-10		1050	W	IA-7 GW	7'-12'	5	X	X	X	X				all Samples
-11		1125	S	IA-2 S1	0"-6"	2	X	X	X	X				
-12		1210	S	IA-2 S2	10'-12'	2	X	X	X	X				

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	1/19/99 1600	Smg Sample Room
Smg Sample Room	1/20/99 0930	Jason R McCormick

COMMENTS
- MDEQ non-RCI method
- Contact Pat Bourque for data information regarding project
- Encores and Preservation method of collection

ORIGINAL TO LAB COPY TO CUSTOMER

KR059B029701

00185725

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. Larabel

DATE SHIPPED: 1/20/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 2

SEND REPORT TO: Pat Sandersen, GMG Plymouth, PHONE: 734-454-6600

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 RCRA metals	CYANIDE	TPH	Ammonia		REMARKS
99-0080-13	1/19/99	1300	W	JA-2 GW	13'-15'	5	X	X	X	X				Show Depths of Samples on Labels for all Samples collected 1/18 & 1/19
-14		1350	S	JA-3 S1	0"-6"	2	X	X	X	X				
-15		1415	S	JA-3 S2	10'-12'	2	X	X	X	X				

KR059B029702

00185726

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	1/15/99 1800	Sme Sample Rec
Sme Sample Rec	1/20/99 0930	[signature]

COMMENTS: See page #1

ORIGINAL TO LAB COPY TO CUSTOMER

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: HWVoigt, T-260

Date: March 03, 1999

Subject: KALAMAZOO, FORMER MGP
- SME Project # KE31823
- Sampling Date of February 01, 1999
  Date of February 03, 1999
  Date of February 08, 1999

File Index No.
519917-450-167
519917-450-194
519917-450-225

CC: GLKelterborn, T-258

CC: Pat Barrese
Soil & Materials Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

On February 09, 1999 the Chemistry Section (CHEM) of Laboratory Services received soil and groundwater samples collected at KALAMAZOO, FORMER MGP.

The samples were returned to CHEM for the determination of

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Michigan 10-Metals
Cyanide, Total and Amenable

Analytical results are attached for your review

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Commercial Services for analysis.

VOC Sample Collection - VOC samples were collected by DEQ-ORGLAB-11, Methanol Preservation Protocol (Method 5035).

Aromatic Volatile Organics (BTEX) - Method 8021, Halogenated And Aromatic Volatiles By Gas Chromatography Using Electrolytic Conductivity And Photoionization Detectors In Series: Capillary Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Total and Amenable - Method 9011, Cyanide Extraction Procedure For Solids and Oils, Method 9010, Total and Amenable Cyanide. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Total Metals Preparation - Soils - Method 7000, Microwave Assisted Digestion Of Sediments, Sludges, Soils and Oils. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	SW-846 Method
Arsenic	7060
Barium	7081
Cadmium	7131
Chromium	7191
Copper	7211
Lead	7421
Mercury	7470
Selenium	7740
Silver	7661
Zinc	7950

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 01, 1999	Project Number CHEM-99-0167

00185729

KR059B029705

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 01. 1999	Project Number CHEM-99-0167

Sample Identification	MW-4
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/01/99
Received Date	02/02/99
Report Date	03/03/99
Percent Solids, %w/w	91
Methanol Preservation Date	02-02-99
Analysis Date	02-12-99
Control Number	990167-01

BTEX - Method 8021	**ug/kg**	**TMDL**
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	102	80-120

Sample Identification	MW-4
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/01/99
Received Date	02/02/99
Report Date	03/03/99
Percent Solids, %w/w	91
Extraction Date	02-04-99
Analysis Date	02-07-99
Control Number	990167-01

PAHs - Method 8270	**ug/kg**	**TMDL**
Naphthalene	nd	330
2-Methylnaphtalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	620	330
Anthracene	nd	330
Fluoranthene	830	330
Pyrene	710	330
Benzo(a)anthracene	570	330
Chrysene	540	330
Benzo(b)fluoranthene	600	330
Benzo(k)fluoranthene	500	330
Benzo(a)pyrene	710	330
Indeno(1,2,3-cd)pyrene	560	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	540	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	85	23-120
2-Fluorobiphenyl	93	30-115
p-Terphenyl-d14	97	18-137

KR059B029706

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185730

Reviewed By HWJ Date 030499 Data File 990167
MW-4 - 0"-6"

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 01, 1999	Project Number CHEM-99-0167

Sample Identification	P-4
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/01/99
Received Date	02/02/99
Report Date	03/03/99
Percent Solids, %w/w	89
Methanol Preservation Date	02-02-99
Analysis Date	02-12-99
Control Number	990167-02

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	100	80-120

Sample Identification	P-4
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/01/99
Received Date	02/02/99
Report Date	03/03/99
Percent Solids, %w/w	89
Extraction Date	02-04-99
Analysis Date	02-07-99
Control Number	990167-02

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	6,500	330
2-Methylnaphtalene	2,100	330
Acenaphthylene	790	330
Acenaphthene	5,400	330
Fluorene	5,200	330
Phenanthrene	29,000	330
Anthracene	9,000	330
Fluoranthene	18,000	330
Pyrene	13,000	330
Benzo(a)anthracene	21,000	330
Chrysene	20,000	330
Benzo(b)fluoranthene	14,000	330
Benzo(k)fluoranthene	12,000	330
Benzo(a)pyrene	9,000	330
Indeno(1,2,3-cd)pyrene	6,100	330
Dibenzo(a,h)anthracene	450	330
Benzo(g,h,i)perylene	7,700	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	73	23-120
2-Fluorobiphenyl	80	30-115
p-Terphenyl-d14	89	18-137

KR059B029707

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185731

Reviewed By HWU Date 030999 Data File 990167
P-4 - 0"-6"

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 01, 1999	Project Number CHEM-99-0167

Sample Identification	MW-3
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/01/99
Received Date	02/02/99
Report Date	03/03/99
Percent Solids, %w/w	94
Methanol Preservation Date	02-02-99
Analysis Date	02-12-99
Control Number	990167-03

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	103	80-120

Sample Identification	MW-3
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/01/99
Received Date	02/02/99
Report Date	03/03/99
Percent Solids, %w/w	94
Extraction Date	02-04-99
Analysis Date	02-07-99
Control Number	990167-03

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphtalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	650	330
Anthracene	nd	330
Fluoranthene	1,100	330
Pyrene	8,200	330
Benzo(a)anthracene	620	330
Chrysene	650	330
Benzo(b)fluoranthene	550	330
Benzo(k)fluoranthene	490	330
Benzo(a)pyrene	380	330
Indeno(1,2,3-cd)pyrene	500	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	410	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	87	23-120
2-Fluorobiphenyl	91	30-115
p-Terphenyl-d14	97	18-137

KR059B029708

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185732

Reviewed By HWJ Date 030499 Data File 990167
MW-3 - 0"-6"

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 01, 1999	Project Number CHEM-99-0167

Sample Identification	P-2
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/01/99
Received Date	02/02/99
Report Date	03/03/99
Percent Solids, %w/w	95
Methanol Preservation Date	02-02-99
Analysis Date	02-12-99
Control Number	990167-04

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	73	50
Ethylbenzene	nd	50
m/p-Xylene	150	100
o-Xylene	78	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	99	80-120

Sample Identification	P-2
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/01/99
Received Date	02/02/99
Report Date	03/03/99
Percent Solids, %w/w	95
Extraction Date	02-04-99
Analysis Date	02-07-99
Control Number	990167-04

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphtalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	390	330
Anthracene	nd	330
Fluoranthene	1,000	330
Pyrene	820	330
Benzo(a)anthracene	730	330
Chrysene	610	330
Benzo(b)fluoranthene	850	330
Benzo(k)fluoranthene	700	330
Benzo(a)pyrene	550	330
Indeno(1,2,3-cd)pyrene	600	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	590	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	86	23-120
2-Fluorobiphenyl	92	30-115
p-Terphenyl-d14	99	18-137

KR059B029709

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185733

Reviewed By PLW Date 030499 Data File 990167
P-2 - 0"-6"

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 01, 1999	Project Number CHEM-99-0167

Sample Identification	P-2
Sample Depth, ft (in=")	5-6
Sample Type	soil
Sample Date	02/01/99
Received Date	02/02/99
Report Date	03/03/99
Percent Solids, %w/w	95
Methanol Preservation Date	02-02-99
Analysis Date	02-12-99
Control Number	990167-05

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	100	80-120

Sample Identification	P-2
Sample Depth, ft (in=")	5-6
Sample Type	soil
Sample Date	02/01/99
Received Date	02/02/99
Report Date	03/03/99
Percent Solids, %w/w	95
Extraction Date	02-04-99
Analysis Date	02-07-99
Control Number	990167-05

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphtalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	93	23-120
2-Fluorobiphenyl	98	30-115
p-Terphenyl-d14	100	18-137

KR059B029710

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185734

Reviewed By HWJ Date 030499 Data File 990167
P-2 - 5-6

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 01, 1999	Project Number CHEM-99-0167

Sample Identification	MW-4
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/01/99
Received Date	02/02/99
Report Date	03/03/99
Percent Solids, %w/w	91
Preparation Date	02-04-99
Analysis Date, Start	02-05-99
Analysis Date, End	02-17-99
Control Number	990167-01

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	4,400	100
Barium, 7081	39,000	1,000
Cadmium - 7131	610	50
Chromium (total) - 7191	9,700	2,500
Copper - 7211	80,000	1,000
Lead - 7421	45,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	150,000	1,000

Sample Identification	MW-4
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/01/99
Received Date	02/02/99
Report Date	03/03/99
Percent Solids, %w/w	91
Extraction Date	02-08-99
Analysis Date, Total	02-10-99
Analysis Date, Amenable	02-11-99
Control Number	990167-01

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	320	200
Cyanide, Amenable - 9011/9010	nd	500

KR059B029711

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185735

Reviewed By HWJ Date 030455 Data File 990167
MW-4 - 0"-6"

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 01, 1999	Project Number CHEM-99-0167

Sample Identification	P-4	Sample Identification	P-4
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	02/01/99	Sample Date	02/01/99
Received Date	02/02/99	Received Date	02/02/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	89	Percent Solids, %w/w	89
Preparation Date	02-04-99	Extraction Date	02-08-99
Analysis Date, Start	02-05-99	Analysis Date, Total	02-10-99
Analysis Date, End	02-17-99	Analysis Date, Amenable	02-11-99
Control Number	990167-02	Control Number	990167-02

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	11,000	100
Barium, 7081	58,000	1,000
Cadmium - 7131	420	50
Chromium (total) - 7191	10,000	2,500
Copper - 7211	190,000	1,000
Lead - 7421	91,000	1,000
Mercury - 7470	150	100
Selenium - 7740	410	500
Silver - 7761	nd	500
Zinc - 7950	310,000	1,000

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	25,000	200
Cyanide, Amenable - 9011/9010	nd	500

KR059B029712

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185736

Reviewed By *[illegible]* Date *030499* Data File 990167
P-4 - 0"-6"

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 01, 1999	Project Number CHEM-99-0167

Sample Identification	MW-3		Sample Identification	MW-3	
Sample Depth, ft (in=")	0"-6"		Sample Depth, ft (in=")	0"-6"	
Sample Type	soil		Sample Type	soil	
Sample Date	02/01/99		Sample Date	02/01/99	
Received Date	02/02/99		Received Date	02/02/99	
Report Date	03/03/99		Report Date	03/03/99	
Percent Solids, %w/w	94		Percent Solids, %w/w	94	
Preparation Date	02-04-99		Extraction Date	02-08-99	
Analysis Date, Start	02-05-99		Analysis Date, Total	02-10-99	
Analysis Date, End	02-17-99		Analysis Date, Amenable	02-11-99	
Control Number	990167-03		Control Number	990167-03	
TOTAL METALS	**ug/kg**	**TMDL**	**INORGANICS**	**ug/kg**	**TMDL**
Arsenic - 7060	2,800	100	Cyanide, Total - 9011/9010	nd	200
Barium, 7081	23,000	1,000	Cyanide, Amenable - 9011/9010	nd	500
Cadmium - 7131	nd	50			
Chromium (total) - 7191	5,800	2,500			
Copper - 7211	4,400	1,000			
Lead - 7421	14,000	1,000			
Mercury - 7470	nd	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	18,000	1,000			

KR059B029713

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185737

Reviewed By HWU Date 030999 Data File 990167
MW-3 - 0"-6"

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 01, 1999	Project Number CHEM-99-0167

Sample Identification	P-2	Sample Identification	P-2
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	02/01/99	Sample Date	02/01/99
Received Date	02/02/99	Received Date	02/02/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	95	Percent Solids, %w/w	95
Preparation Date	02-04-99	Extraction Date	02-08-99
Analysis Date, Start	02-05-99	Analysis Date, Total	02-10-99
Analysis Date, End	02-17-99	Analysis Date, Amenable	02-11-99
Control Number	990167-04	Control Number	990167-04

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	8,400	100
Barium, 7081	31,000	1,000
Cadmium - 7131	98	50
Chromium (total) - 7191	8,700	2,500
Copper - 7211	6,600	1,000
Lead - 7421	12,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	40,000	1,000

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	nd	200
Cyanide, Amenable - 9011/9010	nd	500

KR059B029714

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185738

Reviewed By HWD Date 03 04 99 Data File 990167
P-2 - 0"-6"

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 01, 1999	Project Number CHEM-99-0167

Sample Identification	P-2		Sample Identification	P-2	
Sample Depth, ft (in=")	5-6		Sample Depth, ft (in=")	5-6	
Sample Type	soil		Sample Type	soil	
Sample Date	02/01/99		Sample Date	02/01/99	
Received Date	02/02/99		Received Date	02/02/99	
Report Date	03/03/99		Report Date	03/03/99	
Percent Solids, %w/w	95		Percent Solids, %w/w	95	
Preparation Date	02-04-99		Extraction Date	02-08-99	
Analysis Date, Start	02-05-99		Analysis Date, Total	02-10-99	
Analysis Date, End	02-17-99		Analysis Date, Amenable	02-11-99	
Control Number	990167-05		Control Number	990167-05	
TOTAL METALS	**ug/kg**	**TMDL**	**INORGANICS**	**ug/kg**	**TMDL**
Arsenic - 7060	2,200	100	Cyanide, Total - 9011/9010	nd	200
Barium, 7081	8,100	1,000	Cyanide, Amenable - 9011/9010	nd	500
Cadmium - 7131	nd	50			
Chromium (total) - 7191	3,600	2,500			
Copper - 7211	2,800	1,000			
Lead - 7421	2,400	1,000			
Mercury - 7470	nd	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	10,000	1,000			

KR059B029715

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185739

Reviewed By _____ Date 030499 Data File 990167
P-2 - 5-6

INORG

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: Nick LaBarge

DATE SHIPPED: 2/2/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Barrasso, SMG Plymouth

PHONE: 734-454-9500

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	Kmetals	Cyanide	CTOX	Amenable		REMARKS
0167-1	2/1/99	0822	Soil	MW 4 (0"-6")	0"-6"	2	X	X	X	X				
2		1037	Soil	P-4 (0"-6")	0"-6"	2	X	X	X	X				
3		1237	Soil	MW 3 (0"-6")	0"-6"	2	X	X	X	X				
4		1428	Soil	P-2 (0"-6")	0"-6"	2	X	X	X	X				
5		1432	Soil	P-2 (5'-6')	5'-6'	2	X	X	X	X				

00185740

KR059B029716

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	2/1/99 1805	SMG Sample Room
SMG Sample Room	2/2/99 1430	

COMMENTS
- MDEQ NELAC methods
- Encores needs 48 hr prescreening
contact Pat Barrasso for additional information

ORIGINAL TO LAB COPY TO CUSTOMER

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

00185741

KR059B029717

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	P-3	Sample Identification	P-3
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	02/03/99	Sample Date	02/03/99
Received Date	02/04/99	Received Date	02/04/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	89	Percent Solids, %w/w	89
Methanol Preservation Date	02-04-99	Extraction Date	02-08-99
Analysis Date	02-10-99	Analysis Date	02-17-99
Control Number	990194-01	Control Number	990194-01

BTEX - Method 8021	ug/kg	TMDL
Benzene	93	50
Toluene	690	50
Ethylbenzene	140	50
m/p-Xylene	760	100
o-Xylene	480	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	93	80-120

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	1,800	330
2-Methylnaphthalene	690	330
Acenaphthylene	1,800	330
Acenaphthene	nd	330
Fluorene	350	330
Phenanthrene	4,000	330
Anthracene	3,700	330
Fluoranthene	3,100	330
Pyrene	5,700	330
Benzo(a)anthracene	2,700	330
Chrysene	2,200	330
Benzo(b)fluoranthene	1,900	330
Benzo(k)fluoranthene	990	330
Benzo(a)pyrene	2,100	330
Indeno(1,2,3-cd)pyrene	1,700	330
Dibenzo(a,h)anthracene	550	330
Benzo(g,h,i)perylene	1,100	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	81	23-120
2-Fluorobiphenyl	90	30-115
p-Terphenyl-d14	96	18-137

KR059B029718

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185742

Reviewed By HW Date 03049 Data File 990194
P-3 - 0"-6"

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	MW-1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	94
Methanol Preservation Date	02-04-99
Analysis Date	02-10-99
Control Number	990194-02

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	99	80-120

Sample Identification	MW-1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	94
Extraction Date	02-08-99
Analysis Date	02-17-99
Control Number	990194-02

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	85	23-120
2-Fluorobiphenyl	96	30-115
p-Terphenyl-d14	100	18-137

KR059B029719

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185743

Reviewed By Hew Date 030499 Data File 990194
MW-1 - 0"-6"

ORG

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	MW-1
Sample Depth, ft (in=")	6-8
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	94
Methanol Preservation Date	02-04-99
Analysis Date	02-10-99
Control Number	990194-03

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	97	80-120

Sample Identification	MW-1
Sample Depth, ft (in=")	6-8
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	94
Extraction Date	02-08-99
Analysis Date	02-17-99
Control Number	990194-03

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	87	23-120
2-Fluorobiphenyl	91	30-115
p-Terphenyl-d14	96	18-137

KR059B029720

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185744

Reviewed By MWJ Date 030499 Data File 990194
MW-1 - 6-8

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	MW-2
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	91
Methanol Preservation Date	02-04-99
Analysis Date	02-10-99
Control Number	990194-04

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	110	50
Ethylbenzene	nd	50
m/p-Xylene	190	100
o-Xylene	120	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	93	80-120

Sample Identification	MW-2
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	91
Extraction Date	02-08-99
Analysis Date	02-17-99
Control Number	990194-04

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	410	330
2-Methylnaphthalene	nd	330
Acenaphthylene	860	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	1,600	330
Anthracene	920	330
Fluoranthene	3,600	330
Pyrene	3,700	330
Benzo(a)anthracene	2,900	330
Chrysene	2,900	330
Benzo(b)fluoranthene	2,500	330
Benzo(k)fluoranthene	2,200	330
Benzo(a)pyrene	2,800	330
Indeno(1,2,3-cd)pyrene	2,100	330
Dibenzo(a,h)anthracene	610	330
Benzo(g,h,i)perylene	1,900	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	87	23-120
2-Fluorobiphenyl	94	30-115
p-Terphenyl-d14	99	18-137

KR059B029721

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185745

Reviewed By _____ Date 03 04 99 Data File 990194
MW-2 - 0"-6"

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	MW-2
Sample Depth, ft (in=")	4-6
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	84
Methanol Preservation Date	02-04-99
Analysis Date	02-10-99
Control Number	990194-05

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	130	50
Ethylbenzene	61	50
m/p-Xylene	150	100
o-Xylene	110	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	95	80-120

Sample Identification	MW-2
Sample Depth, ft (in=")	4-6
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	84
Extraction Date	02-08-99
Analysis Date	02-17-99
Control Number	990194-05

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	1,100	330
2-Methylnaphthalene	610	330
Acenaphthylene	1,100	330
Acenaphthene	360	330
Fluorene	410	330
Phenanthrene	3,600	330
Anthracene	1,400	330
Fluoranthene	7,300	330
Pyrene	5,300	330
Benzo(a)anthracene	6,800	330
Chrysene	6,500	330
Benzo(b)fluoranthene	12,000	330
Benzo(k)fluoranthene	10,000	330
Benzo(a)pyrene	12,000	330
Indeno(1,2,3-cd)pyrene	6,100	330
Dibenzo(a,h)anthracene	2,700	330
Benzo(g,h,i)perylene	5,700	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	79	23-120
2-Fluorobiphenyl	83	30-115
p-Terphenyl-d14	92	18-137

KR059B029722

NOTES:
TMDL = Target Method Detection Limit ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185746

Reviewed By HWJ Date 02 24 99 Data File 990194
MW-2 - 4-6

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	P-1	Sample Identification	P-1
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	02/03/99	Sample Date	02/03/99
Received Date	02/04/99	Received Date	02/04/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	92	Percent Solids, %w/w	92
Methanol Preservation Date	02-04-99	Extraction Date	02-08-99
Analysis Date	02-10-99	Analysis Date	02-17-99
Control Number	990194-06	Control Number	990194-06

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	97	80-120

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	590	330
Anthracene	nd	330
Fluoranthene	1,900	330
Pyrene	1,500	330
Benzo(a)anthracene	700	330
Chrysene	8,900	330
Benzo(b)fluoranthene	750	330
Benzo(k)fluoranthene	650	330
Benzo(a)pyrene	720	330
Indeno(1,2,3-cd)pyrene	510	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	440	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	88	23-120
2-Fluorobiphenyl	92	30-115
p-Terphenyl-d14	95	18-137

KR059B029723

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185747

Reviewed By KWW Date 030499 Data File 990194
P-1 - 0"-6"

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	P-1
Sample Depth, ft (in=")	4-5
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	92
Methanol Preservation Date	02-04-99
Analysis Date	02-10-99
Control Number	990194-07

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	P-1
Sample Depth, ft (in=")	4-5
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	92
Extraction Date	02-08-99
Analysis Date	02-17-99
Control Number	990194-07

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	500	330
Benzo(a)anthracene	350	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	85	23-120
2-Fluorobiphenyl	94	30-115
p-Terphenyl-d14	97	18-137

KR059B029724

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185748

Reviewed By HWJ Date 03 04 99 Data File 990194
P-1 - 4-5

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	IA-8
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	94
Methanol Preservation Date	02-04-99
Analysis Date	02-10-99
Control Number	990194-08

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	98	80-120

Sample Identification	IA-8
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	94
Extraction Date	02-08-99
Analysis Date	02-17-99
Control Number	990194-08

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	86	23-120
2-Fluorobiphenyl	94	30-115
p-Terphenyl-d14	98	18-137

KR059B029725

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185749

Reviewed By HWD Date 03 09 99 Data File 990194 IA-8 - 0"-6"

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	IA-8
Sample Depth, ft (in=")	5-6
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	92
Methanol Preservation Date	02-04-99
Analysis Date	02-10-99
Control Number	990194-09

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	120	100
o-Xylene	64	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	IA-8
Sample Depth, ft (in=")	5-6
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	92
Extraction Date	02-08-99
Analysis Date	02-17-99
Control Number	990194-09

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	81	23-120
2-Fluorobiphenyl	90	30-115
p-Terphenyl-d14	97	18-137

KR059B029726

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185750

Reviewed By HWJ Date 03 24 99 Data File 990194
IA-8 - 5-6

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	IA-1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	96
Methanol Preservation Date	02-04-99
Analysis Date	02-10-99
Control Number	990194-10

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	98	80-120

Sample Identification	IA-1
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	96
Extraction Date	02-08-99
Analysis Date	02-17-99
Control Number	990194-10

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	83	23-120
2-Fluorobiphenyl	90	30-115
p-Terphenyl-d14	94	18-137

KR059B029727

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185751

Reviewed By HWW Date 03 24 99 Data File 990194
IA-1 - 0"-6"

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	IA-1
Sample Depth, ft (in=")	7-8
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	94
Methanol Preservation Date	02-04-99
Analysis Date	02-10-99
Control Number	990194-11

BTEX - Method 8021	**ug/kg**	**TMDL**
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	IA-1
Sample Depth, ft (in=")	7-8
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	94
Extraction Date	02-08-99
Analysis Date	02-17-99
Control Number	990194-11

PAHs - Method 8270	**ug/kg**	**TMDL**
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	390	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	86	23-120
2-Fluorobiphenyl	90	30-115
p-Terphenyl-d14	94	18-137

KR059B029728

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185752

Reviewed By KWU Date 030999 Data File 990194
IA-1 - 7-8

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	IA-5	Sample Identification	IA-5
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	02/03/99	Sample Date	02/03/99
Received Date	02/04/99	Received Date	02/04/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	95	Percent Solids, %w/w	95
Methanol Preservation Date	02-04-99	Extraction Date	02-08-99
Analysis Date	02-10-99	Analysis Date	02-17-99
Control Number	990194-12	Control Number	990194-12

BTEX - Method 8021	ug/kg	TMDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	99	80-120

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	900	330
Pyrene	750	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	80	23-120
2-Fluorobiphenyl	87	30-115
p-Terphenyl-d14	91	18-137

KR059B029729

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185753

Reviewed By HWJ Date 030455 Data File 990194
IA-5 - 0"-6"

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	IA-5
Sample Depth, ft (in=")	1.5-2.5
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	77
Methanol Preservation Date	02-04-99
Analysis Date	02-10-99
Control Number	990194-13

BTEX - Method 8021	ug/kg	TMDL
Benzene	3,100	50
Toluene	1,000	50
Ethylbenzene	110	50
m/p-Xylene	660	100
o-Xylene	280	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	91	80-120

Sample Identification	IA-5
Sample Depth, ft (in=")	1.5-2.5
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	77
Extraction Date	02-08-99
Analysis Date	02-17-99
Control Number	990194-13

PAHs - Method 8270	ug/kg	TMDL
Naphthalene	2,900	330
2-Methylnaphthalene	750	330
Acenaphthylene	3,600	330
Acenaphthene	650	330
Fluorene	360	330
Phenanthrene	9,800	330
Anthracene	4,600	330
Fluoranthene	19,000	330
Pyrene	18,000	330
Benzo(a)anthracene	15,000	330
Chrysene	14,000	330
Benzo(b)fluoranthene	16,000	330
Benzo(k)fluoranthene	14,000	330
Benzo(a)pyrene	13,000	330
Indeno(1,2,3-cd)pyrene	7,100	330
Dibenzo(a,h)anthracene	2,200	330
Benzo(g,h,i)perylene	6,500	330
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	85	23-120
2-Fluorobiphenyl	93	30-115
p-Terphenyl-d14	97	18-137

KR059B029730

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185754

Reviewed By HWW Date 03 04 99 Data File 990194
IA-5 - 1.5-2.5

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	P-3	Sample Identification	P-3
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	02/03/99	Sample Date	02/03/99
Received Date	02/04/99	Received Date	02/04/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	89	Percent Solids, %w/w	89
Preparation Date	02-06-99	Extraction Date	02-08-99
Analysis Date, Start	02-09-99	Analysis Date, Total	02-10-99
Analysis Date, End	02-23-99	Analysis Date, Amenable	02-11-99
Control Number	990194-01	Control Number	990194-01

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	15,000	100
Barium, 7081	43,000	1,000
Cadmium - 7131	210	50
Chromium (total) - 7191	12,000	2,500
Copper - 7211	33,000	1,000
Lead - 7421	64,000	1,000
Mercury - 7470	230	100
Selenium - 7740	9,300	500
Silver - 7761	nd	500
Zinc - 7950	74,000	1,000

note: Se results confirmed

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	6,800	200
Cyanide, Amenable - 9011/9010	nd	500

KR059B029731

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185755

Reviewed By HWJ Date 030955 Data File 990194

P-3 - 0"-6"

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	MW-1	Sample Identification	MW-1
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	02/03/99	Sample Date	02/03/99
Received Date	02/04/99	Received Date	02/04/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	94	Percent Solids, %w/w	94
Preparation Date	02-06-99	Extraction Date	02-08-99
Analysis Date, Start	02-09-99	Analysis Date, Total	02-10-99
Analysis Date, End	02-23-99	Analysis Date, Amenable	02-11-99
Control Number	990194-02	Control Number	990194-02

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	3,500	100
Barium, 7081	15,000	1,000
Cadmium - 7131	190	50
Chromium (total) - 7191	6,100	2,500
Copper - 7211	5,700	1,000
Lead - 7421	2,600	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	21,000	1,000

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	nd	200
Cyanide, Amenable - 9011/9010	nd	500

KR059B029732

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185756

Reviewed By HWW Date 030485 Data File 990194
MW-1 - 0"-6"

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	MW-1		Sample Identification	MW-1	
Sample Depth, ft (in=")	6-8		Sample Depth, ft (in=")	6-8	
Sample Type	soil		Sample Type	soil	
Sample Date	02/03/99		Sample Date	02/03/99	
Received Date	02/04/99		Received Date	02/04/99	
Report Date	03/03/99		Report Date	03/03/99	
Percent Solids, %w/w	94		Percent Solids, %w/w	94	
Preparation Date	02-06-99		Extraction Date	02-08-99	
Analysis Date, Start	02-09-99		Analysis Date, Total	02-10-99	
Analysis Date, End	02-23-99		Analysis Date, Amenable	02-11-99	
Control Number	990194-03		Control Number	990194-03	

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	5,800	100
Barium, 7081	32,000	1,000
Cadmium - 7131	50	50
Chromium (total) - 7191	9,500	2,500
Copper - 7211	7,900	1,000
Lead - 7421	8,300	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	29,000	1,000

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	nd	200
Cyanide, Amenable - 9011/9010	nd	500

KR059B029733

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185757

Reviewed By HWW Date 030499 Data File 990194
MW-1 - 6-8

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	MW-2
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	91
Preparation Date	02-06-99
Analysis Date, Start	02-09-99
Analysis Date, End	02-23-99
Control Number	990194-04

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	18,000	100
Barium, 7081	49,000	1,000
Cadmium - 7131	170	50
Chromium (total) - 7191	11,000	2,500
Copper - 7211	14,000	1,000
Lead - 7421	60,000	1,000
Mercury - 7470	140	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	53,000	1,000

Sample Identification	MW-2
Sample Depth, ft (in=")	0"-6"
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	91
Extraction Date	02-08-99
Analysis Date, Total	02-10-99
Analysis Date, Amenable	02-11-99
Control Number	990194-04

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	310	200
Cyanide, Amenable - 9011/9010	nd	500

KR059B029734

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185758

Reviewed By AWW Date 030455 Data File 990194
MW-2 - 0"-6"

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	MW-2
Sample Depth, ft (in=")	4-6
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	84
Preparation Date	02-06-99
Analysis Date, Start	02-09-99
Analysis Date, End	02-23-99
Control Number	990194-05

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	12,000	100
Barium, 7081	63,000	1,000
Cadmium - 7131	88	50
Chromium (total) - 7191	11,000	2,500
Copper - 7211	23,000	1,000
Lead - 7421	51,000	1,000
Mercury - 7470	150	100
Selenium - 7740	580	500
Silver - 7761	nd	500
Zinc - 7950	36,000	1,000

Sample Identification	MW-2
Sample Depth, ft (in=")	4-6
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	84
Extraction Date	02-08-99
Analysis Date, Total	02-10-99
Analysis Date, Amenable	02-11-99
Control Number	990194-05

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	2,200	200
Cyanide, Amenable - 9011/9010	nd	500

KR059B029735

NOTES:
TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185759

Reviewed By KW Date 03 04 99 Data File 990194
MW-2 - 4-6

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	P-1	**Sample Identification**	P-1
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	02/03/99	Sample Date	02/03/99
Received Date	02/04/99	Received Date	02/04/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	92	Percent Solids, %w/w	92
Preparation Date	02-06-99	Extraction Date	02-08-99
Analysis Date, Start	02-09-99	Analysis Date, Total	02-10-99
Analysis Date, End	02-23-99	Analysis Date, Amenable	02-11-99
Control Number	990194-06	Control Number	990194-06

TOTAL METALS	**ug/kg**	**TMDL**
Arsenic - 7060	6,800	100
Barium, 7081	47,000	1,000
Cadmium - 7131	79	50
Chromium (total) - 7191	8,300	2,500
Copper - 7211	11,000	1,000
Lead - 7421	25,000	1,000
Mercury - 7470	100	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	39,000	1,000

INORGANICS	**ug/kg**	**TMDL**
Cyanide, Total - 9011/9010	nd	200
Cyanide, Amenable - 9011/9010	nd	500

KR059B029736

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185760

Reviewed By HWJ Date 030955 Data File 990194
P-1 - 0"-6"

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	P-1		**Sample Identification**	P-1	
Sample Depth, ft (in=")	4-5		Sample Depth, ft (in=")	4-5	
Sample Type	soil		Sample Type	soil	
Sample Date	02/03/99		Sample Date	02/03/99	
Received Date	02/04/99		Received Date	02/04/99	
Report Date	03/03/99		Report Date	03/03/99	
Percent Solids, %w/w	92		Percent Solids, %w/w	92	
Preparation Date	02-06-99		v	02-08-99	
Analysis Date, Start	02-09-99		Analysis Date, Total	02-10-99	
Analysis Date, End	02-23-99		Analysis Date, Amenable	02-11-99	
Control Number	990194-07		Control Number	990194-07	
TOTAL METALS	**ug/kg**	**TMDL**	**INORGANICS**	**ug/kg**	**TMDL**
Arsenic - 7060	5,900	100	Cyanide, Total - 9011/9010	nd	200
Barium, 7081	21,000	1,000	Cyanide, Amenable - 9011/9010	nd	500
Cadmium - 7131	96	50			
Chromium (total) - 7191	6,100	2,500			
Copper - 7211	6,000	1,000			
Lead - 7421	11,000	1,000			
Mercury - 7470	nd	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	27,000	1,000			

KR059B029737

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185761

Reviewed By HWU Date 030499 Data File 990194
P-1 - 4-5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	IA-8	Sample Identification	IA-8
Sample Depth, ft (in=")	0"-6"	Sample Depth, ft (in=")	0"-6"
Sample Type	soil	Sample Type	soil
Sample Date	02/03/99	Sample Date	02/03/99
Received Date	02/04/99	Received Date	02/04/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	94	Percent Solids, %w/w	94
Preparation Date	02-06-99	v	02-08-99
Analysis Date, Start	02-09-99	Analysis Date, Total	02-10-99
Analysis Date, End	02-23-99	Analysis Date, Amenable	02-11-99
Control Number	990194-08	Control Number	990194-08

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	5,000	100
Barium, 7081	38,000	1,000
Cadmium - 7131	52	50
Chromium (total) - 7191	6,700	2,500
Copper - 7211	8,500	1,000
Lead - 7421	10,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	36,000	1,000

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	nd	200
Cyanide, Amenable - 9011/9010	nd	500

KR059B029738

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185762

Reviewed By HWJ Date 03 04 99 Data File 990194
IA-8 - 0"-6"

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	IA-8		Sample Identification	IA-8	
Sample Depth, ft (in=")	5-6		Sample Depth, ft (in=")	5-6	
Sample Type	soil		Sample Type	soil	
Sample Date	02/03/99		Sample Date	02/03/99	
Received Date	02/04/99		Received Date	02/04/99	
Report Date	03/03/99		Report Date	03/03/99	
Percent Solids, %w/w	92		Percent Solids, %w/w	92	
Preparation Date	02-06-99		Extraction Date	02-08-99	
Analysis Date, Start	02-09-99		Analysis Date, Total	02-10-99	
Analysis Date, End	02-23-99		Analysis Date, Amenable	02-11-99	
Control Number	990194-09		Control Number	990194-09	
TOTAL METALS	**ug/kg**	**TMDL**	**INORGANICS**	**ug/kg**	**TMDL**
Arsenic - 7060	5,000	100	Cyanide, Total - 9011/9010	nd	20(
Barium, 7081	17,000	1,000	Cyanide, Amenable - 9011/9010	nd	50(
Cadmium - 7131	nd	50			
Chromium (total) - 7191	5,400	2,500			
Copper - 7211	4,900	1,000			
Lead - 7421	10,000	1,000			
Mercury - 7470	nd	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	20,000	1,000			

KR059B029739

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185763

Reviewed By HCW Date 030488 Data File 990194
IA-8 - 5-6

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	IA-1		**Sample Identification**	IA-1	
Sample Depth, ft (in=")	0"-6"		Sample Depth, ft (in=")	0"-6"	
Sample Type	soil		Sample Type	soil	
Sample Date	02/03/99		Sample Date	02/03/99	
Received Date	02/04/99		Received Date	02/04/99	
Report Date	03/03/99		Report Date	03/03/99	
Percent Solids, %w/w	96		Percent Solids, %w/w	96	
Preparation Date	02-06-99		Extraction Date	02-08-99	
Analysis Date, Start	02-09-99		Analysis Date, Total	02-10-99	
Analysis Date, End	02-23-99		Analysis Date, Amenable	02-11-99	
Control Number	990194-10		Control Number	990194-10	
TOTAL METALS	**ug/kg**	**TMDL**	**INORGANICS**	**ug/kg**	**TMDL**
Arsenic - 7060	9,500	100	Cyanide, Total - 9011/9010	nd	200
Barium, 7081	31,000	1,000	Cyanide, Amenable - 9011/9010	nd	500
Cadmium - 7131	nd	50			
Chromium (total) - 7191	18,000	2,500			
Copper - 7211	11,000	1,000			
Lead - 7421	8,600	1,000			
Mercury - 7470	nd	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	40,000	1,000			

KR059B029740

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185764

Reviewed By HW Date 03 04 99 Data File 990194
IA-1 - 0"-6"

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	IA-1
Sample Depth, ft (in=")	7-8
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	94
Preparation Date	02-06-99
Analysis Date, Start	02-09-99
Analysis Date, End	02-23-99
Control Number	990194-11

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	2,900	100
Barium, 7081	10,000	1,000
Cadmium - 7131	nd	50
Chromium (total) - 7191	6,100	2,500
Copper - 7211	5,100	1,000
Lead - 7421	4,100	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	15,000	1,000

Sample Identification	IA-1
Sample Depth, ft (in=")	7-8
Sample Type	soil
Sample Date	02/03/99
Received Date	02/04/99
Report Date	03/03/99
Percent Solids, %w/w	94
Extraction Date	02-08-99
Analysis Date, Total	02-10-99
Analysis Date, Amenable	02-11-99
Control Number	990194-11

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	nd	200
Cyanide, Amenable - 9011/9010	nd	500

KR059B029741

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185765

Reviewed By _____ Date 03 29 99 Data File 990194
IA-1 - 7-8

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	IA-5		Sample Identification	IA-5	
Sample Depth, ft (in=")	0"-6"		Sample Depth, ft (in=")	0"-6"	
Sample Type	soil		Sample Type	soil	
Sample Date	02/03/99		Sample Date	02/03/99	
Received Date	02/04/99		Received Date	02/04/99	
Report Date	03/03/99		Report Date	03/03/99	
Percent Solids, %w/w	95		Percent Solids, %w/w	95	
Preparation Date	02-06-99		Extraction Date	02-08-99	
Analysis Date, Start	02-09-99		Analysis Date, Total	02-10-99	
Analysis Date, End	02-23-99		Analysis Date, Amenable	02-11-99	
Control Number	990194-12		Control Number	990194-12	
TOTAL METALS	**ug/kg**	**TMDL**	**INORGANICS**	**ug/kg**	**TMDL**
Arsenic - 7060	9,100	100	Cyanide, Total - 9011/9010	nd	200
Barium, 7081	32,000	1,000	Cyanide, Amenable - 9011/9010	nd	500
Cadmium - 7131	52	50			
Chromium (total) - 7191	14,000	2,500			
Copper - 7211	11,000	1,000			
Lead - 7421	6,500	1,000			
Mercury - 7470	nd	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	42,000	1,000			

KR059B029742

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185766

Reviewed By HWV Date 030485 Data File 990194
IA-5 - 0"-6"

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 03, 1999	Project Number CHEM-99-0194

Sample Identification	IA-5	Sample Identification	IA-5
Sample Depth, ft (in=")	1.5-2.5	Sample Depth, ft (in=")	1.5-2.5
Sample Type	soil	Sample Type	soil
Sample Date	02/03/99	Sample Date	02/03/99
Received Date	02/04/99	Received Date	02/04/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	77	Percent Solids, %w/w	77
Preparation Date	02-06-99	Extraction Date	02-08-99
Analysis Date, Start	02-09-99	Analysis Date, Total	02-10-99
Analysis Date, End	02-23-99	Analysis Date, Amenable	02-11-99
Control Number	990194-13	Control Number	990194-13

TOTAL METALS	ug/kg	TMDL
Arsenic - 7060	4,000	100
Barium, 7081	45,000	1,000
Cadmium - 7131	52	50
Chromium (total) - 7191	2,900	2,500
Copper - 7211	13,000	1,000
Lead - 7421	18,000	1,000
Mercury - 7470	900	100
Selenium - 7740	nd	500
Silver - 7761	nd	500
Zinc - 7950	4,600	1,000

note: Hg and Zn results confirmed

INORGANICS	ug/kg	TMDL
Cyanide, Total - 9011/9010	6,000,000	200
Cyanide, Amenable - 9011/9010	<11,000*	500

note: * = indeterminate value

KR059B029743

NOTES: TMDL = Target Method Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185767

Reviewed By [illegible] Date 030499 Data File 990194
IA-5 - 1.5-2.5

INORG

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31923

PAGE 1 OF 2

SEND REPORT TO: Pat Burnecki SMC - Plymouth

PHONE: 734-454-5960

SAMPLING TEAM: N. Larabel

DATE SHIPPED: 2/4/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 of 7 metals	Cyanide	Total Arsenic	REMARKS
99-0194-1	2/3/99	0832	Soil	P-3 0"-6"	0"-6"	2	X	X	X	X		
-2		0940		MW-1 0"-6"	0"-6"		X	X	X	X		
-3		1008		MW-1 6'-8'	6'-8'		X	X	X	X		
-4		1143		MW-2 0"-6"	0"-6"		X	X	X	X		
-5		1148		MW-2 4'-6'	4'-6'		X	X	X	X		
-6		1245		P-1 0"-6"	0"-6"		X	X	X	X		
-7		1250		P-1 4'-5'	4'-5'		X	X	X	X		
-8		1340		IA-8 0"-6"	0"-6"		X	X	X	X		
-9		1349		IA-8 5'-6'	5'-6'		X	X	X	X		
-10		1450		IA-1 0"-6"	0"-6"		X	X	X	X		
-11		1500		IA-1 7'-8'	7'-8'		X	X	X	X		KR059B029744
-12		1510		IA-5 0"-6"	0"-6"		X	X	X	X		

00185768

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	2/3/99 1740	Smg Sample Room
Smg sample Room	2/4/99 13:30	[signature]

COMMENTS
- MDEQ Mercury Method
- Excess Need 48 hr. Preservation
- call Pat Burnecki w/ Any Questions

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KF31823

SAMPLING TEAM: N. LaCasse

DATE SHIPPED: 2/4/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 2

SEND REPORT TO: Pat Bergeson, SME - Plymouth

PHONE: 734-453-9[illegible]

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 Ag Metals	CYANIDE	(TENTIC)	Ammonia		REMARKS
99-0194-13	2/3/99	1520	Soil	IA-5 1.5'-2.5'	1.5'-2.5'	2	X	X	X	X				

ANALYSIS REQUESTED

00185769

KR059B029745

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	2/3/99 1740	SME Sample Room
RELINQUISHED BY: (SIGNATURE) SME Storage	DATE / TIME 2/4/99 13:30	RECEIVED BY: (SIGNATURE) [signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS: See page #1

ORIGINAL TO LAB COPY TO CUSTOMER

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

00185770

KR059B029746

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	MW-4	Sample Identification	MW-4
Sample Depth, ft (in=")	2.7-6.9	Sample Depth, ft (in=")	2.7-6.9
Sample Type	water	Sample Type	water
Sample Date	02/08/99	Sample Date	02/08/99
Received Date	02/09/99	Received Date	02/09/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
HCL Preservation Date	at collection	Extraction Date	02-11-99
Analysis Date	02-20-99	Analysis Date	02-16-99
Control Number	990225-01	Control Number	990225-01

BTEX - Method 8021	ug/L	TMDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	2	1
Surrogate Recovery	**% Recovery**	**Criteria**
4-Bromofluorobenzene	98	80-120

PAHs - Method 8270	ug/L	TMDL
Naphthalene	nd	5
2-Methylnaphtalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**% Recovery**	**Criteria**
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	100	33-141

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

00185771

Reviewed By HWJ Date 030499 Data File 990225
MW-4 2.7-6.9

ORG

KR059B029747

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	P-4
Sample Depth, ft (in=")	3.4-7.9
Sample Type	water
Sample Date	02/08/99
Received Date	02/09/99
Report Date	03/03/99
Percent Solids, %w/w	-
HCL Preservation Date	at collection
Analysis Date	02-20-99
Control Number	990225-02

BTEX - Method 8021	ug/L	TMDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	95	80-120

Sample Identification	P-4
Sample Depth, ft (in=")	3.4-7.9
Sample Type	water
Sample Date	02/08/99
Received Date	02/09/99
Report Date	03/03/99
Percent Solids, %w/w	-
Extraction Date	02-11-99
Analysis Date	02-16-99
Control Number	990225-02

PAHs - Method 8270	ug/L	TMDL
Naphthalene	nd	5
2-Methylnaphtalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	99	33-141

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

00185772

Reviewed By KWD Date 030499 Data File 990225
P-4 3.4-7.9

ORG

KR059B029748

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	MW-3
Sample Depth, ft (in=")	3.6-7.8
Sample Type	water
Sample Date	02/08/99
Received Date	02/09/99
Report Date	03/03/99
Percent Solids, %w/w	-
HCL Preservation Date	at collection
Analysis Date	02-20-99
Control Number	990225-03

BTEX - Method 8021	ug/L	TMDL
Benzene	3	1
Toluene	1	1
Ethylbenzene	1	1
m/p-Xylene	2	1
o-Xylene	1	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	MW-3
Sample Depth, ft (in=")	3.6-7.8
Sample Type	water
Sample Date	02/08/99
Received Date	02/09/99
Report Date	03/03/99
Percent Solids, %w/w	-
Extraction Date	02-11-99
Analysis Date	02-16-99
Control Number	990225-03

PAHs - Method 8270	ug/L	TMDL
Naphthalene	nd	5
2-Methylnaphtalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	98	33-141

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

00185773

Reviewed By HW Date 030999 Data File 990225
MW-3 3.6-7.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	P-3	Sample Identification	P-3
Sample Depth, ft (in=")	3.8-7.8	Sample Depth, ft (in=")	3.8-7.8
Sample Type	water	Sample Type	water
Sample Date	02/08/99	Sample Date	02/08/99
Received Date	02/09/99	Received Date	02/09/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
HCL Preservation Date	at collection	Extraction Date	02-11-99
Analysis Date	02-20-99	Analysis Date	02-16-99
Control Number	990225-04	Control Number	990225-04

BTEX - Method 8021	ug/L	TMDL
Benzene	3	1
Toluene	5	1
Ethylbenzene	13	1
m/p-Xylene	17	1
o-Xylene	14	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	93	80-120

PAHs - Method 8270	ug/L	TMDL
Naphthalene	24	5
2-Methylnaphtalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	89	35-114
2-Fluorobiphenyl	91	43-116
p-Terphenyl-d14	97	33-141

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

00185774

Reviewed By HW Date 030499 Data File 990225
P-3 3.8-7.8

KR059B029750 ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	MW-2	**Sample Identification**	MW-2
Sample Depth, ft (in=")	4.9-8	Sample Depth, ft (in=")	4.9-8
Sample Type	water	Sample Type	water
Sample Date	02/08/99	Sample Date	02/08/99
Received Date	02/09/99	Received Date	02/09/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
HCL Preservation Date	at collection	Extraction Date	02-11-99
Analysis Date	02-20-99	Analysis Date	02-16-99
Control Number	990225-05	Control Number	990225-05

BTEX - Method 8021	**ug/L**	**TMDL**
Benzene	1	1
Toluene	4	1
Ethylbenzene	1	1
m/p-Xylene	5	1
o-Xylene	2	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	93	80-120

PAHs - Method 8270	**ug/L**	**TMDL**
Naphthalene	6	5
2-Methylnaphtalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	90	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	97	33-141

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

00185775

Reviewed By [signature] Date 030488 Data File 990225
MW-2 4.9-8

CRG KR059B029751

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	MW-1
Sample Depth, ft (in=")	8.5-11.6
Sample Type	water
Sample Date	02/08/99
Received Date	02/09/99
Report Date	03/03/99
Percent Solids, %w/w	-
HCL Preservation Date	at collection
Analysis Date	02-20-99
Control Number	990225-06

BTEX - Method 8021	ug/L	TMDL
Benzene	13	1
Toluene	540	1
Ethylbenzene	910	1
m/p-Xylene	1,300	1
o-Xylene	430	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	87	80-120

Sample Identification	MW-1
Sample Depth, ft (in=")	8.5-11.6
Sample Type	water
Sample Date	02/08/99
Received Date	02/09/99
Report Date	03/03/99
Percent Solids, %w/w	-
Extraction Date	02-11-99
Analysis Date	02-16-99
Control Number	990225-06

PAHs - Method 8270	ug/L	TMDL
Naphthalene	120	5
2-Methylnaphtalene	21	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	80	35-114
2-Fluorobiphenyl	92	43-116
p-Terphenyl-d14	96	33-141

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

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Reviewed By KWJ Date 030499 Data File 990225
MW-1 8.5-11.6

ORG KR059B029752

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section • Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	P-2		Sample Identification	P-2	
Sample Depth, ft (in=")	8.2-12.1		Sample Depth, ft (in=")	8.2-12.1	
Sample Type	water		Sample Type	water	
Sample Date	02/08/99		Sample Date	02/08/99	
Received Date	02/09/99		Received Date	02/09/99	
Report Date	03/03/99		Report Date	03/03/99	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
HCL Preservation Date	at collection		Extraction Date	02-11-99	
Analysis Date	02-20-99		Analysis Date	02-16-99	
Control Number	990225-07		Control Number	990225-07	

BTEX - Method 8021	ug/L	TMDL
Benzene	480	1
Toluene	280	1
Ethylbenzene	320	1
m/p-Xylene	1,100	1
o-Xylene	490	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	86	80-120

PAHs - Method 8270	ug/L	TMDL
Naphthalene	2,900	10
2-Methylnaphtalene	59	10
Acenaphthylene	nd	10
Acenaphthene	65	10
Fluorene	32	10
Phenanthrene	46	10
Anthracene	nd	10
Fluoranthene	nd	10
Pyrene	nd	10
Benzo(a)anthracene	nd	15
Chrysene	nd	15
Benzo(b)fluoranthene	nd	15
Benzo(k)fluoranthene	nd	15
Benzo(a)pyrene	nd	10
Indeno(1,2,3-cd)pyrene	nd	20
Dibenzo(a,h)anthracene	nd	20
Benzo(g,h,i)perylene	nd	20
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	dilutedout	35-114
2-Fluorobiphenyl	dilutedout	43-116
p-Terphenyl-d14	dilutedout	33-141

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

00185777

Reviewed By [illegible] Date 030485 Data File 990225
P-2 8.2-12.1

ORG KR059B029753

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	DUPLICATE
Sample Depth, ft (in=")	-
Sample Type	water
Sample Date	02/08/99
Received Date	02/09/99
Report Date	03/03/99
Percent Solids, %w/w	-
HCL Preservation Date	at collection
Analysis Date	02-20-99
Control Number	990225-08

BTEX - Method 8021	**ug/L**	**TMDL**
Benzene	460	1
Toluene	250	1
Ethylbenzene	290	1
m/p-Xylene	990	1
o-Xylene	450	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	85	80-120

KR059B029754

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

00185778

Reviewed By HEW Date 030499 Data File 990225
DUPLICATE -

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	EQUIPMENT BLANK-TUBE	
Sample Depth, ft (in=")	-	
Sample Type	water	
Sample Date	02/08/99	
Received Date	02/09/99	
Report Date	03/03/99	
Percent Solids, %w/w	-	
HCL Preservation Date	at collection	
Analysis Date	02-20-99	
Control Number	990225-09	
BTEX - Method 8021	**ug/L**	**TMDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	96	80-120

KR059B029755

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

00185779

Reviewed By HWJ Date 030499 Data File 990225
EQUIPMENT -

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	EQUIPMENT BLANK-LEVEL
Sample Depth, ft (in=")	-
Sample Type	water
Sample Date	02/08/99
Received Date	02/09/99
Report Date	03/03/99
Percent Solids, %w/w	-
HCL Preservation Date	at collection
Analysis Date	02-20-99
Control Number	990225-10

BTEX - Method 8021	**ug/L**	**TMDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	95	80-120

KR059B029756

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

00185780

Reviewed By KWJ Date 030499 Data File 990225
EQUIPMENT -

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	MW-4		Sample Identification	MW-4	
Sample Depth, ft (in=")	2.7-6.9		Sample Depth, ft (in=")	2.7-6.9	
Sample Type	water		Sample Type	water	
Sample Date	02/08/99		Sample Date	02/08/99	
Received Date	02/09/99		Received Date	02/09/99	
Report Date	03/03/99		Report Date	03/03/99	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
Preparation Date	-		Extraction Date	-	
Analysis Date, Start	02-12-99		Analysis Date, Total	02-11-99	
Analysis Date, End	02-23-99		Analysis Date, Amenable	02-12-99	
Control Number	990225-01		Control Number	990225-01	
DISSOLVED METALS	**ug/L**	**TMDL**	**INORGANICS**	**ug/L**	**TMDL**
Arsenic - 7060	nd	5.0	Cyanide, Total - 9010	nd	5
Barium, 7081	nd	200.0	Cyanide, Amenable - 9010	nd	20
Cadmium - 7131	nd	0.5			
Chromium (total) - 7191	nd	50.0			
Copper - 7211	nd	25.0			
Lead - 7421	nd	3.0			
Mercury - 7470	nd	0.2			
Selenium - 7740	nd	5.0			
Silver - 7761	nd	0.5			
Zinc - 7950	nd	20.0			

KR059B029757

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

00185781

Reviewed By _____ Date 030499 Data File 990225
MW-4 2.7-6.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section · Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	P-4		**Sample Identification**	P-4	
Sample Depth, ft (in=")	3.4-7.9		Sample Depth, ft (in=")	3.4-7.9	
Sample Type	water		Sample Type	water	
Sample Date	02/08/99		Sample Date	02/08/99	
Received Date	02/09/99		Received Date	02/09/99	
Report Date	03/03/99		Report Date	03/03/99	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
Preparation Date	-		Extraction Date	-	
Analysis Date, Start	02-12-99		Analysis Date, Total	02-11-99	
Analysis Date, End	02-23-99		Analysis Date, Amenable	02-12-99	
Control Number	990225-02		Control Number	990225-02	
DISSOLVED METALS	**ug/L**	**TMDL**	**INORGANICS**	**ug/L**	**TMDL**
Arsenic - 7060	nd	5.0	Cyanide, Total - 9010	nd	5
Barium, 7081	nd	200.0	Cyanide, Amenable - 9010	nd	20
Cadmium - 7131	nd	0.5			
Chromium (total) - 7191	nd	50.0			
Copper - 7211	nd	25.0			
Lead - 7421	nd	3.0			
Mercury - 7470	nd	0.2			
Selenium - 7740	nd	5.0			
Silver - 7761	nd	0.5			
Zinc - 7950	nd	20.0			

KR059B029758

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

00185782

Reviewed By [illegible] Date 030499 Data File 990225

P-4	3.4-7.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	MW-3	Sample Identification	MW-3
Sample Depth, ft (in=")	3.6-7.8	Sample Depth, ft (in=")	3.6-7.8
Sample Type	water	Sample Type	water
Sample Date	02/08/99	Sample Date	02/08/99
Received Date	02/09/99	Received Date	02/09/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	-
Analysis Date, Start	02-12-99	Analysis Date, Total	02-11-99
Analysis Date, End	02-23-99	Analysis Date, Amenable	02-12-99
Control Number	990225-03	Control Number	990225-03

DISSOLVED METALS	ug/L	TMDL
Arsenic - 7060	13	5.0
Barium, 7081	nd	200.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	50.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TMDL
Cyanide, Total - 9010	16	5
Cyanide, Amenable - 9010	nd	20

KR059B029759

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

00185783

Reviewed By KW Date 030499 Data File 990225
MW-3 3.6-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	P-3	Sample Identification	P-3
Sample Depth, ft (in=")	3.8-7.8	Sample Depth, ft (in=")	3.8-7.8
Sample Type	water	Sample Type	water
Sample Date	02/08/99	Sample Date	02/08/99
Received Date	02/09/99	Received Date	02/09/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	-
Analysis Date, Start	02-12-99	Analysis Date, Total	02-11-99
Analysis Date, End	02-23-99	Analysis Date, Amenable	02-12-99
Control Number	990225-04	Control Number	990225-04

DISSOLVED METALS	ug/L	TMDL
Arsenic - 7060	nd	5.0
Barium, 7081	nd	200.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	50.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	29	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TMDL
Cyanide, Total - 9010	16	5
Cyanide, Amenable - 9010	nd	20

KR059B029760

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

00185784

Reviewed By KWW Date 030495 Data File 990225
P-3 3.8-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	MW-2		Sample Identification	MW-2	
Sample Depth, ft (in=")	4.9-8		Sample Depth, ft (in=")	4.9-8	
Sample Type	water		Sample Type	water	
Sample Date	02/08/99		Sample Date	02/08/99	
Received Date	02/09/99		Received Date	02/09/99	
Report Date	03/03/99		Report Date	03/03/99	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
Preparation Date	-		Extraction Date	-	
Analysis Date, Start	02-12-99		Analysis Date, Total	02-11-99	
Analysis Date, End	02-23-99		Analysis Date, Amenable	02-12-99	
Control Number	990225-05		Control Number	990225-05	
DISSOLVED METALS	**ug/L**	**TMDL**	**INORGANICS**	**ug/L**	**TMDL**
Arsenic - 7060	nd	5.0	Cyanide, Total - 9010	150	5
Barium, 7081	nd	200.0	Cyanide, Amenable - 9010	nd	20
Cadmium - 7131	nd	0.5			
Chromium (total) - 7191	nd	50.0			
Copper - 7211	nd	25.0			
Lead - 7421	nd	3.0			
Mercury - 7470	nd	0.2			
Selenium - 7740	nd	5.0			
Silver - 7761	nd	0.5			
Zinc - 7950	nd	20.0			

KR059B029761

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

00185785

Reviewed By [illegible] Date 03 07 99 Data File 990225
MW-2 4.9-8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	MW-1	Sample Identification	MW-1
Sample Depth, ft (in=")	8.5-11.6	Sample Depth, ft (in=")	8.5-11.6
Sample Type	water	Sample Type	water
Sample Date	02/08/99	Sample Date	02/08/99
Received Date	02/09/99	Received Date	02/09/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	-
Analysis Date, Start	02-12-99	Analysis Date, Total	02-11-99
Analysis Date, End	02-23-99	Analysis Date, Amenable	02-12-99
Control Number	990225-06	Control Number	990225-06

DISSOLVED METALS	ug/L	TMDL
Arsenic - 7060	nd	5.0
Barium, 7081	nd	200.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	50.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TMDL
Cyanide, Total - 9010	nd	5
Cyanide, Amenable - 9010	nd	20

KR059B029762

NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

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Reviewed By KW Date 030975 Data File 990225
MW-1 8.5-11.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - KE 31823 - Sampling Date February 08, 1999	Project Number CHEM-99-0225

Sample Identification	P-2	Sample Identification	P-2
Sample Depth, ft (in=")	8.2-12.1	Sample Depth, ft (in=")	8.2-12.1
Sample Type	water	Sample Type	water
Sample Date	02/08/99	Sample Date	02/08/99
Received Date	02/09/99	Received Date	02/09/99
Report Date	03/03/99	Report Date	03/03/99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	-
Analysis Date, Start	02-12-99	Analysis Date, Total	02-11-99
Analysis Date, End	02-23-99	Analysis Date, Amenable	02-12-99
Control Number	990225-07	Control Number	990225-07

DISSOLVED METALS	ug/L	TMDL
Arsenic - 7060	8	5.0
Barium, 7081	nd	200.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	50.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TMDL
Cyanide, Total - 9010	77	5
Cyanide, Amenable - 9010	nd	20

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NOTES: TMDL = Target Method Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TMDL

00185787

Reviewed By HLW Date 03 04 99 Data File 990225
P-2 8.2-12.1

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CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KC 31623

SAMPLING TEAM: Nick Lassel

DATE SHIPPED: 2/5/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Brewer

PHONE: 734-454-5[illegible]

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	Kjeldahl	Cyanide	CTOC	Ammonia		REMARKS
99-0225-1	2/8/99	1350	W	MW-4	2.7-6.9	5	X	X	X	X				
-2		1322		P-4	3.4-7.9		X	X	X	X				
-3		1250		MW-3	3.6-7.8		X	X	X	X				
-4		1000		P-3	3.8-7.6		X	X	X	X				
-5		1025		MW-2	4.9-8		X	X	X	X				
-6		0930		MW-1	8.5-11.0		X	X	X	X				
-7		1140		P-2	8.2-12.1		X	X	X	X				
-8	2/10/99	—	W	Duplicate	—	2	X							
-9		—		Equipment Blank Inside	—	2	X							
70		—		Equipment Blank Lower	—	2	X							

00185788

KR059B029764

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	2/8/99 1600	Sno Sample Pen 1600
RELINQUISHED BY: (SIGNATURE) Sno Sample Pen	DATE / TIME 02/10/99 1227	RECEIVED BY: (SIGNATURE) [signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MDL's method
- contact Pat Brewer of any Questions

ORIGINAL TO LAB COPY TO CUSTOMER

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: HWVoigt, T-260

Date: March 11, 1999

Subject: KALAMAZOO, FORMER MGP
- SME Project # KE31823
- Sampling Date of February 22, 1999
- Sampling Date of February 25 - March 01, 1999

File Index No.
519917-450-304
519917-450-348

CC: GLKelterborn, T-258

CC: Pat Barrese
Soil & Materials Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

On February 23 and March 01, 1999 the Chemistry Section (CHEM) of Laboratory Services received soil and groundwater samples collected at KALAMAZOO, FORMER MGP.

The samples were returned to CHEM for the determination of

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Michigan 10-Metals
Cyanide, Total, Amenable and Free

Analytical results are attached for your review

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

VOC Sample Collection - VOC samples were collected by DEQ-ORGLAB-11, Methanol Preservation Protocol (Method 5035).

Aromatic Volatile Organics (BTEX) - Method 8021, Halogenated And Aromatic Volatiles By Gas Chromatography Using Electrolytic Conductivity And Photoionization Detectors In Series: Capillary Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Soil Extraction - Method 9011, Cyanide Extraction Procedure For Solids and Oils. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Total and Amenable - Method 9010, Total and Amenable Cyanide. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Free - Method ASTM-D4282-95, Determination Of Free Cyanide In Water And Wastewater By Microdiffusion. ASTM

Total Metals Preparation - Soils - Method 7000, Microwave Assisted Digestion Of Sediments, Sludges, Soils and Oils. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	SW-846 Method
Arsenic	7060
Barium	7081
Cadmium	7131
Chromium	7191
Copper	7211
Lead	7421
Mercury	7470
Selenium	7740
Silver	7661
Zinc	7950

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE31823 - Sampling Date February 22, 1999	Project Number CHEM-99-0304

00185791

KR059B029767

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE31823 - Sampling Date February 22, 1999	Project Number CHEM-99-0304

Sample Identification	IA-1
Sample Depth, ft (in=")	12-14
Sample Type	soil
Sample Date	02-22-99
Received Date	02-23-99
Report Date	03-10-99
Percent Solids, %w/w	84
Methanol Preservation Date	02-23-99
Analysis Date	03-04-99
Control Number	990304-01

BTEX - Method 8021	ug/kg	TDL
Benzene	1,500	50
Toluene	35,000	50
Ethylbenzene	39,000	50
m/p-Xylene	44,000	100
o-Xylene	19,000	50
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	86	80-120

Sample Identification	IA-1
Sample Depth, ft (in=")	12-14
Sample Type	soil
Sample Date	02-22-99
Received Date	02-23-99
Report Date	03-10-99
Percent Solids, %w/w	84
Extraction Date	02-25-99
Analysis Date	02-27-99
Control Number	990304-01

PAHs - Method 8270	ug/kg	TDL
Naphthalene	76,000	660
2-Methylnaphtalene	5,700	660
Acenaphthylene	8,200	660
Acenaphthene	1,300	660
Fluorene	720	660
Phenanthrene	17,000	660
Anthracene	15,000	660
Fluoranthene	9,300	660
Pyrene	11,000	660
Benzo(a)anthracene	5,100	660
Chrysene	4,900	660
Benzo(b)fluoranthene	2,500	660
Benzo(k)fluoranthene	2,300	660
Benzo(a)pyrene	2,300	660
Indeno(1,2,3-cd)pyrene	960	800
Dibenzo(a,h)anthracene	nd	800
Benzo(g,h,i)perylene	860	800
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	dilutedout	23-120
2-Fluorobiphenyl	dilutedout	30-115
p-Terphenyl-d14	dilutedout	18-137

KR059B029768

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185792

Reviewed By HWJ Date 031199 Data File 990304
IA-1 12-14

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE31823 - Sampling Date February 22, 1999	Project Number CHEM-99-0304

Sample Identification	IA-1 GW
Sample Depth, ft (in=")	-
Sample Type	water
Sample Date	02-22-99
Received Date	02-23-99
Report Date	03-10-99
Percent Solids, %w/w	-
HCL Preservation Date	at collection
Analysis Date	03-04-99
Control Number	990304-02

BTEX - Method 8021	ug/L	TDL
Benzene	110	1
Toluene	6,300	1
Ethylbenzene	2,100	1
m/p-Xylene	5,200	1
o-Xylene	7,700	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	91	80-120

Sample Identification	IA-1 GW
Sample Depth, ft (in=")	-
Sample Type	water
Sample Date	02-22-99
Received Date	02-23-99
Report Date	03-10-99
Percent Solids, %w/w	-
Extraction Date	02-29-99
Analysis Date	02-27-99
Control Number	990304-02

PAHs - Method 8270	ug/L	TDL
Naphthalene	1,900	5
2-Methylnaphtalene	630	5
Acenaphthylene	150	5
Acenaphthene	6	5
Fluorene	31	5
Phenanthrene	47	5
Anthracene	11	5
Fluoranthene	6	5
Pyrene	11	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	81	35-114
2-Fluorobiphenyl	83	43-116
p-Terphenyl-d14	87	33-141

KR059B029769

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185793

Reviewed By HWC Date 03/18/99 Data File 990304
IA-1 -

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE31823 - Sampling Date February 22, 1999	Project Number CHEM-99-0304

Sample Identification	IA-8 GW
Sample Depth, ft (in=")	-
Sample Type	water
Sample Date	02-22-99
Received Date	02-23-99
Report Date	03-10-99
Percent Solids, %w/w	-
HCL Preservation Date	at collection
Analysis Date	03-04-99
Control Number	990304-03

BTEX - Method 8021	**ug/L**	**TDL**
Benzene	6	1
Toluene	32	1
Ethylbenzene	14	1
m/p-Xylene	38	1
o-Xylene	27	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	94	80-120

Sample Identification	IA-8 GW
Sample Depth, ft (in=")	-
Sample Type	water
Sample Date	02-22-99
Received Date	02-23-99
Report Date	03-10-99
Percent Solids, %w/w	-
Extraction Date	02-29-99
Analysis Date	02-27-99
Control Number	990304-03

PAHs - Method 8270	**ug/L**	**TDL**
Naphthalene	6	5
2-Methylnaphtalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	8	5
Fluorene	nd	5
Phenanthrene	5	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	88	35-114
2-Fluorobiphenyl	91	43-116
p-Terphenyl-d14	96	33-141

KR059B029770

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185794

Reviewed By HWJ Date 03/19/99 Data File 990304
IA-8 -

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE31823 - Sampling Date February 22, 1999	Project Number CHEM-99-0304

Sample Identification	IA-1		Sample Identification	IA-1	
Sample Depth, ft (in=")	12-14		Sample Depth, ft (in=")	12-14	
Sample Type	soil		Sample Type	soil	
Sample Date	02-22-99		Sample Date	02-22-99	
Received Date	02-23-99		Received Date	02-23-99	
Report Date	03-10-99		Report Date	03-10-99	
Percent Solids, %w/w	84		Percent Solids, %w/w	84	
Preparation Date	02-24-99		Analysis Date, Total CN	03-05-99	
Analysis Date, Start	02-25-99		Analysis Date, Amenable CN	03-05-99	
Analysis Date, End	03-03-99		Analysis Date, Free CN	03-05-99	
Control Number	990304-01		Control Number	990304-01	
TOTAL METALS	**ug/kg**	**TDL**	**INORGANICS**	**ug/kg**	**TDL**
Arsenic - 7060	3,400	100	Cyanide, Total - 9011/9010	2,000	200
Barium, 7081	44,000	1,000	Cyanide, Amenable - 9011/9010	nd	500
Cadmium - 7131	130	50	Cyanide, Free - 9011/D4282	nd	200
Chromium (total) - 7191	12,000	2,500			
Copper - 7211	6,700	1,000			
Lead - 7421	11,000	1,000			
Mercury - 7470	nd	100			
Selenium - 7740	nd	500			
Silver - 7761	nd	500			
Zinc - 7950	37,000	1,000			

KR059B029771

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TMDL
Results Corrected To Dry-Weight Basis

00185795

Reviewed By _____ Date 03/19/99 Data File 990304 IA-1 12-14

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE31823 - Sampling Date February 22, 1999	Project Number CHEM-99-0304

Sample Identification	IA-1 GW		Sample Identification	IA-1 GW	
Sample Depth, ft (in=")	-		Sample Depth, ft (in=")	-	
Sample Type	water		Sample Type	water	
Sample Date	02-22-99		Sample Date	02-22-99	
Received Date	02-23-99		Received Date	02-23-99	
Report Date	03-10-99		Report Date	03-10-99	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
Preparation Date	-		Analysis Date, Total CN	03-05-99	
Analysis Date, Start	02-25-99		Analysis Date, Amenable CN	03-05-99	
Analysis Date, End	03-03-99		Analysis Date, Free CN	03-05-99	
Control Number	990304-02		Control Number	990304-02	
DISSOLVED METALS	**ug/L**	**TDL**	**INORGANICS**	**ug/L**	**TDL**
Arsenic - 7060	18	5.0	Cyanide, Total - 9010	20	5
Barium, 7081	210	200.0	Cyanide, Amenable - 9010	nd	20
Cadmium - 7131	nd	0.5	Cyanide, Free - D4282	nd	10
Chromium (total) - 7191	nd	50.0			
Copper - 7211	nd	25.0			
Lead - 7421	nd	3.0			
Mercury - 7470	nd	0.2			
Selenium - 7740	nd	5.0			
Silver - 7761	nd	0.5			
Zinc - 7950	nd	20.0			

KR059B029772

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185796

Reviewed By [illegible] Date 03/15/99 Data File 990304
IA-1 -

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE31823 - Sampling Date February 22, 1999	Project Number CHEM-99-0304

Sample Identification	IA-8 GW
Sample Depth, ft (in=")	-
Sample Type	water
Sample Date	02-22-99
Received Date	02-23-99
Report Date	03-10-99
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date, Start	02-25-99
Analysis Date, End	03-03-99
Control Number	990304-03

DISSOLVED METALS	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium, 7081	nd	200.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	50.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

Sample Identification	IA-8 GW
Sample Depth, ft (in=")	-
Sample Type	water
Sample Date	02-22-99
Received Date	02-23-99
Report Date	03-10-99
Percent Solids, %w/w	-
Analysis Date, Total CN	03-05-99
Analysis Date, Amenable CN	03-05-99
Analysis Date, Free CN	03-05-99
Control Number	990304-03

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	100	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

KR059B029773

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185797

Reviewed By [illegible] Date 031199 Data File 990304
IA-8 -

INORG

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: 160 31823

SAMPLING TEAM: N. LARABEE

DATE SHIPPED: 2/23/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASSO, SMG - PLYMOUTH

PHONE: 734-454-9160

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 Air Metals	Cyanide	Total	Ammonia		REMARKS
99-0304-1	2/22/99	0930	Soil	JA-1 (12-14)	12-14	2	X	X	X	X				Energy Sample
-2		1045	W	JA-1 GW	14-16	5	X	X	X	X				
-3		1310	W	JA-8 GW	12-15	5	X	X	X	X				

00185798

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RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	2/22/99 18:00	SMG Sample Room
SMG Sample Room	2/23/99 10:10	[signature]

COMMENTS
- MDEQ NOD & Methods
- Contact PAT BARRASSO with Ass. Information
- Energy Needs Methanol Preservative within 4 hrs.

ORIGINAL TO LAB COPY TO CUSTOMER

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE31823 - Sampling Date February 25 - March 01, 1999	Project Number CHEM-99-0348

00185799

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE31823 - Sampling Date February 25 - March 01, 1999	Project Number CHEM-99-0348

Sample Identification	P1	Sample Identification	P1
Sample Depth, ft (in=")	-	Sample Depth, ft (in=")	-
Sample Type	water	Sample Type	water
Sample Date	02-25-99	Sample Date	02-27-99
Received Date	03-01-99	Received Date	03-01-99
Report Date	03-10-99	Report Date	03-10-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
HCL Preservation Date	at collection	Extraction Date	02-29-99
Analysis Date	03-05-99	Analysis Date	03-06-99
Control Number	990348-01	Control Number	990348-02

BTEX - Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	% Recovery	Criteria
4-Bromofluorobenzene	96	80-120

PAHs - Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphtalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	% Recovery	Criteria
Nitrobenzene-d5	86	35-114
2-Fluorobiphenyl	93	43-116
p-Terphenyl-d14	97	33-141

KR059B029776

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185800

Reviewed By HW Date 03/18/99 Data File 990348
P1 -

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# KE31823 - Sampling Date February 25 - March 01, 1999	Project Number CHEM-99-0348

Sample Identification	P1	Sample Identification	P1
Sample Depth, ft (in=")	-	Sample Depth, ft (in=")	-
Sample Type	water	Sample Type	water
Sample Date	03-01-99	Sample Date	02-25-99
Received Date	03-01-99	Received Date	03-01-99
Report Date	03-10-99	Report Date	03-10-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Analysis Date, Total CN	03-05-99
Analysis Date, Start	03-03-99	Analysis Date, Amenable CN	03-05-99
Analysis Date, End	03-09-99	Analysis Date, Free CN	03-05-99
Control Number	990348-03	Control Number	990348-01

DISSOLVED METALS	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium, 7081	nd	200.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	50.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	6	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	90	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

KR059B029777

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185801

Reviewed By MW Date 031199 Data File 990348
P1 -

INORG

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE31823

SAMPLING TEAM: Nick Larabel

DATE SHIPPED: 2/24/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Barcasse, Cam Allman

PHONE: 734-414-4115

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	RBX	DRO	GRAVIMETRIC	General Analysis	10 VOC mix			REMARKS
0348-1	2/25/99	1100	W	P-1	6-12	2	X		X					
2	2/27/99	0800		P-1	6-12	2		X						
3	3/1/99	1130		P-1	6-12	1					X			

00185802

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RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	3/1/99	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MALS or methods
- Contact Pat Barcasse for Additional information

ORIGINAL TO LAB COPY TO CUSTOMER

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: HWVoigt, T-260

Date: May 07, 1999

Subject: KALAMAZOO, FORMER MGP
- SME Project # KE31823
- Sampling Date of February 22, 1999

File Index No.
519917-450-488

CC: GLKelterborn, T-258

CC: Pat Barrese
Soil & Materials Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

On March 30, 1999 the Chemistry Section (CHEM) of Laboratory Services received soil samples collected at KALAMAZOO, FORMER MGP.

The samples were returned to CHEM for the determination of

Total Organic Carbon (TOC)

Analytical results are attached for your review

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Total Organic Carbon (TOC) - Analyzed by Severn Trent Laboratories, Inc (STL).

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME# - KE31823 - Sampling Date Of March 30, 1999	Project Number CHEM-99-0488

Control Number	Sample Identification	Sample Depth	Sample Date	Received Date	TOC mg/kg	Dry Weight Percent	Report Date	Method Number
990488-01	IA-12	5-6	03-29-99	03-30-99	930	91	04-21-99	5310B
990488-02	IA-12	8-9	03-29-99	03-30-99	249,000	47	04-21-99	5310B
990488-03	MW-3	6-7	03-29-99	03-30-99	670	85	04-21-99	5310B
990488-04	MW-3	7-8	03-29-99	03-30-99	115,000	44	04-21-99	5310B
990488-05	P-4	5-6	03-29-99	03-30-99	5,150	87	04-21-99	5310B
990488-06	P-4	6-7	03-29-99	03-30-99	87,100	44	04-21-99	5310B

KR059B029780

NOTE: Analysis Completed By STL - Chicago
Results Corrected To Dry Weight Basis

Reviewed By Lecw Date 042199 Date File 990488

00185804

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N LARABEL

DATE SHIPPED: 3/30/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASE
SMC - PLYMOUTH
PHONE: 731-454-9960

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	TOTAL ORGANIC CARBON (TOC)	REMARKS
0488-1	3/29/99	0915	Soil	IA12 (5-6)	5-6	1	X	
2		0930		IA12 (8-9)	8-9	1	X	
3		1005		MW3 (6-7)	6-7	1	X	
4		1010		MW3 (7-8)	7-8	1	X	
5		1045		P-4 (5-6)	5-6	1	X	
6		1050		P-4 (6-7)	6-7	1	X	

00185805

KR059B029781

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	3/31/99 1200	SMC Sample Room
RELINQUISHED BY: (SIGNATURE) SMC Sample Room	DATE / TIME 3/30/99 1010	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ mass method
- CONTACT PAT BARRASE FOR ADDN INFORMATION

ORIGINAL TO LAB COPY TO CUSTOMER

KR059B029782

APPENDIX G

LABORATORY ANALYTICAL REPORTS FOR SOIL AND GROUNDWATER SAMPLES COLLECTED IN JUNE AND JULY, 1999

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: HWVoigt, T-260

Date: July 15, 1999

Subject: KALAMAZOO, Former MGP
SME Project # KE31823
- Sampling Date Of June 03, 1999
- Sampling Date Of June 03-04, 1999
- Sampling Date Of June 09, 1999
- Sampling Date Of June 16-18, 1999
- Sampling Date Of June 22, 1999
- Sampling Date Of June 24, 1999

File Index Number
519917-450-853
519917-450-854
519917-450-879
519917-450-937
519917-450-943
519917-450-961
519917-450-971

CC: GLKelterborn, P-24-605B

CC: Pat Baresse
Soil & Materials Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

On June 04 to June 24, 1999 the Chemistry Section (CHEM) of Laboratory Services received soil and groundwater samples collected at KALAMAZOO, Former MGP by Soil and Material Engineers (SME)..

The selected samples were returned to CHEM for the determination of

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Michigan 10-Metals
Cyanide - Total , Amenable, Free
Total Organic Carbon (TOC)

00185808

Analytical results are attached for your review.

KR059B029784

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

VOC Sample Collection - VOC samples were collected by DEQ-ORGLAB-11, Methanol Preservation Protocol (Method 5035).

Aromatic Volatile Organics (BTEX) - Method 8021, Halogenated And Aromatic Volatiles By Gas Chromatography Using Electrolytic Conductivity And Photoionization Detectors In Series: Capillary Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Total Metals Preparation - Soils - Method 7000, Microwave Assisted Digestion Of Sediments, Sludges, Soils and Oils. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	SW-846 Method
Arsenic	7060
Barium	7081
Cadmium	7131
Chromium	7191
Copper	7211
Lead	7421
Mercury	7470
Selenium	7740
Silver	7661
Zinc	7950

Cyanide Soil Extraction - Method 9013, Cyanide Extraction Procedure For Solids and Oils. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Total and Amenable - Method 9010, Total and Amenable Cyanide. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Free - Method ASTM-D4282-95, Determination Of Free Cyanide In Water And Wastewater By Micro-diffusion. ASTM

Total Organic Carbon (TOC) - Severn Trent Laboratories.

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME Project # KE31823 - TOC Summary	Project Number Chem-99-KAL-TOC

00185810

KR059B029786

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 17, 1999	Project Number CHEM-99-0937

Sample Identification	MW101D
Sample Depth, ft (in=")	13.5-15
Sample Type	soil
Sample Date	06-17-99
Received Date	06-18-99
Report Date	07-15-99
Percent Solids, %w/w	85
Preservation Date	-
Analysis Date	07-12-99
Control Number	990937-01

OTHERS	**mg/kg**	**MDL**
TOC	2,200	1,620

KR059B029787

NOTES:	MDL = Method Detection Limit, mg/kg (parts-per-million) nd = Parameter Not Detected At MDL Results Reported As Dry-Weight Basis
Analysis Completed By	Severn Trent Laboratories

00185811

Reviewed By HWJ Date 07/15/99

Data File	990937
MW101D	13.5-15

TOC

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 17, 1999	Project Number CHEM-99-0937

Sample Identification	MW101D
Sample Depth, ft (in=")	46-47.5
Sample Type	soil
Sample Date	06-17-99
Received Date	06-18-99
Report Date	07-15-99
Percent Solids, %w/w	88
Preservation Date	-
Analysis Date	07-12-99
Control Number	990937-02

OTHERS	**mg/kg**	**MDL**
TOC	12,000	1,100

KR059B029788

NOTES:	MDL = Method Detection Limit, mg/kg (parts-per-million) nd = Parameter Not Detected At MDL Results Reported As Dry-Weight Basis
Analysis Completed By	Severn Trent Laboratories

00185812

Reviewed By HWJ Date 07/15/99

Data File	990937
MW101D	46-47.5

TOC

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number CHEM-99-0943

Sample Identification	MW104D
Sample Depth, ft (in=")	33.5-35
Sample Type	soil
Sample Date	06-16-99
Received Date	06-18-99
Report Date	07-15-99
Percent Solids, %w/w	84
Preservation Date	-
Analysis Date	07-12-99
Control Number	990943-01

OTHERS	**mg/kg**	**MDL**
TOC	5,900	1,600

KR059B029789

NOTES:	MDL = Method Detection Limit, mg/kg (parts-per-million) nd = Parameter Not Detected At MDL Results Reported As Dry-Weight Basis
Analysis Completed By	Severn Trent Laboratories

00185813

Reviewed By [illegible] Date 07/15/99

Data File	990943
MW104D	33.5-35

TOC

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number CHEM-99-0943

Sample Identification	MW103
Sample Depth, ft (in=")	13.5-15
Sample Type	soil
Sample Date	06-17-99
Received Date	06-18-99
Report Date	07-15-99
Percent Solids, %w/w	82
Preservation Date	-
Analysis Date	07-12-99
Control Number	990943-02

OTHERS	**mg/kg**	**MDL**
TOC	4,100	980

KR059B029790

NOTES:	MDL = Method Detection Limit, mg/kg (parts-per-million) nd = Parameter Not Detected At MDL Results Reported As Dry-Weight Basis
Analysis Completed By	Severn Trent Laboratories

00185814

Reviewed By HWD Date 07/15/99

Data File	990943
MW103	13.5-15

TOC

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number CHEM-99-0943

Sample Identification	MW102
Sample Depth, ft (in=")	13.5-15
Sample Type	soil
Sample Date	06-18-99
Received Date	06-18-99
Report Date	07-15-99
Percent Solids, %w/w	83
Preservation Date	-
Analysis Date	07-12-99
Control Number	990943-03

OTHERS	mg/kg	MDL
TOC	2,900	600

KR059B029791

NOTES:	MDL = Method Detection Limit, mg/kg (parts-per-million) nd = Parameter Not Detected At MDL Results Reported As Dry-Weight Basis
Analysis Completed By	Severn Trent Laboratories

00185815

Reviewed By _____ Date 07/15/99

Data File	990943
MW102	13.5-15

TOC

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number CHEM-99-0943

Sample Identification	P2D
Sample Depth, ft (in=")	36-37.5
Sample Type	soil
Sample Date	06-18-99
Received Date	06-18-99
Report Date	07-15-99
Percent Solids, %w/w	88
Preservation Date	-
Analysis Date	07-12-99
Control Number	990943-06

OTHERS	**mg/kg**	**MDL**
TOC	19,000	1,200

KR059B029792

NOTES:	MDL = Method Detection Limit, mg/kg (parts-per-million) nd = Parameter Not Detected At MDL Results Reported As Dry-Weight Basis
Analysis Completed By	Severn Trent Laboratories

00185816

Reviewed By HWJ Date 07/15/99

Data File	990943
P2D	36-37.5

TOC

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Technical Services Department

LOCATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number CHEM-99-0961

Sample Identification	SP108
Sample Depth, ft (in=")	6-8
Sample Type	soil
Sample Date	06-03-99
Received Date	06-23-99
Report Date	07-15-99
Percent Solids, %w/w	75
Preservation Date	-
Analysis Date	07-12-99
Control Number	990961-01

OTHERS	**mg/kg**	**MDL**
TOC	66,000	26,000

KR059B029793

NOTES:	MDL = Method Detection Limit, mg/kg (parts-per-million) nd = Parameter Not Detected At MDL Results Reported As Dry-Weight Basis
Analysis Completed By	Severn Trent Laboratories

00185817

Reviewed By MW Date 07/15/99

Data File	990961
SP108	6-8

TOC

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

00185818

KR059B029794

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	IA-7A
Sample Depth, ft	11-12
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	80
Preservation Date	06-03-99
Preservation Type	MeOH
Analysis Date	06-14-99
Control Number	990853-01

BTEX, Mehod 8021	ug/kg	TDL
Benzene	160,000	50
Toluene	190,000	50
Ethylbenzene	21,000	50
m/p-Xylene	180,000	100
o-Xylene	80,000	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	maskedout	80-120

Sample Identification	IA-7A
Sample Depth, ft	11-12
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	80
Extraction Date	06-14-99
Analysis Date	07-01-99
Control Number	990853-01

PAHs, Method 8270	ug/kg	TDL
Naphthalene	5,600,000	330
2-Methylnaphthalene	830,000	330
Acenaphthylene	680,000	330
Acenaphthene	330,000	330
Fluorene	660,000	330
Phenanthrene	1,300,000	330
Anthracene	1,200,000	330
Fluoranthene	320,000	330
Pyrene	1,000,000	330
Benzo(a)anthracene	1,300,000	330
Chrysene	1,100,000	330
Benzo(b)fluoranthene	770,000	330
Benzo(k)fluoranthene	610,000	330
Benzo(a)pyrene	720,000	330
Indeno(1,2,3-cd)pyrene	370,000	330
Dibenzo(a,h)anthracene	90,000	330
Benzo(g,h,i)perylene	410,000	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	diluted out	23-120
2-Fluorobiphenyl	diluted out	30-115
p-Terphenyl-d14	diluted out	18-137

KR059B029795

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185819

Reviewed By [illegible] Date 07/15/99

Data File	990853
IA-7A	11-12

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP109
Sample Depth, ft	3-4
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	88
Preservation Date	06-03-99
Preservation Type	MeOH
Analysis Date	06-14-99
Control Number	990853-02

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	93	80-120

Sample Identification	SP109
Sample Depth, ft	3-4
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	88
Extraction Date	06-14-99
Analysis Date	06-29-99
Control Number	990853-02

PAHs, Method 8270	ug/kg	TDL
Naphthalene	1,100	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	450	330
Pyrene	330	330
Benzo(a)anthracene	720	330
Chrysene	650	330
Benzo(b)fluoranthene	670	330
Benzo(k)fluoranthene	510	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	82	23-120
2-Fluorobiphenyl	94	30-115
p-Terphenyl-d14	96	18-137

KR059B029796

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185820

Reviewed By HWJ Date 071599

Data File	990853
SP109	3-4

ORC

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP109 GW	Sample Identification	SP109 GW
Sample Depth, ft	5-8	Sample Depth, ft	5-8
Sample Type	water	Sample Type	water
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-08-99
Preservation Type	HCl	Analysis Date	06-22-99
Analysis Date	06-10-99		
Control Number	990853-03	Control Number	990853-03

BTEX, Mehod 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	98	80-120

PAHs, Method 8270	ug/L	TDL
Naphthalene	5	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	90	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	100	33-141

KR059B029797

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185821

Reviewed By [illegible] Date 071588

Data File	990853
SP109 GW	5-8

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP108 GW
Sample Depth, ft	6-10
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-10-99
Control Number	990853-04

BTEX, Mehod 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	97	80-120

Sample Identification	SP108 GW
Sample Depth, ft	6-10
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-08-99
Analysis Date	06-22-99
Control Number	990853-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	92	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	99	33-141

KR059B029798

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185822

Reviewed By HWJ Date 07/15/99

Data File 990853
SP108 GW 6-10

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP107
Sample Depth, ft	5-7
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	81
Preservation Date	06-03-99
Preservation Type	MeOH
Analysis Date	06-14-99
Control Number	990853-05

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	95	80-120

Sample Identification	SP107
Sample Depth, ft	5-7
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	81
Extraction Date	06-14-99
Analysis Date	06-29-99
Control Number	990853-05

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	85	23-120
2-Fluorobiphenyl	89	30-115
p-Terphenyl-d14	97	18-137

KR059B029799

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185823

Reviewed By HW Date 07/15/99

Data File	990853
SP107	5-7

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP107 GW
Sample Depth, ft	7.5-10
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-10-99
Control Number	990853-06

BTEX, Mehod 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	SP107 GW
Sample Depth, ft	7.5-10
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-08-99
Analysis Date	06-22-99
Control Number	990853-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	410	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	89	35-114
2-Fluorobiphenyl	91	43-116
p-Terphenyl-d14	99	33-141

KR059B029800

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185824

Reviewed By KWJ Date 071599

Data File	990853
SP107 GW	7.5-10

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP106
Sample Depth, ft	0-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Preservation Date	06-03-99
Preservation Type	MeOH
Analysis Date	06-14-99
Control Number	990853-07

BTEX, Mehod 8021	ug/kg	TDL
Benzene	70	50
Toluene	270	50
Ethylbenzene	50	50
m/p-Xylene	360	100
o-Xylene	310	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	95	80-120

Sample Identification	SP106
Sample Depth, ft	0-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Extraction Date	06-14-99
Analysis Date	06-29-99
Control Number	990853-07

PAHs, Method 8270	ug/kg	TDL
Naphthalene	3,500	330
2-Methylnaphthalene	400	330
Acenaphthylene	750	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	3,300	330
Anthracene	1,000	330
Fluoranthene	6,000	330
Pyrene	6,100	330
Benzo(a)anthracene	7,500	330
Chrysene	6,800	330
Benzo(b)fluoranthene	4,800	330
Benzo(k)fluoranthene	3,600	330
Benzo(a)pyrene	6,000	330
Indeno(1,2,3-cd)pyrene	2,800	330
Dibenzo(a,h)anthracene	1,400	330
Benzo(g,h,i)perylene	1,600	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	83	23-120
2-Fluorobiphenyl	86	30-115
p-Terphenyl-d14	92	18-137

KR059B029801

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185825

Reviewed By [illegible] Date 071598

Data File	990853
SP106	0-1

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP106 GW
Sample Depth, ft	5.5-10
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-10-99
Control Number	990853-08

BTEX, Mehod 8021	ug/L	TDL
Benzene	250	1
Toluene	150	1
Ethylbenzene	650	1
m/p-Xylene	660	1
o-Xylene	540	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	91	80-120

Sample Identification	SP106 GW
Sample Depth, ft	5.5-10
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-08-99
Analysis Date	06-22-99
Control Number	990853-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	300	5
2-Methylnaphthalene	16	5
Acenaphthylene	12	5
Acenaphthene	34	5
Fluorene	9	5
Phenanthrene	11	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	90	35-114
2-Fluorobiphenyl	92	43-116
p-Terphenyl-d14	99	33-141

KR059B029802

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185826

Reviewed By HWU Date 07/19/9

Data File	990853
SP106 GW	5.5-10

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP104	**Sample Identification**	SP104
Sample Depth, ft	0-1	Sample Depth, ft	0-1
Sample Type	soil	Sample Type	soil
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	95	Percent Solids, %w/w	95
Preservation Date	06-03-99	Extraction Date	06-14-99
Preservation Type	MeOH	Analysis Date	06-29-99
Analysis Date	06-14-99		
Control Number	990853-09	Control Number	990853-09

BTEX, Mehod 8021	**ug/kg**	**TDL**
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	98	80-120

PAHs, Method 8270	**ug/kg**	**TDL**
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	86	23-120
2-Fluorobiphenyl	94	30-115
p-Terphenyl-d14	96	18-137

KR059B029803

NOTES: TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185827

Reviewed By Hlwd Date 07/15/99

Data File	990853
SP104	0-1

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP104
Sample Depth, ft	4-5
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	83
Preservation Date	no sample
Preservation Type	no sample
Analysis Date	no sample
Control Number	990853-10

BTEX, Mehod 8021	ug/kg	TDL
Benzene	-	50
Toluene	-	50
Ethylbenzene	-	50
m/p-Xylene	-	100
o-Xylene	-	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	-	80-120

Sample Identification	SP104
Sample Depth, ft	4-5
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	83
Extraction Date	06-14-99
Analysis Date	06-29-99
Control Number	990853-10

PAHs, Method 8270	ug/kg	TDL
Naphthalene	1,300	330
2-Methylnaphthalene	490	330
Acenaphthylene	600	330
Acenaphthene	480	330
Fluorene	340	330
Phenanthrene	4,300	330
Anthracene	1,400	330
Fluoranthene	6,500	330
Pyrene	8,800	330
Benzo(a)anthracene	10,000	330
Chrysene	9,000	330
Benzo(b)fluoranthene	6,100	330
Benzo(k)fluoranthene	4,100	330
Benzo(a)pyrene	9,300	330
Indeno(1,2,3-cd)pyrene	2,500	330
Dibenzo(a,h)anthracene	1,000	330
Benzo(g,h,i)perylene	1,700	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	88	23-120
2-Fluorobiphenyl	90	30-115
p-Terphenyl-d14	97	18-137

KR059B029804

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185828

Reviewed By HWD Date 07/17/99

Data File	990853
SP104	4-5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP104 GW
Sample Depth, ft	6.5-10
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-10-99
Control Number	990853-11

BTEX, Mehod 8021	ug/L	TDL
Benzene	360	1
Toluene	3	1
Ethylbenzene	5	1
m/p-Xylene	3	1
o-Xylene	8	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	97	80-120

Sample Identification	SP104 GW
Sample Depth, ft	6.5-10
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-08-99
Analysis Date	06-22-99
Control Number	990853-11

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	98	33-141

KR059B029805

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185829

Reviewed By *Pew* Date 07/15/99

Data File	990853
SP104 GW	6.5-10

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP105
Sample Depth, ft	0-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Preservation Date	06-03-99
Preservation Type	MeOH
Analysis Date	06-14-99
Control Number	990853-12

BTEX, Mehod 8021	ug/kg	TDL
Benzene	69	50
Toluene	260	50
Ethylbenzene	57	50
m/p-Xylene	330	100
o-Xylene	190	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	SP105
Sample Depth, ft	0-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Extraction Date	06-14-99
Analysis Date	06-29-99
Control Number	990853-12

PAHs, Method 8270	ug/kg	TDL
Naphthalene	840	330
2-Methylnaphthalene	330	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	1,200	330
Anthracene	480	330
Fluoranthene	1,800	330
Pyrene	2,500	330
Benzo(a)anthracene	2,900	330
Chrysene	2,600	330
Benzo(b)fluoranthene	2,100	330
Benzo(k)fluoranthene	1,700	330
Benzo(a)pyrene	1,800	330
Indeno(1,2,3-cd)pyrene	990	330
Dibenzo(a,h)anthracene	360	330
Benzo(g,h,i)perylene	610	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	86	23-120
2-Fluorobiphenyl	89	30-115
p-Terphenyl-d14	93	18-137

KR059B029806

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185830

Reviewed By [illegible] Date 07/08/99

Data File	990853
SP105	0-1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP105 GW
Sample Depth, ft	5-10
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-10-99
Control Number	990853-13

BTEX, Mehod 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	98	80-120

Sample Identification	SP105 GW
Sample Depth, ft	5-10
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-08-99
Analysis Date	06-22-99
Control Number	990853-13

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	92	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	97	33-141

KR059B029807

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185831

Reviewed By [illegible] Date 07/15/99

Data File	990853
SP105 GW	5-10

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP102
Sample Depth, ft	0-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	93
Preservation Date	06-03-99
Preservation Type	MeOH
Analysis Date	06-14-99
Control Number	990853-14

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	120	50
Ethylbenzene	50	50
m/p-Xylene	170	100
o-Xylene	140	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	SP102
Sample Depth, ft	0-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	93
Extraction Date	06-14-99
Analysis Date	06-29-99
Control Number	990853-14

PAHs, Method 8270	ug/kg	TDL
Naphthalene	1,600	330
2-Methylnaphthalene	410	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	340	330
Anthracene	nd	330
Fluoranthene	360	330
Pyrene	350	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	83	23-120
2-Fluorobiphenyl	86	30-115
p-Terphenyl-d14	91	18-137

KR059B029808

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185832

Reviewed By [signature] Date 07/15/99

Data File	990853
SP102	0-1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP102
Sample Depth, ft	2-3
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Preservation Date	06-03-99
Preservation Type	MeOH
Analysis Date	06-14-99
Control Number	990853-15

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	97	80-120

Sample Identification	SP102
Sample Depth, ft	2-3
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Extraction Date	06-14-99
Analysis Date	06-29-99
Control Number	990853-15

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	23-120
2-Fluorobiphenyl	93	30-115
p-Terphenyl-d14	96	18-137

KR059B029809

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185833

Reviewed By Fleur Date 07/15/99

Data File	990853
SP102	2-3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO. Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP101
Sample Depth, ft	0.5-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	96
Preservation Date	06-03-99
Preservation Type	MeOH
Analysis Date	06-14-99
Control Number	990853-16

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	98	80-120

Sample Identification	SP101
Sample Depth, ft	0.5-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	96
Extraction Date	06-14-99
Analysis Date	06-29-99
Control Number	990853-16

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	83	23-120
2-Fluorobiphenyl	90	30-115
p-Terphenyl-d14	95	18-137

KR059B029810

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185834

Reviewed By [illegible] Date 07/15/99

Data File	990853
SP101	0.5-1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP103
Sample Depth, ft	0.5-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	85
Preservation Date	06-03-99
Preservation Type	MeOH
Analysis Date	06-14-99
Control Number	990853-17

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	70	50
Ethylbenzene	150	50
m/p-Xylene	340	100
o-Xylene	70	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	SP103
Sample Depth, ft	0.5-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	85
Extraction Date	06-14-99
Analysis Date	06-29-99
Control Number	990853-17

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	86	23-120
2-Fluorobiphenyl	87	30-115
p-Terphenyl-d14	94	18-137

KR059B029811

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185835

Reviewed By Hlw Date 071599

Data File	990853
SP103	0.5-1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP103
Sample Depth, ft	4-5
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	91
Preservation Date	06-03-99
Preservation Type	MeOH
Analysis Date	06-14-99
Control Number	990853-18

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	98	80-120

Sample Identification	SP103
Sample Depth, ft	4-5
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	91
Extraction Date	06-14-99
Analysis Date	06-29-99
Control Number	990853-18

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	84	23-120
2-Fluorobiphenyl	91	30-115
p-Terphenyl-d14	97	18-137

KR059B029812

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185836

Reviewed By Hlw Date 071595

Data File	990853
SP103	4-5

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP103	Sample Identification	SP103
Sample Depth, ft	7-8	Sample Depth, ft	7-8
Sample Type	soil	Sample Type	soil
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	88	Percent Solids, %w/w	88
Preservation Date	06-03-99	Extraction Date	06-14-99
Preservation Type	MeOH	Analysis Date	06-29-99
Analysis Date	06-14-99		
Control Number	990853-19	Control Number	990853-19

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	98	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	86	23-120
2-Fluorobiphenyl	89	30-115
p-Terphenyl-d14	98	18-137

KR059B029813

NOTES: TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185837

Reviewed By HWU Date 07/09/99

Data File	990853
SP103	7-8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	IA-7A	Sample Identification	IA-7A
Sample Depth, ft	11-12	Sample Depth, ft	11-12
Sample Type	soil	Sample Type	soil
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	80	Percent Solids, %w/w	80
Preparation Date	06-15-99	Extraction Date	06-24-99
Analysis Date, Start	06-17-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-02-99
Control Number	990853-01	Control Number	990853-01

METALS, Total	ug/kg	TDL
Arsenic - 7060	9,700	100
Barium, 7081	51,000	1,000
Cadmium - 7131	190	50
Chromium (total) - 7191	6,400	500
Copper - 7211	6,600	1,000
Lead - 7421	81,000	1,000
Mercury - 7470	260	100
Selenium - 7740	700	200
Silver - 7761	nd	500
Zinc - 7950	22,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	76,000	200
Cyanide, Amenable - 9010/9013	1,200	500
Cyanide, Free - D4282/9013	500	400

KR059B029814

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185838

Reviewed By HW Date 07/15/99

Data File	990853
IA-7A	11-12

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP109	**Sample Identification**	SP109
Sample Depth, ft	3-4	Sample Depth, ft	3-4
Sample Type	soil	Sample Type	soil
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	88	Percent Solids, %w/w	88
Preparation Date	06-15-99	Extraction Date	06-24-99
Analysis Date, Start	06-17-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-02-99
Control Number	990853-02	Control Number	990853-02

METALS, Total	**ug/kg**	**TDL**
Arsenic - 7060	16,000	100
Barium, 7081	190,000	1,000
Cadmium - 7131	510	50
Chromium (total) - 7191	16,000	500
Copper - 7211	96,000	1,000
Lead - 7421	270,000	1,000
Mercury - 7470	1,200	100
Selenium - 7740	630	200
Silver - 7761	420	500
Zinc - 7950	250,000	1,000

INORGANICS	**ug/kg**	**TDL**
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029815

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185839

Reviewed By [illegible] Date 07 15 99

Data File	990853
SP109	3-4

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP109 GW
Sample Depth, ft	5-8
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preparation Date	
Analysis Date, Start	06-17-99
Analysis Date, End	07-12-99
Control Number	990853-03

Sample Identification	SP109 GW
Sample Depth, ft	5-8
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Total	07-02-99
Analysis Date, Amenable	07-02-99
Analysis Date, Free	07-02-99
Control Number	990853-03

METALS, Dissolved	**ug/L**	**TDL**
Arsenic - 7060	nd	5.0
Barium, 7081	100	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	45	20.0

INORGANICS	**ug/L**	**TDL**
Cyanide, Total - 9010/9013	nd	5
Cyanide, Amenable - 9010/9013	nd	20
Cyanide, Free - D4282/9013	nd	10

KR059B029816

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185840

Reviewed By [illegible] Date 07-15-99

Data File
SP109 G

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP108 GW
Sample Depth, ft	6-10
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preparation Date	
Analysis Date, Start	06-17-99
Analysis Date, End	07-12-99
Control Number	990853-04

Sample Identification	SP108 GW
Sample Depth, ft	6-10
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Total	07-02-99
Analysis Date, Amenable	07-02-99
Analysis Date, Free	07-02-99
Control Number	990853-04

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	12	5.0
Barium, 7081	300	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	3	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	32	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010/9013	16	5
Cyanide, Amenable - 9010/9013	nd	20
Cyanide, Free - D4282/9013	nd	10

KR059B029817

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185841

Reviewed By HWW Date 071595

Data File	990853
SP108 GW 6-10	

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP107	Sample Identification	SP107
Sample Depth, ft	5-7	Sample Depth, ft	5-7
Sample Type	soil	Sample Type	soil
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	81	Percent Solids, %w/w	81
Preparation Date	06-15-99	Extraction Date	06-24-99
Analysis Date, Start	06-17-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-02-99
Control Number	990853-05	Control Number	990853-05

METALS, Total	ug/kg	TDL
Arsenic - 7060	8,200	100
Barium, 7081	60,000	1,000
Cadmium - 7131	150	50
Chromium (total) - 7191	16,000	500
Copper - 7211	14,000	1,000
Lead - 7421	12,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	38,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029818

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185842

Reviewed By [illegible] Date 07/15/99

Data File	990853
SP107	5-7

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP107 GW	Sample Identification	SP107 GW
Sample Depth, ft	7.5-10	Sample Depth, ft	7.5-10
Sample Type	water	Sample Type	water
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date		Extraction Date	-
Analysis Date, Start	06-17-99	Analysis Date, Total	07-02-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-02-99
		Analysis Date, Free	07-02-99
Control Number	990853-06	Control Number	990853-06

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium, 7081	240	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010/9013	nd	5
Cyanide, Amenable - 9010/9013	nd	20
Cyanide, Free - D4282/9013	nd	10

KR059B029819

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185843

Reviewed By [illegible] Date 07/15/99

Data File	990853
SP107 GW	7.5-10

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP106
Sample Depth, ft	0-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Preparation Date	06-15-99
Analysis Date, Start	06-17-99
Analysis Date, End	07-12-99
Control Number	990853-07

METALS, Total	ug/kg	TDL
Arsenic - 7060	8,800	100
Barium, 7081	57,000	1,000
Cadmium - 7131	180	50
Chromium (total) - 7191	7,300	500
Copper - 7211	19,000	1,000
Lead - 7421	81,000	1,000
Mercury - 7470	390	100
Selenium - 7740	480	200
Silver - 7761	nd	500
Zinc - 7950	60,000	1,000

Sample Identification	SP106
Sample Depth, ft	0-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Extraction Date	06-24-99
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-02-99
Control Number	990853-07

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	3,000	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029820

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185844

Reviewed By [illegible] Date 07/15/99

Data File	990853
SP106	0-1

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP106 GW	**Sample Identification**	SP106 GW
Sample Depth, ft	5.5-10	Sample Depth, ft	5.5-10
Sample Type	water	Sample Type	water
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date		Extraction Date	-
Analysis Date, Start	06-17-99	Analysis Date, Total	07-02-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-02-99
		Analysis Date, Free	07-02-99
Control Number	990853-08	Control Number	990853-08

METALS, Dissolved	**ug/L**	**TDL**
Arsenic - 7060	nd	5.0
Barium, 7081	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	**ug/L**	**TDL**
Cyanide, Total - 9010/9013	160	5
Cyanide, Amenable - 9010/9013	60	20
Cyanide, Free - D4282/9013	nd	10

KR059B029821

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185845

Reviewed By [illegible] Date 071599

Data File	990853
SP106 GW	5.5-10

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP104	**Sample Identification**	SP104
Sample Depth, ft	0-1	Sample Depth, ft	0-1
Sample Type	soil	Sample Type	soil
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	95	Percent Solids, %w/w	95
Preparation Date	06-15-99	Extraction Date	06-24-99
Analysis Date, Start	06-17-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-02-99
Control Number	990853-09	Control Number	990853-09

METALS, Total	**ug/kg**	**TDL**
Arsenic - 7060	10,000	100
Barium, 7081	36,000	1,000
Cadmium - 7131	150	50
Chromium (total) - 7191	9,900	500
Copper - 7211	13,000	1,000
Lead - 7421	75,000	1,000
Mercury - 7470	100	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	46,000	1,000

INORGANICS	**ug/kg**	**TDL**
Cyanide, Total - 9010/9013	4,700	200
Cyanide, Amenable - 9010/9013	4,500	500
Cyanide, Free - D4282/9013	nd	400

KR059B029822

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185846

Reviewed By _____ Date 07/15/99

Data File	990853
SP104	0-1

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP104	Sample Identification	SP104
Sample Depth, ft	4-5	Sample Depth, ft	4-5
Sample Type	soil	Sample Type	soil
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	83	Percent Solids, %w/w	83
Preparation Date	not requested	Extraction Date	06-24-99
Analysis Date, Start	not requested	Analysis Date, Total	07-09-99
Analysis Date, End	not requested	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-02-99
Control Number	990853-10	Control Number	990853-10

METALS, Dissolved	ug/kg	TDL
Arsenic - 7060	-	100
Barium, 7081	-	1,000
Cadmium - 7131	-	50
Chromium (total) - 7191	-	500
Copper - 7211	-	1,000
Lead - 7421	-	1,000
Mercury - 7470	-	100
Selenium - 7740	-	200
Silver - 7761	-	500
Zinc - 7950	-	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	4,000	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029823

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185847

Reviewed By [illegible] Date 07/15/99

Data File	990853
SP104	4-5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP104 GW
Sample Depth, ft	6.5-10
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preparation Date	
Analysis Date, Start	06-17-99
Analysis Date, End	07-12-99
Control Number	990853-11

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium, 7081	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

Sample Identification	SP104 GW
Sample Depth, ft	6.5-10
Sample Type	water
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Total	07-02-99
Analysis Date, Amenable	07-02-99
Analysis Date, Free	07-02-99
Control Number	990853-11

INORGANICS	ug/L	TDL
Cyanide, Total - 9010/9013	170	5
Cyanide, Amenable - 9010/9013	nd	20
Cyanide, Free - D4282/9013	nd	10

KR059B029824

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185848

Reviewed By Lleod Date 07/15/99

Data File	990853
SP104 GW	6.5-10

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP105	Sample Identification	SP105
Sample Depth, ft	0-1	Sample Depth, ft	0-1
Sample Type	soil	Sample Type	soil
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	90	Percent Solids, %w/w	90
Preparation Date	06-15-99	Extraction Date	06-24-99
Analysis Date, Start	06-17-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-02-99
Control Number	990853-12	Control Number	990853-12

METALS, Total	ug/kg	TDL
Arsenic - 7060	11,000	100
Barium, 7081	50,000	1,000
Cadmium - 7131	200	50
Chromium (total) - 7191	8,100	500
Copper - 7211	15,000	1,000
Lead - 7421	59,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	66,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	2,200	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029825

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185849

Reviewed By [illegible] Date 071599

Data File	990853
SP105	0-1

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP105 GW	Sample Identification	SP105 GW
Sample Depth, ft	5-10	Sample Depth, ft	5-10
Sample Type	water	Sample Type	water
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date		Extraction Date	-
Analysis Date, Start	06-17-99	Analysis Date, Total	07-02-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-02-99
		Analysis Date, Free	07-02-99
Control Number	990853-13	Control Number	990853-13

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium, 7081	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010/9013	190	5
Cyanide, Amenable - 9010/9013	38	20
Cyanide, Free - D4282/9013	nd	10

KR059B029826

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185850

Reviewed By [signature] Date 071595

Data File	990853
SP105 GW	5-10

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP102	Sample Identification	SP102
Sample Depth, ft	0-1	Sample Depth, ft	0-1
Sample Type	soil	Sample Type	soil
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	93	Percent Solids, %w/w	93
Preparation Date	06-15-99	Extraction Date	06-24-99
Analysis Date, Start	06-17-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-02-99
Control Number	990853-14	Control Number	990853-14

METALS, Total	ug/kg	TDL
Arsenic - 7060	15,000	100
Barium, 7081	38,000	1,000
Cadmium - 7131	50	50
Chromium (total) - 7191	8,400	500
Copper - 7211	13,000	1,000
Lead - 7421	34,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	42,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029827

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185851

Reviewed By [signature] Date 07/17/99

Data File	990853
SP102	0-1

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP102
Sample Depth, ft	2-3
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Preparation Date	06-15-99
Analysis Date, Start	06-17-99
Analysis Date, End	07-12-99
Control Number	990853-15

METALS, Total	ug/kg	TDL
Arsenic - 7060	41,000	100
Barium, 7081	13,000	1,000
Cadmium - 7131	370	50
Chromium (total) - 7191	13,000	500
Copper - 7211	50,000	1,000
Lead - 7421	41,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	96,000	1,000

Sample Identification	SP102
Sample Depth, ft	2-3
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Extraction Date	06-24-99
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-02-99
Control Number	990853-15

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029828

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185852

Reviewed By [signature] Date 07/15/99

Data File	990853
SP102	2-3

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP101
Sample Depth, ft	0.5-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	96
Preparation Date	06-15-99
Analysis Date, Start	06-17-99
Analysis Date, End	07-12-99
Control Number	990853-16

METALS, Total	ug/kg	TDL
Arsenic - 7060	7,500	100
Barium, 7081	18,000	1,000
Cadmium - 7131	71	50
Chromium (total) - 7191	4,100	500
Copper - 7211	7,100	1,000
Lead - 7421	13,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	26,000	1,000

Sample Identification	SP101
Sample Depth, ft	0.5-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	96
Extraction Date	06-24-99
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-02-99
Control Number	990853-16

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029829

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185853

Reviewed By [signature] Date 071599

Data File	990853
SP101	0.5-1

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP103
Sample Depth, ft	0.5-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	85
Preparation Date	06-15-99
Analysis Date, Start	06-17-99
Analysis Date, End	07-12-99
Control Number	990853-17

Sample Identification	SP103
Sample Depth, ft	0.5-1
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	85
Extraction Date	06-24-99
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-02-99
Control Number	990853-17

METALS, Total	ug/kg	TDL
Arsenic - 7060	5,700	100
Barium, 7081	43,000	1,000
Cadmium - 7131	81	50
Chromium (total) - 7191	4,800	500
Copper - 7211	6,500	1,000
Lead - 7421	7,800	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	20,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	430	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029830

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185854

Reviewed By Ken Date 07/19/99

Data File	990853
SP103	0.5-1

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP103	Sample Identification	SP103
Sample Depth, ft	4-5	Sample Depth, ft	4-5
Sample Type	soil	Sample Type	soil
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	91	Percent Solids, %w/w	91
Preparation Date	06-15-99	Extraction Date	06-24-99
Analysis Date, Start	06-17-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-02-99
Control Number	990853-18	Control Number	990853-18

METALS, Total	ug/kg	TDL
Arsenic - 7060	4,700	100
Barium, 7081	14,000	1,000
Cadmium - 7131	69	50
Chromium (total) - 7191	2,500	500
Copper - 7211	4,700	1,000
Lead - 7421	4,200	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	12,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029831

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185855

Reviewed By [illegible] Date 07/15/95

Data File	990853
SP103	4-5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03, 1999	Project Number Chem-99-0853

Sample Identification	SP103
Sample Depth, ft	7-8
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	88
Preparation Date	06-15-99
Analysis Date, Start	06-17-99
Analysis Date, End	07-12-99
Control Number	990853-19

METALS, Total	ug/kg	TDL
Arsenic - 7060	5,100	100
Barium, 7081	14,000	1,000
Cadmium - 7131	nd	50
Chromium (total) - 7191	3,300	500
Copper - 7211	4,200	1,000
Lead - 7421	4,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	11,000	1,000

Sample Identification	SP103
Sample Depth, ft	7-8
Sample Type	soil
Sample Date	06-03-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	88
Extraction Date	06-24-99
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-02-99
Control Number	990853-19

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	4,800	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029832

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185856

Reviewed By [illegible] Date 07/15/99

Data File	990853
SP103	7-8

INORG

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. Urbaske

DATE SHIPPED: 6/4/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 2

SEND REPORT TO: Pat Barrasse, SMS - Plymouth

PHONE: 734-454-9910

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAHs	10 mt mt	CYANIDE	TPH	Arsenic		REMARKS
	6/3/99	1625	GW	SP105 GW	5-10	5	X	X	X	X				
		1810	Soil	SP102 (0-1)	0-1	3	X	X	X	X				
		1820		SP102 (2-3)	2-3	3	X	Hold						Hold for [illegible]
		1848		SP101 (0.5T)	0.5T	3	X	X	X	X				
		1920		SP103 (0.5-1)	0.5-1	3	X	X	X	X				
		1925		SP103 (4-5)	4-5	3	X	X	X	X				Hold for [illegible]
		1930		SP103 (7-8)	7-8	3	X	X	X	X				Hold for [illegible]

00185857

KR059B029833

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/3/99 2000	[signature]
[signature]	6-4-99 09:30	[signature]

COMMENTS: See Page #1

ORIGINAL TO LAB COPY TO CUSTOMER

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CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. LaBarbel

DATE SHIPPED: 6/4/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 2

SEND REPORT TO: Pat Breeze, SME - Plymouth

PHONE: 734-454-7200

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 Mst Metals	CYANIDE	TOTAL & Amenable			REMARKS
	6/3/99	0930 Soil	Soil	IA-7 A	11-12	3	X	X	X	X				
		1015	↓	SP109 (3-4)	3-4	3	X	X	X	X				
		1025	GW	SP109 GW	5-8	5	X	X	X	X				
		1120	GW	SP108 GW	6-10	5	X	X	X	X				
		1210	Soil	SP107 (5-7)	5-7	3	X	X	X	X				
		1245	GW	SP107 GW	7.5-10	5	X	X	X	X				
		1350	Soil	SP106 (0-1)	0-1	3	X	X	X	X				
		~~1400~~ 1420	GW	SP106 GW	5.5-10	5	X	X	X	X				KR059B029834
		1450	Soil	SP104 (0-1)	0-1	3	X	X	X	X				
		1455	↓	SP104 (4-5)	4-5	1		X						4 PNAs ONLY
		1515	GW	SP104 GW	6.5-10	5	X	X	X	X				
	↓	1600	Soil	SP105 (0-1)	0-1	3	X	X	X	X				

00185858

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[signature]	6/3/99 2000	[signature]
[signature]	6-4-99 09:30	[signature]

COMMENTS
- MDEQ Methods + MDL's
- Excess Acid 48 hr methanol Prep.
- Contact Pat B w/ questions

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KG 31823

SAMPLING TEAM: N. LARSEN

DATE SHIPPED: 6/4/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 2

SEND REPORT TO: Pat Bassett, SME - Plymouth

PHONE: 734-454-990

ANALYSIS REQUESTED

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAHs	10 mt mtbt	CYANIDE	PAHs	Amesb		REMARKS
0853-13	6/3/99	1625	GW	SP105 GW	5-10	5	X	X	X	X				
14		1810	Soil	SP102 (0-1)	0-1	3	X	X	X	X				
15		1820		SP102 (2-3)	2-3	3	X	~~X~~	~~X~~	X				~~Hold~~ Hold Remove 6/07/99
16		1848		SP101 (0.5T)	0.5T	3	X	X	X	X				
17		1920		SP103 (0.5-1)	0.5-1	3	X	X	X	X				
18		1925		SP103 (4-5)	4-5	3								Hold
19		1930		SP103 (7-8)	7-8	3	X	X	X	X				~~Hold~~ Hold Remove 6/07/99

00185859

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/3/99 2:00	SME Sample Room
RELINQUISHED BY: (SIGNATURE) SME Sample Room	DATE / TIME 6-4-99 09:30	RECEIVED BY: (SIGNATURE) [signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS: See Page #1

KR059B029835

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823

SAMPLING TEAM: N. LaBabel

DATE SHIPPED: 6/4/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 2

SEND REPORT TO: Pat Barcale, SMG - Plymouth

PHONE: 734-454-7900

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 MT Metals	Cyanide	TCNA & Amnia			REMARKS
0853-1	6/3/99	~~Soil~~ 1130	Soil	IA57 A	11-12	3	X	X	X	X				
2		1015	↓	SP109 (3-4)	3-4	3	X	X	X	X				
3		1025	GW	SP109 GW	5-8	5	X	X	X	X				
4		1120	GW	SP108 GW	6-10	5	X	X	X	X				
5		1210	Soil	SP107 (5-7)	5-7	3	X	X	X	X				
6		1245	GW	SP107 GW	7.5-10	5	X	X	X	X				
7		1350	Soil	SP106 (0-1)	0-1	3	X	X	X	X				
8		~~1400~~ 1420	GW	SP106 GW	5.5-10	5	X	X	X	X				
9		1450	Soil	SP104 (0-1)	0-1	3	X	X	X	X				
10		1455	↓	SP104 (4-5)	4-5	1		X						
11		1515	GW	SP104 GW	6.5-10	5	X	X	X	X				KR059B029836
12	↓	1600	Soil	SP105 (0-1)	0-1	3	X	X	X	X				

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/3/99 2000	[signature]
[signature]	6-4-99 09:30	[signature]

00185860

COMMENTS
- MDEQ Methods + MDL
- Lanes need 48 hr methanol Prep.
- Consider PM B w/ Guidance

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

00185861

KR059B029837

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP110	**Sample Identification**	SP110
Sample Depth, ft	0-0.5	Sample Depth, ft	0-0.5
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	91	Percent Solids, %w/w	91
Preservation Date	06-04-99	Extraction Date	06-10-99
Preservation Type	MeOH	Analysis Date	06-26-99
Analysis Date	06-07-99		
Control Number	990854-01	Control Number	990854-01

BTEX, Mehod 8021	**ug/kg**	**TDL**
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	98	80-120

PAHs, Method 8270	**ug/kg**	**TDL**
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	710	330
Anthracene	530	330
Fluoranthene	2,800	330
Pyrene	1,700	330
Benzo(a)anthracene	740	330
Chrysene	760	330
Benzo(b)fluoranthene	690	330
Benzo(k)fluoranthene	510	330
Benzo(a)pyrene	1,100	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	84	23-120
2-Fluorobiphenyl	87	30-115
p-Terphenyl-d14	96	18-137

KR059B029838

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185862

Reviewed By [illegible] Date 07/05/99

Data File	990854
SP110	0-0.5

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP111
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	93
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-07-99
Control Number	990854-02

BTEX, Mehod 8021	ug/kg	TDL
Benzene	88	50
Toluene	50	50
Ethylbenzene	nd	50
m/p-Xylene	100	100
o-Xylene	64	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	98	80-120

Sample Identification	SP111
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	93
Extraction Date	06-10-99
Analysis Date	06-26-99
Control Number	990854-02

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	590	330
Anthracene	nd	330
Fluoranthene	880	330
Pyrene	620	330
Benzo(a)anthracene	1,200	330
Chrysene	1,100	330
Benzo(b)fluoranthene	990	330
Benzo(k)fluoranthene	790	330
Benzo(a)pyrene	810	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	81	23-120
2-Fluorobiphenyl	88	30-115
p-Terphenyl-d14	95	18-137

KR059B029839

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185863

Reviewed By Hwd Date 07/15/99

Data File	990854
SP111	0-0.5

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP112
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	93
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-07-99
Control Number	990854-03

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	97	80-120

Sample Identification	SP112
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	93
Extraction Date	06-10-99
Analysis Date	06-26-99
Control Number	990854-03

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	380	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	2,500	330
Anthracene	720	330
Fluoranthene	8,000	330
Pyrene	4,800	330
Benzo(a)anthracene	4,400	330
Chrysene	4,100	330
Benzo(b)fluoranthene	3,800	330
Benzo(k)fluoranthene	3,000	330
Benzo(a)pyrene	2,600	330
Indeno(1,2,3-cd)pyrene	1,000	330
Dibenzo(a,h)anthracene	590	330
Benzo(g,h,i)perylene	1,100	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	83	23-120
2-Fluorobiphenyl	85	30-115
p-Terphenyl-d14	91	18-137

KR059B029840

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185864

Reviewed By Hwd Date 07/19/99

Data File	990854
SP112	0-0.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP112
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-07-99
Control Number	990854-04

BTEX, Mehod 8021	**ug/kg**	**TDL**
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	SP112
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Extraction Date	06-10-99
Analysis Date	06-26-99
Control Number	990854-04

PAHs, Method 8270	**ug/kg**	**TDL**
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	400	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	1,400	330
Anthracene	470	330
Fluoranthene	2,800	330
Pyrene	2,400	330
Benzo(a)anthracene	2,500	330
Chrysene	2,400	330
Benzo(b)fluoranthene	1,400	330
Benzo(k)fluoranthene	900	330
Benzo(a)pyrene	1,200	330
Indeno(1,2,3-cd)pyrene	670	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	710	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	81	23-120
2-Fluorobiphenyl	84	30-115
p-Terphenyl-d14	90	18-137

KR059B029841

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185865

Reviewed By *Pleu* Date 07/09/99

Data File	990854
SP112	2-4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP113
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	94
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-07-99
Control Number	990854-05

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	99	80-120

Sample Identification	SP113
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	94
Extraction Date	06-10-99
Analysis Date	06-26-99
Control Number	990854-05

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	85	23-120
2-Fluorobiphenyl	91	30-115
p-Terphenyl-d14	98	18-137

KR059B029842

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185866

Reviewed By HWJ Date 07-15-99

Data File	990854
SP113	0-0.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP113
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	87
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-07-99
Control Number	990854-06

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	95	80-120

Sample Identification	SP113
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	87
Extraction Date	06-10-99
Analysis Date	06-26-99
Control Number	990854-06

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	910	330
Anthracene	nd	330
Fluoranthene	1,600	330
Pyrene	1,200	330
Benzo(a)anthracene	1,100	330
Chrysene	990	330
Benzo(b)fluoranthene	850	330
Benzo(k)fluoranthene	680	330
Benzo(a)pyrene	500	330
Indeno(1,2,3-cd)pyrene	410	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	400	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	81	23-120
2-Fluorobiphenyl	84	30-115
p-Terphenyl-d14	87	18-137

KR059B029843

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185867

Reviewed By HWJ Date 07/15/99

Data File	990854
SP113	2-4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP114
Sample Depth, ft	0-05
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	95
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-07-99
Control Number	990854-07

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	97	80-120

Sample Identification	SP114
Sample Depth, ft	0-05
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	95
Extraction Date	06-10-99
Analysis Date	06-26-99
Control Number	990854-07

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	87	23-120
2-Fluorobiphenyl	93	30-115
p-Terphenyl-d14	100	18-137

KR059B029844

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185868

Reviewed By Hud Date 07/15/99

Data File	990854
SP114	0-05

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP114
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	85
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-07-99
Control Number	990854-08

BTEX, Mehod 8021	ug/kg	TDL
Benzene	50	50
Toluene	240	50
Ethylbenzene	50	50
m/p-Xylene	210	100
o-Xylene	150	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	96	80-120

Sample Identification	SP114
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	85
Extraction Date	06-10-99
Analysis Date	06-26-99
Control Number	990854-08

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	370	330
Anthracene	nd	330
Fluoranthene	810	330
Pyrene	560	330
Benzo(a)anthracene	550	330
Chrysene	500	330
Benzo(b)fluoranthene	510	330
Benzo(k)fluoranthene	490	330
Benzo(a)pyrene	440	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	83	23-120
2-Fluorobiphenyl	88	30-115
p-Terphenyl-d14	93	18-137

KR059B029845

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185869

Reviewed By HW Date 071099

Data File	990854
SP114	2-4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP115
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	95
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-07-99
Control Number	990854-09

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	98	80-120

Sample Identification	SP115
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	95
Extraction Date	06-10-99
Analysis Date	06-26-99
Control Number	990854-09

PAHs, Method 8270	ug/kg	TDL
Naphthalene	510	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	1,000	330
Anthracene	900	330
Fluoranthene	2,100	330
Pyrene	1,400	330
Benzo(a)anthracene	1,500	330
Chrysene	1,600	330
Benzo(b)fluoranthene	1,100	330
Benzo(k)fluoranthene	1,000	330
Benzo(a)pyrene	1,500	330
Indeno(1,2,3-cd)pyrene	510	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	400	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	80	23-120
2-Fluorobiphenyl	85	30-115
p-Terphenyl-d14	91	18-137

KR059B029846

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185870

Reviewed By [illegible] Date 07/15/99

Data File	990854
SP115	0-0.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP115
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	87
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-07-99
Control Number	990854-10

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	99	80-120

Sample Identification	SP115
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	87
Extraction Date	06-10-99
Analysis Date	06-26-99
Control Number	990854-10

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	500	330
Anthracene	420	330
Fluoranthene	400	330
Pyrene	600	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	85	23-120
2-Fluorobiphenyl	90	30-115
p-Terphenyl-d14	96	18-137

KR059B029847

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185871

Reviewed By Hew Date 07/17/99

Data File	990854
SP115	2-4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP116
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	89
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-07-99
Control Number	990854-11

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	94	80-120

Sample Identification	SP116
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	89
Extraction Date	06-10-99
Analysis Date	06-26-99
Control Number	990854-11

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	480	330
Anthracene	nd	330
Fluoranthene	1,000	330
Pyrene	750	330
Benzo(a)anthracene	880	330
Chrysene	750	330
Benzo(b)fluoranthene	690	330
Benzo(k)fluoranthene	500	330
Benzo(a)pyrene	1,000	330
Indeno(1,2,3-cd)pyrene	410	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	350	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	83	23-120
2-Fluorobiphenyl	90	30-115
p-Terphenyl-d14	96	18-137

KR059B029848

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185872

Reviewed By HWJ Date 07/15/99

Data File	990854
SP116	0-0.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP117	Sample Identification	SP117
Sample Depth, ft	0-0.5	Sample Depth, ft	0-0.5
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	96	Percent Solids, %w/w	96
Preservation Date	06-04-99	Extraction Date	06-10-99
Preservation Type	MeOH	Analysis Date	06-26-99
Analysis Date	06-07-99		
Control Number	990854-12	Control Number	07-15-99

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	97	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	500	330
Pyrene	340	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	350	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	84	23-120
2-Fluorobiphenyl	91	30-115
p-Terphenyl-d14	96	18-137

KR059B029849

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185873

Reviewed By Hew Date 07/09/99

Data File	990854
SP117	0-0.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP117
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	83
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-07-99
Control Number	990854-13

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	SP117
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	83
Extraction Date	06-10-99
Analysis Date	06-26-99
Control Number	990854-13

PAHs, Method 8270	ug/kg	TDL
Naphthalene	730	330
2-Methylnaphthalene	350	330
Acenaphthylene	4,500	330
Acenaphthene	410	330
Fluorene	500	330
Phenanthrene	2,500	330
Anthracene	5,000	330
Fluoranthene	6,800	330
Pyrene	14,000	330
Benzo(a)anthracene	13,000	330
Chrysene	12,000	330
Benzo(b)fluoranthene	7,000	330
Benzo(k)fluoranthene	5,500	330
Benzo(a)pyrene	6,300	330
Indeno(1,2,3-cd)pyrene	3,100	330
Dibenzo(a,h)anthracene	880	330
Benzo(g,h,i)perylene	3,800	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	80	23-120
2-Fluorobiphenyl	87	30-115
p-Terphenyl-d14	96	18-137

KR059B029850

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185874

Reviewed By [signature] Date 07/15/99

Data File	990854
SP117	2-4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP118
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	94
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-11-99
Control Number	990854-14

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	97	80-120

Sample Identification	SP118
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	94
Extraction Date	06-10-99
Analysis Date	06-26-99
Control Number	990854-14

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	87	23-120
2-Fluorobiphenyl	92	30-115
p-Terphenyl-d14	99	18-137

KR059B029851

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185875

Reviewed By Date 07/15/99

Data File	990854
SP118	0-0.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP118
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	86
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-11-99
Control Number	990854-15

BTEX, Mehod 8021	ug/kg	TDL
Benzene	70	50
Toluene	100	50
Ethylbenzene	nd	50
m/p-Xylene	100	100
o-Xylene	72	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	98	80-120

Sample Identification	SP118
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	86
Extraction Date	06-10-99
Analysis Date	06-26-99
Control Number	990854-15

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	1,300	330
Anthracene	500	330
Fluoranthene	3,800	330
Pyrene	3,000	330
Benzo(a)anthracene	3,400	330
Chrysene	3,000	330
Benzo(b)fluoranthene	2,800	330
Benzo(k)fluoranthene	2,200	330
Benzo(a)pyrene	1,800	330
Indeno(1,2,3-cd)pyrene	1,000	330
Dibenzo(a,h)anthracene	700	330
Benzo(g,h,i)perylene	1,100	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	85	23-120
2-Fluorobiphenyl	90	30-115
p-Terphenyl-d14	98	18-137

KR059B029852

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185876

Reviewed By [illegible] Date 07-15-99

Data File	990854
SP118	2-4

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP119
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	94
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-11-99
Control Number	990854-16

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	98	80-120

Sample Identification	SP119
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	94
Extraction Date	06-10-99
Analysis Date	06-26-99
Control Number	990854-16

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	660	330
Anthracene	nd	330
Fluoranthene	1,100	330
Pyrene	770	330
Benzo(a)anthracene	830	330
Chrysene	740	330
Benzo(b)fluoranthene	660	330
Benzo(k)fluoranthene	550	330
Benzo(a)pyrene	460	330
Indeno(1,2,3-cd)pyrene	500	330
Dibenzo(a,h)anthracene	340	330
Benzo(g,h,i)perylene	400	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	86	23-120
2-Fluorobiphenyl	91	30-115
p-Terphenyl-d14	97	18-137

KR059B029853

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185877

Reviewed By [illegible] Date 07/15/99

Data File	990854
SP119	0-0.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP119
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-11-99
Control Number	990854-17

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	SP119
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Extraction Date	06-10-99
Analysis Date	06-27-99
Control Number	990854-17

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	700	330
Anthracene	nd	330
Fluoranthene	900	330
Pyrene	500	330
Benzo(a)anthracene	550	330
Chrysene	600	330
Benzo(b)fluoranthene	510	330
Benzo(k)fluoranthene	510	330
Benzo(a)pyrene	450	330
Indeno(1,2,3-cd)pyrene	410	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	350	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	85	23-120
2-Fluorobiphenyl	89	30-115
p-Terphenyl-d14	95	18-137

KR059B029854

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185878

Reviewed By HWD Date 07/15/99

Data File	990854
SP119	2-4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP120
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	94
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-11-99
Control Number	990854-18

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	94	80-120

Sample Identification	SP120
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	94
Extraction Date	06-10-99
Analysis Date	06-27-99
Control Number	990854-18

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	86	23-120
2-Fluorobiphenyl	90	30-115
p-Terphenyl-d14	97	18-137

KR059B029855

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185879

Reviewed By HLW Date 07/15/99

Data File	990854
SP120	0-0.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP120	Sample Identification	SP120
Sample Depth, ft	2-4	Sample Depth, ft	2-4
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	87	Percent Solids, %w/w	87
Preservation Date	06-04-99	Extraction Date	06-10-99
Preservation Type	MeOH	Analysis Date	06-27-99
Analysis Date	06-11-99		
Control Number	990854-19	Control Number	990854-19

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	97	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	1,700	330
Anthracene	480	330
Fluoranthene	3,000	330
Pyrene	3,300	330
Benzo(a)anthracene	4,500	330
Chrysene	4,000	330
Benzo(b)fluoranthene	5,000	330
Benzo(k)fluoranthene	4,000	330
Benzo(a)pyrene	3,300	330
Indeno(1,2,3-cd)pyrene	900	330
Dibenzo(a,h)anthracene	380	330
Benzo(g,h,i)perylene	700	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	81	23-120
2-Fluorobiphenyl	86	30-115
p-Terphenyl-d14	89	18-137

KR059B029856

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185880

Reviewed By KWW Date 07/15/99

Data File	990854
SP120	2-4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP121
Sample Depth, ft	1.5-2.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-11-99
Control Number	990854-20

BTEX, Mehod 8021	ug/kg	TDL
Benzene	190	50
Toluene	200	50
Ethylbenzene	95	50
m/p-Xylene	270	100
o-Xylene	170	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	98	80-120

Sample Identification	SP121
Sample Depth, ft	1.5-2.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Extraction Date	06-10-99
Analysis Date	06-27-99
Control Number	990854-20

PAHs, Method 8270	ug/kg	TDL
Naphthalene	350	330
2-Methylnaphthalene	nd	330
Acenaphthylene	350	330
Acenaphthene	nd	330
Fluorene	500	330
Phenanthrene	3,500	330
Anthracene	920	330
Fluoranthene	6,000	330
Pyrene	7,300	330
Benzo(a)anthracene	8,800	330
Chrysene	8,000	330
Benzo(b)fluoranthene	6,000	330
Benzo(k)fluoranthene	4,700	330
Benzo(a)pyrene	3,700	330
Indeno(1,2,3-cd)pyrene	2,100	330
Dibenzo(a,h)anthracene	980	330
Benzo(g,h,i)perylene	1,800	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	83	23-120
2-Fluorobiphenyl	85	30-115
p-Terphenyl-d14	86	18-137

KR059B029857

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185881

Reviewed By [illegible] Date 07/15/99

Data File	990854
SP121	1.5-2.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP122	Sample Identification	SP122
Sample Depth, ft	0-0.5	Sample Depth, ft	0-0.5
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	94	Percent Solids, %w/w	94
Preservation Date	06-04-99	Extraction Date	06-10-99
Preservation Type	MeOH	Analysis Date	06-27-99
Analysis Date	06-11-99		
Control Number	990854-21	Control Number	990854-21

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	93	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	1,100	330
Pyrene	630	330
Benzo(a)anthracene	630	330
Chrysene	580	330
Benzo(b)fluoranthene	410	330
Benzo(k)fluoranthene	350	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	23-120
2-Fluorobiphenyl	92	30-115
p-Terphenyl-d14	99	18-137

KR059B029858

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185882

Reviewed By [illegible] Date 07/15/99

Data File	990854
SP122	0-0.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP122
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	87
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-11-99
Control Number	990854-22

BTEX, Mehod 8021	ug/kg	TDL
Benzene	50	50
Toluene	120	50
Ethylbenzene	nd	50
m/p-Xylene	190	100
o-Xylene	180	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	98	80-120

Sample Identification	SP122
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	87
Extraction Date	06-10-99
Analysis Date	06-27-99
Control Number	990854-22

PAHs, Method 8270	ug/kg	TDL
Naphthalene	1,900	330
2-Methylnaphthalene	340	330
Acenaphthylene	650	330
Acenaphthene	330	330
Fluorene	1,100	330
Phenanthrene	4,000	330
Anthracene	1,500	330
Fluoranthene	6,000	330
Pyrene	7,800	330
Benzo(a)anthracene	7,700	330
Chrysene	7,000	330
Benzo(b)fluoranthene	6,000	330
Benzo(k)fluoranthene	5,000	330
Benzo(a)pyrene	4,500	330
Indeno(1,2,3-cd)pyrene	2,100	330
Dibenzo(a,h)anthracene	650	330
Benzo(g,h,i)perylene	1,800	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	80	23-120
2-Fluorobiphenyl	86	30-115
p-Terphenyl-d14	88	18-137

KR059B029859

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185883

Reviewed By [illegible] Date 07/15/99

Data File	990854
SP122	2-4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP123
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	93
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-14-99
Control Number	990854-23

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	98	80-120

Sample Identification	SP123
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	93
Extraction Date	06-10-99
Analysis Date	06-27-99
Control Number	990854-23

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	720	330
Pyrene	440	330
Benzo(a)anthracene	510	330
Chrysene	450	330
Benzo(b)fluoranthene	400	330
Benzo(k)fluoranthene	340	330
Benzo(a)pyrene	340	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	85	23-120
2-Fluorobiphenyl	89	30-115
p-Terphenyl-d14	97	18-137

KR059B029860

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185884

Reviewed By Hur Date 07/15/99

Data File	990854
SP123	0-0.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP123	Sample Identification	SP123
Sample Depth, ft	2-4	Sample Depth, ft	2-4
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	87	Percent Solids, %w/w	87
Preservation Date	06-04-99	Extraction Date	06-10-99
Preservation Type	MeOH	Analysis Date	06-27-99
Analysis Date	06-14-99		
Control Number	990854-24	Control Number	990854-24

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	130	50
Ethylbenzene	nd	50
m/p-Xylene	210	100
o-Xylene	160	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	97	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	1,400	330
2-Methylnaphthalene	350	330
Acenaphthylene	530	330
Acenaphthene	nd	330
Fluorene	350	330
Phenanthrene	4,000	330
Anthracene	1,300	330
Fluoranthene	6,800	330
Pyrene	950	330
Benzo(a)anthracene	9,800	330
Chrysene	9,000	330
Benzo(b)fluoranthene	9,300	330
Benzo(k)fluoranthene	7,500	330
Benzo(a)pyrene	6,500	330
Indeno(1,2,3-cd)pyrene	2,100	330
Dibenzo(a,h)anthracene	830	330
Benzo(g,h,i)perylene	1,700	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	84	23-120
2-Fluorobiphenyl	87	30-115
p-Terphenyl-d14	94	18-137

KR059B029861

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185885

Reviewed By Hew Date 07/15-99

Data File	990854
SP123	2-4

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP124
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	76
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-14-99
Control Number	990854-25

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	95	80-120

Sample Identification	SP124
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	76
Extraction Date	06-10-99
Analysis Date	06-27-99
Control Number	990854-25

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	830	330
Pyrene	450	330
Benzo(a)anthracene	440	330
Chrysene	410	330
Benzo(b)fluoranthene	390	330
Benzo(k)fluoranthene	350	330
Benzo(a)pyrene	400	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	23-120
2-Fluorobiphenyl	86	30-115
p-Terphenyl-d14	92	18-137

KR059B029862

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185886

Reviewed By [signature] Date 071599

Data File	990854
SP124	0-0.5

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP124
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	80
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-14-99
Control Number	990854-26

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	97	80-120

Sample Identification	SP124
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	80
Extraction Date	06-10-99
Analysis Date	06-27-99
Control Number	990854-26

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	350	330
Pyrene	340	330
Benzo(a)anthracene	400	330
Chrysene	400	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	340	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	85	23-120
2-Fluorobiphenyl	88	30-115
p-Terphenyl-d14	96	18-137

KR059B029863

NOTES: TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185887

Reviewed By HLW Date 07/15/99

Data File	990854
SP124	2-4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP125
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-14-99
Control Number	990854-27

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	SP125
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Extraction Date	06-10-99
Analysis Date	06-27-99
Control Number	990854-27

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	430	330
Pyrene	350	330
Benzo(a)anthracene	430	330
Chrysene	400	330
Benzo(b)fluoranthene	380	330
Benzo(k)fluoranthene	340	330
Benzo(a)pyrene	550	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	86	23-120
2-Fluorobiphenyl	88	30-115
p-Terphenyl-d14	94	18-137

KR059B029864

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185888

Reviewed By HWD Date 07/29/99

Data File	990854
SP125	0-0.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP125
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	88
Preservation Date	06-04-99
Preservation Type	MeOH
Analysis Date	06-14-99
Control Number	990854-28

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	95	80-120

Sample Identification	SP125
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	88
Extraction Date	06-10-99
Analysis Date	06-27-99
Control Number	990854-28

PAHs, Method 8270	ug/kg	TDL
Naphthalene	1,800	330
2-Methylnaphthalene	410	330
Acenaphthylene	7,200	330
Acenaphthene	410	330
Fluorene	840	330
Phenanthrene	3,900	330
Anthracene	2,600	330
Fluoranthene	9,600	330
Pyrene	10,000	330
Benzo(a)anthracene	12,000	330
Chrysene	13,000	330
Benzo(b)fluoranthene	8,300	330
Benzo(k)fluoranthene	5,200	330
Benzo(a)pyrene	7,800	330
Indeno(1,2,3-cd)pyrene	2,500	330
Dibenzo(a,h)anthracene	720	330
Benzo(g,h,i)perylene	1,700	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	83	23-120
2-Fluorobiphenyl	86	30-115
p-Terphenyl-d14	91	18-137

KR059B029865

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185889

Reviewed By Hew Date 07/15/99

Data File	990854
SP125	2-4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP102 GW
Sample Depth, ft	4.5-9
Sample Type	water
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-12-99
Control Number	990854-29

BTEX, Mehod 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	100	80-120

Sample Identification	SP102 GW
Sample Depth, ft	4.5-9
Sample Type	water
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-09-99
Analysis Date	06-18-99
Control Number	990854-29

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	91	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	101	33-141

KR059B029866

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185890

Reviewed By Hwd Date 07/15/99

Data File	990854
SP102 GW	4.5-9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP103 GW
Sample Depth, ft	7-10
Sample Type	water
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-12-99
Control Number	990854-30

BTEX, Mehod 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	100	80-120

Sample Identification	SP103 GW
Sample Depth, ft	7-10
Sample Type	water
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-09-99
Analysis Date	06-18-99
Control Number	990854-30

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	93	35-114
2-Fluorobiphenyl	99	43-116
p-Terphenyl-d14	102	33-141

KR059B029867

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185891

Reviewed By [signature] Date 07/15/99

Data File	990854
SP103 GW	7-10

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP108	Sample Identification	SP108
Sample Depth, ft	4-5	Sample Depth, ft	4-5
Sample Type	soil	Sample Type	soil
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	96	Percent Solids, %w/w	96
Preservation Date	06-04-99	Extraction Date	06-10-99
Preservation Type	MeOH	Analysis Date	06-27-99
Analysis Date	06-14-99		
Control Number	990854-31	Control Number	990854-31

BTEX, Mehod 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	96	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	23-120
2-Fluorobiphenyl	90	30-115
p-Terphenyl-d14	95	18-137

KR059B029868

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185892

Reviewed By [signature] Date 07-15-99

Data File	990854
SP108	4-5

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP110	Sample Identification	SP110
Sample Depth, ft	0-0.5	Sample Depth, ft	0-0.5
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	91	Percent Solids, %w/w	91
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-01	Control Number	990854-01

METALS, Total	ug/kg	TDL
Arsenic - 7060	9,600	100
Barium, 7081	72,000	1,000
Cadmium - 7131	810	50
Chromium (total) - 7191	14,000	500
Copper - 7211	85,000	1,000
Lead - 7421	230,000	1,000
Mercury - 7470	1,300	100
Selenium - 7740	200	200
Silver - 7761	nd	500
Zinc - 7950	71,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	620	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029869

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185893

Reviewed By [illegible] Date 07/15/99

Data File	990854
SP110	0-0.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP111	Sample Identification	SP111
Sample Depth, ft	0-0.5	Sample Depth, ft	0-0.5
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	93	Percent Solids, %w/w	93
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-02	Control Number	990854-02

METALS, Total	ug/kg	TDL
Arsenic - 7060	8,000	100
Barium, 7081	57,000	1,000
Cadmium - 7131	550	50
Chromium (total) - 7191	8,200	500
Copper - 7211	79,000	1,000
Lead - 7421	85,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	77,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	790	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029870

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185894

Reviewed By [illegible] Date 071585

Data File	990854
SP111	0-0.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP112
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	93
Preparation Date	06-16-99
Analysis Date, Start	06-23-99
Analysis Date, End	07-13-99
Control Number	990854-03

METALS, Total	ug/kg	TDL
Arsenic - 7060	12,000	100
Barium, 7081	63,000	1,000
Cadmium - 7131	9,800	50
Chromium (total) - 7191	19,000	500
Copper - 7211	44,000	1,000
Lead - 7421	220,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	230,000	1,000

Sample Identification	SP112
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	93
Extraction Date	06-28-99
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-09-99
Control Number	990854-03

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	650	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029871

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185895

Reviewed By [illegible] Date 07/15/99

Data File	990854
SP112	0-0.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP112	Sample Identification	SP112
Sample Depth, ft	2-4	Sample Depth, ft	2-4
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	90	Percent Solids, %w/w	90
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-04	Control Number	990854-04

METALS, Total	ug/kg	TDL
Arsenic - 7060	9,400	100
Barium, 7081	33,000	1,000
Cadmium - 7131	200	50
Chromium (total) - 7191	6,700	500
Copper - 7211	10,000	1,000
Lead - 7421	30,000	1,000
Mercury - 7470	1,400	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	34,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029872

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185896

Reviewed By [illegible] Date 07/15/99

Data File	990854
SP112	2-4

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP113	Sample Identification	SP113
Sample Depth, ft	0-0.5	Sample Depth, ft	0-0.5
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	94	Percent Solids, %w/w	94
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-05	Control Number	990854-05

METALS, Total	ug/kg	TDL
Arsenic - 7060	13,000	100
Barium, 7081	61,000	1,000
Cadmium - 7131	320	50
Chromium (total) - 7191	16,000	500
Copper - 7211	47,000	1,000
Lead - 7421	35,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	160,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029873

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185897

Reviewed By [illegible] Date 071598

Data File	990854
SP113	0-0.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP113	Sample Identification	SP113
Sample Depth, ft	2-4	Sample Depth, ft	2-4
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	87	Percent Solids, %w/w	87
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-06	Control Number	990854-06

METALS, Total	ug/kg	TDL
Arsenic - 7060	9,300	100
Barium, 7081	34,000	1,000
Cadmium - 7131	100	50
Chromium (total) - 7191	96,000	500
Copper - 7211	27,000	1,000
Lead - 7421	51,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	36,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	860	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029874

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185898

Reviewed By [illegible] Date 07/15/99

Data File	990854
SP113	2-4

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO. Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP114	Sample Identification	SP114
Sample Depth, ft	0-05	Sample Depth, ft	0-05
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	95	Percent Solids, %w/w	95
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-07	Control Number	990854-07

METALS, Total	ug/kg	TDL
Arsenic - 7060	8,100	100
Barium, 7081	44,000	1,000
Cadmium - 7131	160	50
Chromium (total) - 7191	25,000	500
Copper - 7211	13,000	1,000
Lead - 7421	38,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	45,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029875

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185899

Reviewed By HWJ Date 07/15/99

Data File	990854
SP114	0-05

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP114	Sample Identification	SP114
Sample Depth, ft	2-4	Sample Depth, ft	2-4
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	85	Percent Solids, %w/w	85
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-08	Control Number	990854-08

METALS, Total	ug/kg	TDL
Arsenic - 7060	10,000	100
Barium, 7081	140,000	1,000
Cadmium - 7131	940	50
Chromium (total) - 7191	9,800	500
Copper - 7211	76,000	1,000
Lead - 7421	90,000	1,000
Mercury - 7470	160	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	66,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029876

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185900

Reviewed By HLW Date 07/15/99

Data File	990854
SP114	2-4

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP115	Sample Identification	SP115
Sample Depth, ft	0-0.5	Sample Depth, ft	0-0.5
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	95	Percent Solids, %w/w	95
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-09	Control Number	990854-09

METALS, Total	ug/kg	TDL
Arsenic - 7060	9,000	100
Barium, 7081	33,000	1,000
Cadmium - 7131	150	50
Chromium (total) - 7191	12,000	500
Copper - 7211	10,000	1,000
Lead - 7421	99,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	26,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029877

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185901

Reviewed By Hwr Date 07/15/99

Data File	990854
SP115	0-0.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP115	Sample Identification	SP115
Sample Depth, ft	2-4	Sample Depth, ft	2-4
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	87	Percent Solids, %w/w	87
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-10	Control Number	990854-10

METALS, Total	ug/kg	TDL
Arsenic - 7060	10,000	100
Barium, 7081	35,000	1,000
Cadmium - 7131	56	50
Chromium (total) - 7191	21,000	500
Copper - 7211	44,000	1,000
Lead - 7421	80,000	1,000
Mercury - 7470	100	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	35,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029878

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185902

Reviewed By Hew Date 07/15/99

Data File	990854
SP115	2-4

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP116	Sample Identification	SP116
Sample Depth, ft	0-0.5	Sample Depth, ft	0-0.5
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	89	Percent Solids, %w/w	89
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-11	Control Number	990854-11

METALS, Total	ug/kg	TDL
Arsenic - 7060	11,000	100
Barium, 7081	60,000	1,000
Cadmium - 7131	830	50
Chromium (total) - 7191	14,000	500
Copper - 7211	20,000	1,000
Lead - 7421	130,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	98,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	6,300	200
Cyanide, Amenable - 9010/9013	900	500
Cyanide, Free - D4282/9013	nd	400

KR059B029879

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185903

Reviewed By HWD Date 07/15/99

Data File	990854
SP116	0-0.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP117	Sample Identification	SP117
Sample Depth, ft	0-0.5	Sample Depth, ft	0-0.5
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	96	Percent Solids, %w/w	96
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-12	Control Number	990854-12

METALS, Total	ug/kg	TDL
Arsenic - 7060	7,100	100
Barium, 7081	36,000	1,000
Cadmium - 7131	110	50
Chromium (total) - 7191	12,000	500
Copper - 7211	8,900	1,000
Lead - 7421	45,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	27,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029880

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185904

Reviewed By HWJ Date 07/15/99

Data File	990854
SP117	0-0.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP117	Sample Identification	SP117
Sample Depth, ft	2-4	Sample Depth, ft	2-4
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	83	Percent Solids, %w/w	83
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-13	Control Number	990854-13

METALS, Total	ug/kg	TDL
Arsenic - 7060	5,700	100
Barium, 7081	130,000	1,000
Cadmium - 7131	210	50
Chromium (total) - 7191	8,900	500
Copper - 7211	1,200,000	1,000
Lead - 7421	380,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	570,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	11,000	200
Cyanide, Amenable - 9010/9013	4,900	500
Cyanide, Free - D4282/9013	nd	400

KR059B029881

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185905

Reviewed By HLW Date 07/15/99

Data File	990854
SP117	2-4

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP118
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	94
Preparation Date	06-16-99
Analysis Date, Start	06-23-99
Analysis Date, End	07-13-99
Control Number	990854-14

METALS, Total	ug/kg	TDL
Arsenic - 7060	5,900	100
Barium, 7081	46,000	1,000
Cadmium - 7131	91	50
Chromium (total) - 7191	13,000	500
Copper - 7211	10,000	1,000
Lead - 7421	19,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	28,000	1,000

Sample Identification	SP118
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	94
Extraction Date	06-28-99
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-09-99
Control Number	990854-14

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029882

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185906

Reviewed By Hew Date 07/15/99

Data File	990854
SP118	0-0.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP118
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	86
Preparation Date	06-16-99
Analysis Date, Start	06-23-99
Analysis Date, End	07-13-99
Control Number	990854-15

METALS, Total	ug/kg	TDL
Arsenic - 7060	28,000	100
Barium, 7081	71,000	1,000
Cadmium - 7131	390	50
Chromium (total) - 7191	22,000	500
Copper - 7211	68,000	1,000
Lead - 7421	76,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	290,000	1,000

Sample Identification	SP118
Sample Depth, ft	2-4
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	86
Extraction Date	06-28-99
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-09-99
Control Number	990854-15

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	9,900	200
Cyanide, Amenable - 9010/9013	4,200	500
Cyanide, Free - D4282/9013	nd	400

KR059B029883

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185907

Reviewed By HW Date 071598

Data File	990854
SP118	2-4

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP119	Sample Identification	SP119
Sample Depth, ft	0-0.5	Sample Depth, ft	0-0.5
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	94	Percent Solids, %w/w	94
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-16	Control Number	990854-16

METALS, Total	ug/kg	TDL
Arsenic - 7060	8,100	100
Barium, 7081	42,000	1,000
Cadmium - 7131	190	50
Chromium (total) - 7191	11,000	500
Copper - 7211	22,000	1,000
Lead - 7421	47,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	49,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029884

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185908

Reviewed By [signature] Date 07/09/99

Data File	990854
SP119	0-0.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP119	Sample Identification	SP119
Sample Depth, ft	2-4	Sample Depth, ft	2-4
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	90	Percent Solids, %w/w	90
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-17	Control Number	990854-17

METALS, Total	ug/kg	TDL
Arsenic - 7060	6,100	100
Barium, 7081	44,000	1,000
Cadmium - 7131	78	50
Chromium (total) - 7191	12,000	500
Copper - 7211	11,000	1,000
Lead - 7421	21,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	34,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029885

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185909

Reviewed By HW Date 07/15/99

Data File	990854
SP119	2-4

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP120	Sample Identification	SP120
Sample Depth, ft	0-0.5	Sample Depth, ft	0-0.5
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	94	Percent Solids, %w/w	94
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-18	Control Number	990854-18

METALS, Total	ug/kg	TDL
Arsenic - 7060	6,200	100
Barium, 7081	41,000	1,000
Cadmium - 7131	160	50
Chromium (total) - 7191	12,000	500
Copper - 7211	12,000	1,000
Lead - 7421	29,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	31,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029886

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185910

Reviewed By [illegible] Date 07/15/99

Data File	990854
SP120	0-0.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP120	Sample Identification	SP120
Sample Depth, ft	2-4	Sample Depth, ft	2-4
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	87	Percent Solids, %w/w	87
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-19	Control Number	990854-19

METALS, Total	ug/kg	TDL
Arsenic - 7060	20,000	100
Barium, 7081	100,000	1,000
Cadmium - 7131	290	50
Chromium (total) - 7191	36,000	500
Copper - 7211	62,000	1,000
Lead - 7421	220,000	1,000
Mercury - 7470	210	100
Selenium - 7740	360	200
Silver - 7761	nd	500
Zinc - 7950	78,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029887

NOTES: TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185911

Reviewed By flw Date 07/15/99

Data File	990854
SP120	2-4

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP121
Sample Depth, ft	1.5-2.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Preparation Date	06-16-99
Analysis Date, Start	06-23-99
Analysis Date, End	07-13-99
Control Number	990854-20

METALS, Total	ug/kg	TDL
Arsenic - 7060	11,000	100
Barium, 7081	250,000	1,000
Cadmium - 7131	350	50
Chromium (total) - 7191	24,000	500
Copper - 7211	38,000	1,000
Lead - 7421	170,000	1,000
Mercury - 7470	250	100
Selenium - 7740	200	200
Silver - 7761	nd	500
Zinc - 7950	79,000	1,000

Sample Identification	SP121
Sample Depth, ft	1.5-2.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	90
Extraction Date	06-28-99
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-09-99
Control Number	990854-20

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	2,900	200
Cyanide, Amenable - 9010/9013	2,000	500
Cyanide, Free - D4282/9013	nd	400

KR059B029888

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185912

Reviewed By HWD Date 6/10-95

Data File	990854
SP121	1.5-2.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP122	Sample Identification	SP122
Sample Depth, ft	0-0.5	Sample Depth, ft	0-0.5
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	94	Percent Solids, %w/w	94
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-21	Control Number	990854-21

METALS, Total	ug/kg	TDL
Arsenic - 7060	6,300	100
Barium, 7081	55,000	1,000
Cadmium - 7131	570	50
Chromium (total) - 7191	13,000	500
Copper - 7211	17,000	1,000
Lead - 7421	81,000	1,000
Mercury - 7470	130	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	57,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	260	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029889

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185913

Reviewed By HWW Date 07/15/99

Data File	990854
SP122	0-0.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP122	Sample Identification	SP122
Sample Depth, ft	2-4	Sample Depth, ft	2-4
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	87	Percent Solids, %w/w	87
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-22	Control Number	990854-22

METALS, Total	ug/kg	TDL
Arsenic - 7060	17,000	100
Barium, 7081	88,000	1,000
Cadmium - 7131	84	50
Chromium (total) - 7191	7,600	500
Copper - 7211	23,000	1,000
Lead - 7421	66,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	32,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	62,000	200
Cyanide, Amenable - 9010/9013	*1,400	500
Cyanide, Free - D4282/9013	nd	400

KR059B029890

NOTES: TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185914

Reviewed By HWJ Date 07/15/99

Data File	990854
SP122	2-4

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP123	Sample Identification	SP123
Sample Depth, ft	0-0.5	Sample Depth, ft	0-0.5
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	93	Percent Solids, %w/w	93
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-23	Control Number	990854-23

METALS, Total	ug/kg	TDL
Arsenic - 7060	6,400	100
Barium, 7081	44,000	1,000
Cadmium - 7131	500	50
Chromium (total) - 7191	12,000	500
Copper - 7211	11,000	1,000
Lead - 7421	48,000	1,000
Mercury - 7470	100	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	47,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029891

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185915

Reviewed By HW Date 07/15/99

Data File	990854
SP123	0-0.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP123	Sample Identification	SP123
Sample Depth, ft	2-4	Sample Depth, ft	2-4
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	87	Percent Solids, %w/w	87
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-24	Control Number	990854-24

METALS, Total	ug/kg	TDL
Arsenic - 7060	13,000	100
Barium, 7081	100,000	1,000
Cadmium - 7131	180	50
Chromium (total) - 7191	7,300	500
Copper - 7211	49,000	1,000
Lead - 7421	39,000	1,000
Mercury - 7470	150	100
Selenium - 7740	420	200
Silver - 7761	nd	500
Zinc - 7950	23,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	34,000	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029892

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185916

Reviewed By HWJ Date 07/15/9

Data File	990854
SP123	2-4

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP124
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	76
Preparation Date	06-16-99
Analysis Date, Start	06-23-99
Analysis Date, End	07-13-99
Control Number	990854-25

METALS, Total	ug/kg	TDL
Arsenic - 7060	6,700	100
Barium, 7081	67,000	1,000
Cadmium - 7131	620	50
Chromium (total) - 7191	17,000	500
Copper - 7211	27,000	1,000
Lead - 7421	120,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	130,000	1,000

Sample Identification	SP124
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	76
Extraction Date	06-28-99
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-09-99
Control Number	990854-25

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	430	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029893

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185917

Reviewed By HW Date 071595

Data File	990854
SP124	0-0.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP124	Sample Identification	SP124
Sample Depth, ft	2-4	Sample Depth, ft	2-4
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	80	Percent Solids, %w/w	80
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-26	Control Number	990854-26

METALS, Total	ug/kg	TDL
Arsenic - 7060	14,000	100
Barium, 7081	440,000	1,000
Cadmium - 7131	140	50
Chromium (total) - 7191	15,000	500
Copper - 7211	150,000	1,000
Lead - 7421	490,000	1,000
Mercury - 7470	130	100
Selenium - 7740	620	200
Silver - 7761	nd	500
Zinc - 7950	330,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	560	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029894

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185918

Reviewed By Hew Date 021589

Data File	990854
SP124	2-4

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP125	Sample Identification	SP125
Sample Depth, ft	0-0.5	Sample Depth, ft	0-0.5
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	90	Percent Solids, %w/w	90
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-27	Control Number	990854-27

METALS, Total	ug/kg	TDL
Arsenic - 7060	5,300	100
Barium, 7081	32,000	1,000
Cadmium - 7131	160	50
Chromium (total) - 7191	7,800	500
Copper - 7211	15,000	1,000
Lead - 7421	44,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	26,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029895

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185919

Reviewed By [illegible] Date 071095

Data File	990854
SP125	0-0.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP125	Sample Identification	SP125
Sample Depth, ft	2-4	Sample Depth, ft	2-4
Sample Type	soil	Sample Type	soil
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	88	Percent Solids, %w/w	88
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-28	Control Number	990854-28

METALS, Total	ug/kg	TDL
Arsenic - 7060	8,700	100
Barium, 7081	66,000	1,000
Cadmium - 7131	150	50
Chromium (total) - 7191	12,000	500
Copper - 7211	13,000	1,000
Lead - 7421	26,000	1,000
Mercury - 7470	260	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	39,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	50,000	200
Cyanide, Amenable - 9010/9013	6,800	500
Cyanide, Free - D4282/9013	nd	400

KR059B029896

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185920

Reviewed By Hur Date 07/15/99

Data File	990854
SP125	2-4

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP102 GW
Sample Depth, ft	4.5-9
Sample Type	water
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date, Start	06-23-99
Analysis Date, End	07-13-99
Control Number	990854-29

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium, 7081	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

Sample Identification	SP102 GW
Sample Depth, ft	4.5-9
Sample Type	water
Sample Date	06-04-99
Received Date	06-04-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-09-99
Control Number	990854-29

INORGANICS	ug/L	TDL
Cyanide, Total - 9010/9013	nd	5
Cyanide, Amenable - 9010/9013	nd	20
Cyanide, Free - D4282/9013	nd	10

KR059B029897

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185921

Reviewed By HWO Date 07/15/99

Data File	990854
SP102 GW	4.5-9

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP103 GW	Sample Identification	SP103 GW
Sample Depth, ft	7-10	Sample Depth, ft	7-10
Sample Type	water	Sample Type	water
Sample Date	06-04-99	Sample Date	06-04-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	-
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-30	Control Number	990854-30

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium, 7081	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010/9013	620	5
Cyanide, Amenable - 9010/9013	42	20
Cyanide, Free - D4282/9013	36	10

KR059B029898

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185922

Reviewed By HLW Date 07/15/99

Data File	990854
SP103 GW	7-10

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03-04, 1999	Project Number Chem-99-0854

Sample Identification	SP108	Sample Identification	SP108
Sample Depth, ft	4-5	Sample Depth, ft	4-5
Sample Type	soil	Sample Type	soil
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-04-99	Received Date	06-04-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	96	Percent Solids, %w/w	96
Preparation Date	06-16-99	Extraction Date	06-28-99
Analysis Date, Start	06-23-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990854-31	Control Number	990854-31

METALS, Total	ug/kg	TDL
Arsenic - 7060	3,500	100
Barium, 7081	14,000	1,000
Cadmium - 7131	nd	50
Chromium (total) - 7191	4,900	500
Copper - 7211	3,400	1,000
Lead - 7421	4,200	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	10,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029899

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185923

Reviewed By PWJ Date 07/15/99

Data File	990854
SP108	4-5

INORG

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KG31823

SAMPLING TEAM: N. LARABEL

DATE SHIPPED: 6/4/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 3 OF 3

SEND REPORT TO: Pat Barnes BMP - Plymouth

PHONE: 734-454-9600

ANALYSIS REQUESTED

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 m. mcf	Cyanide	TDS & Alkalinity			REMARKS
854-25	6/4	Soil 1010	Soil	SP124 0-0.5	0-0.5	3	X	X	X	X				
26		1010		SP124 2-4	2-4	3	X	X	X	X				
27		1020		SP125 0-0.5	0-0.5	3	X	X	X	X				
28		1020		SP125 2-4	2-4	3	X	X	X	X				
29		1115	W	SP102 GW	4.5-9	5	X	X	X	X				
30		1215	W	SP103 GW	7-10	5	X	X	X	X				
31	6/3/99	1050	Soil	SP108 4-5	4-5	3	X	X	X	X				

00185924

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COMMENTS

See Note on Page #1

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE31823

SAMPLING TEAM: N. LaPabel

DATE SHIPPED: 6/4/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 3

SEND REPORT TO: Pat Bourque, SME - Plymouth

PHONE: 734-454-5500

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 mt metals	CYANIDE	TOTAL #	Ammonia		REMARKS
8541-13	6/4/99	0810	Soil	SP117 2-4	2-4	3	X	✓	✓	✓				
14		0845		SP118 0-0.5	0-0.5	3	X	✓	✓	✓				
15		0845		SP118 2-4	2-4	3	X	✓	✓	✓				
16		0852		SP119 0-0.5	0-0.5	3	X	✓	✓	✓				
17		0852		SP119 2-4	2-4	3	X	✓	✓	✓				
18		0900		SP120 0-0.5	0-0.5	3	X	✓	✓	✓				
19		0900		SP120 2-4	2-4	3	✓	✓	✓	✓				
20		0925		SP121 1.5-2.5	1.5-2.5	3	✓	✓	✓	✓				
21		0930		SP122 0-0.5	0-0.5	3	✓	✓	✓	✓				
22		0930		SP122 2-4	2-4	3	✓	✓	✓	✓				
23		0955		SP123 0-0.5	0-0.5	3	✓	✓	✓	✓				KR059B029901
24	✓	0955	✓	SP123 2-4	2-4	3	✓	✓	✓	✓				

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[signature]	6/4/99 1540	[signature]
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RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

00185925

COMMENTS: See Page #1

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. LABABEL

DATE SHIPPED: 6/4/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

ANALYSIS REQUESTED

PAGE 1 OF 3

SEND REPORT TO: Pat Barrese SME - Plymouth

PHONE: 734-454-5960

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 mi Metals	CYANIDE	TPH	Amenable		REMARKS
854-1	6/4/99	0700	Soil	SP110 0-0.5	0-0.5	3	X	X	X	X				
2		0713		SP111 0-0.5	0-0.5	3	X	X	X	X				
3		0725		SP112 0-0.5	0-0.5	3	X	X	X	X				
4		0725		SP112 2-4	2-4	3	X	X	X	X				
5		0730		SP113 0-0.5	0-0.5	3	X	X	X	X				
6		0730		SP113 2-4	2-4	3	X	X	X	X				
7		0738		SP114 0-0.5	0-0.5	3	X	X	X	X				
8		0738		SP114 2-4	2-4	3	X	X	X	X				
9		0745		SP115 0-0.5	0-0.5	3	X	X	X	X				
10		0745		SP115 2-4	2-4	3	X	X	X	X				
11		0758		SP116 0-0.5	0-0.5	3	X	X	X	X				KR059B029902
12		0810		SP117 0-0.5	0-0.5	3	X	X	X	X				

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	6/4/99 1540	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MDLs & methods
- Encores need 4 oz Preservative
- call Pat Barrese w/ info

ORIGINAL TO LAB COPY TO CUSTOMER

00185926

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 09, 1999	Project Number Chem-99-0879

00185927

KR059B029903

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 09, 1999	Project Number Chem-99-0879

Sample Identification	SP101	Sample Identification	SP101
Sample Depth, ft	4-5	Sample Depth, ft	4-5
Sample Type	soil	Sample Type	soil
Sample Date	06-09-99	Sample Date	06-09-99
Received Date	06-10-99	Received Date	06-10-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	06-10-99	Extraction Date	not requested
Preservation Type	MeOH	Analysis Date	not requested
Analysis Date	not requested		
Control Number	990879-01	Control Number	990879-01

BTEX, Mehod 8021	ug/kg	TDL
Benzene	-	50
Toluene	-	50
Ethylbenzene	-	50
m/p-Xylene	-	100
o-Xylene	-	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	-	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	-	330
2-Methylnaphthalene	-	330
Acenaphthylene	-	330
Acenaphthene	-	330
Fluorene	-	330
Phenanthrene	-	330
Anthracene	-	330
Fluoranthene	-	330
Pyrene	-	330
Benzo(a)anthracene	-	330
Chrysene	-	330
Benzo(b)fluoranthene	-	330
Benzo(k)fluoranthene	-	330
Benzo(a)pyrene	-	330
Indeno(1,2,3-cd)pyrene	-	330
Dibenzo(a,h)anthracene	-	330
Benzo(g,h,i)perylene	-	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	-	23-120
2-Fluorobiphenyl	-	30-115
p-Terphenyl-d14	-	18-137

KR059B029904

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185928

Reviewed By LWJ Date 07 (T 99

Data File	990879
SP101	4-5

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 09, 1999	Project Number Chem-99-0879

Sample Identification	SP101
Sample Depth, ft	11-12
Sample Type	soil
Sample Date	06-09-99
Received Date	06-10-99
Report Date	07-15-99
Percent Solids, %w/w	87
Preservation Date	06-10-99
Preservation Type	MeOH
Analysis Date	06-22-99
Control Number	990879-02

BTEX, Mehod 8021	ug/kg	TDL
Benzene	180	50
Toluene	930	50
Ethylbenzene	380	50
m/p-Xylene	1,300	100
o-Xylene	1,100	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	92	80-120

Sample Identification	SP101
Sample Depth, ft	11-12
Sample Type	soil
Sample Date	06-09-99
Received Date	06-10-99
Report Date	07-15-99
Percent Solids, %w/w	87
Extraction Date	06-15-99
Analysis Date	07-01-99
Control Number	990879-02

PAHs, Method 8270	ug/kg	TDL
Naphthalene	6,100	330
2-Methylnaphthalene	1,100	330
Acenaphthylene	3,500	330
Acenaphthene	nd	330
Fluorene	1,300	330
Phenanthrene	3,500	330
Anthracene	3,200	330
Fluoranthene	8,100	330
Pyrene	9,000	330
Benzo(a)anthracene	7,400	330
Chrysene	6,900	330
Benzo(b)fluoranthene	3,700	330
Benzo(k)fluoranthene	3,200	330
Benzo(a)pyrene	6,200	330
Indeno(1,2,3-cd)pyrene	960	330
Dibenzo(a,h)anthracene	510	330
Benzo(g,h,i)perylene	690	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	81	23-120
2-Fluorobiphenyl	87	30-115
p-Terphenyl-d14	96	18-137

KR059B029905

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185929

Reviewed By HWJ Date 07/15/99

Data File	990879
SP101	11-12

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 09, 1999	Project Number Chem-99-0879

Sample Identification	SP101	Sample Identification	SP101
Sample Depth, ft	4-5	Sample Depth, ft	4-5
Sample Type	soil	Sample Type	soil
Sample Date	06-09-99	Sample Date	06-09-99
Received Date	06-10-99	Received Date	06-10-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	not requested	Extraction Date	not requested
Analysis Date, Start	not requested	Analysis Date, Total	not requested
Analysis Date, End	not requested	Analysis Date, Amenable	not requested
		Analysis Date, Free	not requested
Control Number	990879-01	Control Number	990879-01

METALS, Total	ug/kg	TDL
Arsenic - 7060	-	100
Barium, 7081	-	1,000
Cadmium - 7131	-	50
Chromium (total) - 7191	-	500
Copper - 7211	-	1,000
Lead - 7421	-	1,000
Mercury - 7470	-	100
Selenium - 7740	-	200
Silver - 7761	-	500
Zinc - 7950	-	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	-	200
Cyanide, Amenable - 9010/9013	-	500
Cyanide, Free - D4282/9013	-	400

KR059B029906

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185930

Reviewed By HWJ Date 07/15/99

Data File	990879
SP101	4-5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 09, 1999	Project Number Chem-99-0879

Sample Identification	SP101	Sample Identification	SP101
Sample Depth, ft	11-12	Sample Depth, ft	11-12
Sample Type	soil	Sample Type	soil
Sample Date	06-09-99	Sample Date	06-09-99
Received Date	06-10-99	Received Date	06-10-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	87	Percent Solids, %w/w	87
Preparation Date	06-16-99	Extraction Date	06-30-99
Analysis Date, Start	06-24-99	Analysis Date, Total	07-09--99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09--99
		Analysis Date, Free	07-09--99
Control Number	990879-02	Control Number	990879-02

METALS, Total	ug/kg	TDL
Arsenic - 7060	18,000	100
Barium, 7081	75,000	1,000
Cadmium - 7131	99	50
Chromium (total) - 7191	5,700	500
Copper - 7211	18,000	1,000
Lead - 7421	12,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	570	200
Silver - 7761	nd	500
Zinc - 7950	34,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	1,800	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029907

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185931

Reviewed By KCW Date 07/15/99

Data File	990879
SP101	11-12

INORG

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: K-Zoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. CARABel

DATE SHIPPED: 6/9/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Sarabar SME - Plymouth

PHONE: 734-454-9900

ANALYSIS REQUESTED: BTEX, PNA, 10 MF methods, CYANIDE, TPH, Amides

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNA	10 MF methods	CYANIDE	TPH	Amides	REMARKS
99-0879-1	6/9/99	0915	Soil	SP101 (4-5)	4-5	3	+	+	O	O			Preserve Encores
2-2	↓	0945	↓	SP101 (11-12)	11-12	3	+	+	+	+			

00185932

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	6/9/99 1445	
RELINQUISHED BY: (SIGNATURE) FedEx	DATE / TIME 06/10/99 0930	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MDLs & methods
- Encores needs 48 hr Method Preservation

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 17, 1999	Project Number Chem-99-0937

00185933

KR059B029909

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 17, 1999	Project Number Chem-99-0937

Sample Identification	MW101D	Sample Identification	MW101D
	(TOC Only)		(TOC Only)
Sample Depth, ft	13.5-15	Sample Depth, ft	13.5-15
Sample Type	soil	Sample Type	soil
Sample Date	06-17-99	Sample Date	06-17-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	85	Percent Solids, %w/w	85
Preservation Date	no sample	Extraction Date	no sample
Preservation Type	no sample	Analysis Date	no sample
Analysis Date	no sample		
Control Number	990937-01	Control Number	990937-01

BTEX, Method 8021	ug/kg	TDL
Benzene	-	50
Toluene	-	50
Ethylbenzene	-	50
m/p-Xylene	-	100
o-Xylene	-	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	-	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	-	330
2-Methylnaphthalene	-	330
Acenaphthylene	-	330
Acenaphthene	-	330
Fluorene	-	330
Phenanthrene	-	330
Anthracene	-	330
Fluoranthene	-	330
Pyrene	-	330
Benzo(a)anthracene	-	330
Chrysene	-	330
Benzo(b)fluoranthene	-	330
Benzo(k)fluoranthene	-	330
Benzo(a)pyrene	-	330
Indeno(1,2,3-cd)pyrene	-	330
Dibenzo(a,h)anthracene	-	330
Benzo(g,h,i)perylene	-	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	-	23-120
2-Fluorobiphenyl	-	30-115
p-Terphenyl-d14	-	18-137

KR059B029910

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185934

Reviewed By HWU Date 07/15/99

Data File	990937
MW101D	13.5-15

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 17, 1999	Project Number Chem-99-0937

Sample Identification	MW101D	Sample Identification	MW101D
	(TOC Only)		(TOC Only)
Sample Depth, ft	46-47.5	Sample Depth, ft	46-47.5
Sample Type	soil	Sample Type	soil
Sample Date	06-17-99	Sample Date	06-17-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	89	Percent Solids, %w/w	89
Preservation Date	no sample	Extraction Date	no sample
Preservation Type	no sample	Analysis Date	no sample
Analysis Date	no sample		
Control Number	990937-02	Control Number	990937-02

BTEX, Method 8021	ug/kg	TDL
Benzene	-	50
Toluene	-	50
Ethylbenzene	-	50
m/p-Xylene	-	100
o-Xylene	-	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	-	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	-	330
2-Methylnaphthalene	-	330
Acenaphthylene	-	330
Acenaphthene	-	330
Fluorene	-	330
Phenanthrene	-	330
Anthracene	-	330
Fluoranthene	-	330
Pyrene	-	330
Benzo(a)anthracene	-	330
Chrysene	-	330
Benzo(b)fluoranthene	-	330
Benzo(k)fluoranthene	-	330
Benzo(a)pyrene	-	330
Indeno(1,2,3-cd)pyrene	-	330
Dibenzo(a,h)anthracene	-	330
Benzo(g,h,i)perylene	-	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	23-120
2-Fluorobiphenyl	-	30-115
p-Terphenyl-d14	-	18-137

KR059B029911

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185935

Reviewed By [illegible] Date 07/15/99

Data File	990937
MW101D	46-47.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 17, 1999	Project Number Chem-99-0937

Sample Identification	MW103
Sample Depth, ft	0-1
Sample Type	soil
Sample Date	06-17-99
Received Date	06-18-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	not requested
Preservation Type	not requested
Analysis Date	not requested
Control Number	990937-03

BTEX, Method 8021	**ug/kg**	**TDL**
Benzene	-	50
Toluene	-	50
Ethylbenzene	-	50
m/p-Xylene	-	100
o-Xylene	-	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	-	80-120

Sample Identification	MW103
Sample Depth, ft	0-1
Sample Type	soil
Sample Date	06-17-99
Received Date	06-18-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	not requested
Analysis Date	not requested
Control Number	990937-03

PAHs, Method 8270	**ug/kg**	**TDL**
Naphthalene	-	330
2-Methylnaphthalene	-	330
Acenaphthylene	-	330
Acenaphthene	-	330
Fluorene	-	330
Phenanthrene	-	330
Anthracene	-	330
Fluoranthene	-	330
Pyrene	-	330
Benzo(a)anthracene	-	330
Chrysene	-	330
Benzo(b)fluoranthene	-	330
Benzo(k)fluoranthene	-	330
Benzo(a)pyrene	-	330
Indeno(1,2,3-cd)pyrene	-	330
Dibenzo(a,h)anthracene	-	330
Benzo(g,h,i)perylene	-	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	23-120
2-Fluorobiphenyl	-	30-115
p-Terphenyl-d14	-	18-137

KR059B029912

NOTES: TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185936

Reviewed By HLW Date 07/15/99

Data File	990937
MW103	0-1

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO. Former MGP - SME Project # KE31823 - Sampling Date Of June 17, 1999	Project Number Chem-99-0937

Sample Identification	MW103
Sample Depth, ft	8.5-10
Sample Type	soil
Sample Date	06-17-99
Received Date	06-18-99
Report Date	07-15-99
Percent Solids, %w/w	95
Preservation Date	06-18-99
Preservation Type	MeOH
Analysis Date	06-29-99
Control Number	990937-04

BTEX, Method 8021	**ug/kg**	**TDL**
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	92	80-120

Sample Identification	MW103
Sample Depth, ft	8.5-10
Sample Type	soil
Sample Date	06-17-99
Received Date	06-18-99
Report Date	07-15-99
Percent Solids, %w/w	95
Extraction Date	06-22-99
Analysis Date	07-08-99
Control Number	990937-04

PAHs, Method 8270	**ug/kg**	**TDL**
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	86	23-120
2-Fluorobiphenyl	90	30-115
p-Terphenyl-d14	99	18-137

KR059B029913

NOTES: TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185937

Reviewed By flw Date 07/15/99

Data File	990937
MW103	8.5-10

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 17, 1999	Project Number Chem-99-0937

Sample Identification	MW103	Sample Identification	MW103
Sample Depth, ft	11-12.5	Sample Depth, ft	11-12.5
Sample Type	soil	Sample Type	soil
Sample Date	06-17-99	Sample Date	06-17-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	86	Percent Solids, %w/w	86
Preservation Date	06-18-99	Extraction Date	06-22-99
Preservation Type	MeOH	Analysis Date	07-08-99
Analysis Date	06-29-99		
Control Number	990937-05	Control Number	990937-05

BTEX, Method 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	24	50
m/p-Xylene	73	100
o-Xylene	130	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	97	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	430	330
Fluorene	nd	330
Phenanthrene	550	330
Anthracene	540	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	83	23-120
2-Fluorobiphenyl	87	30-115
p-Terphenyl-d14	95	18-137

KR059B029914

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185938

Reviewed By HWJ Date 07/19/99

Data File	990937
MW103	11-12.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 17, 1999	Project Number Chem-99-0937

Sample Identification	MW101D Product	Sample Identification	MW101D Product
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water/product	Sample Type	water
Sample Date	06-17-99	Sample Date	06-17-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	not requested	Extraction Date	not requested
Preservation Type	not requested	Analysis Date	not requested
Analysis Date	not requested		
Control Number	990937-06	Control Number	990937-06

BTEX, Method 8021	ug/kg	TDL
Benzene	-	1
Toluene	-	1
Ethylbenzene	-	1
m/p-Xylene	-	1
o-Xylene	-	1
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	-	80-120

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	5
Chrysene	-	5
Benzo(b)fluoranthene	-	5
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	5
Indeno(1,2,3-cd)pyrene	-	5
Dibenzo(a,h)anthracene	-	5
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

KR059B029915

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185939

Reviewed By HWJ Date 07/19/99

Data File 990937
MW101D Pr

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO. Former MGP - SME Project # KE31823 - Sampling Date Of June 17, 1999	Project Number Chem-99-0937

Sample Identification	MW101D	Sample Identification	MW101D
	(TOC Only)		(TOC Only)
Sample Depth, ft	13.5-15	Sample Depth, ft	13.5-15
Sample Type	soil	Sample Type	soil
Sample Date	06-17-99	Sample Date	06-17-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	85	Percent Solids, %w/w	85
Preparation Date	no sample	Extraction Date	no sample
Analysis Date, Start	no sample	Analysis Date, Total	no sample
Analysis Date, End	no sample	Analysis Date, Amenable	no sample
		Analysis Date, Free	no sample
Control Number	990937-01	Control Number	990937-01

METALS, Total	ug/kg	TDL
Arsenic - 7060	-	100
Barium, 7081	-	1,000
Cadmium - 7131	-	50
Chromium (total) - 7191	-	500
Copper - 7211	-	1,000
Lead - 7421	-	1,000
Mercury - 7470	-	100
Selenium - 7740	-	200
Silver - 7761	-	500
Zinc - 7950	-	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	-	200
Cyanide, Amenable - 9010/9013	-	500
Cyanide, Free - D4282/9013	-	400

KR059B029916

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185940

Reviewed By HLW Date 07/15/99

Data File	990937
MW101D	13.5-15

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 17, 1999	Project Number Chem-99-0937

Sample Identification	MW101D	Sample Identification	MW101D
	(TOC Only)		(TOC Only)
Sample Depth, ft	46-47.5	Sample Depth, ft	46-47.5
Sample Type	soil	Sample Type	soil
Sample Date	06-17-99	Sample Date	06-17-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	89	Percent Solids, %w/w	89
Preparation Date	no sample	Extraction Date	no sample
Analysis Date, Start	no sample	Analysis Date, Total	no sample
Analysis Date, End	no sample	Analysis Date, Amenable	no sample
		Analysis Date, Free	no sample
Control Number	990937-02	Control Number	990937-02

METALS, Total	ug/kg	TDL
Arsenic - 7060	-	100
Barium, 7081	-	1,000
Cadmium - 7131	-	50
Chromium (total) - 7191	-	500
Copper - 7211	-	1,000
Lead - 7421	-	1,000
Mercury - 7470	-	100
Selenium - 7740	-	200
Silver - 7761	-	500
Zinc - 7950	-	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	-	200
Cyanide, Amenable - 9010/9013	-	500
Cyanide, Free - D4282/9013	-	400

KR059B029917

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185941

Reviewed By HLW Date 07/15/99

Data File	990937
MW101D	46-47.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 17, 1999	Project Number Chem-99-0937

Sample Identification	MW103	Sample Identification	MW103
Sample Depth, ft	0-1	Sample Depth, ft	0-1
Sample Type	soil	Sample Type	soil
Sample Date	06-17-99	Sample Date	06-17-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	not requested	Extraction Date	not requested
Analysis Date, Start	not requested	Analysis Date, Total	not requested
Analysis Date, End	not requested	Analysis Date, Amenable	not requested
		Analysis Date, Free	not requested
Control Number	990937-03	Control Number	990937-03

METALS, Total	ug/kg	TDL
Arsenic - 7060	-	100
Barium, 7081	-	1,000
Cadmium - 7131	-	50
Chromium (total) - 7191	-	500
Copper - 7211	-	1,000
Lead - 7421	-	1,000
Mercury - 7470	-	100
Selenium - 7740	-	200
Silver - 7761	-	500
Zinc - 7950	-	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	-	200
Cyanide, Amenable - 9010/9013	-	500
Cyanide, Free - D4282/9013	-	400

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185942

Reviewed By [illegible] Date 07/15/99

Data File	990937
MW103	0-1

INORG

KR059B029918

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 17, 1999	Project Number Chem-99-0937

Sample Identification	MW103	Sample Identification	MW103
Sample Depth, ft	8.5-10	Sample Depth, ft	8.5-10
Sample Type	soil	Sample Type	soil
Sample Date	06-17-99	Sample Date	06-17-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	95	Percent Solids, %w/w	95
Preparation Date	06-28-99	Extraction Date	06-30-99
Analysis Date, Start	07-08-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990937-04	Control Number	990937-04

METALS, Total	ug/kg	TDL
Arsenic - 7060	4,100	100
Barium, 7081	13,000	1,000
Cadmium - 7131	nd	50
Chromium (total) - 7191	5,200	500
Copper - 7211	3,300	1,000
Lead - 7421	2,400	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	8,800	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185943

Reviewed By HW Date 07/15/99

Data File	990937
MW103	8.5-10

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 17, 1999	Project Number Chem-99-0937

Sample Identification	MW103	Sample Identification	MW103
Sample Depth, ft	11-12.5	Sample Depth, ft	11-12.5
Sample Type	soil	Sample Type	soil
Sample Date	06-17-99	Sample Date	06-17-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	86	Percent Solids, %w/w	86
Preparation Date	06-28-99	Extraction Date	06-30-99
Analysis Date, Start	07-08-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-13-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990937-05	Control Number	990937-05

METALS, Total	ug/kg	TDL
Arsenic - 7060	7,300	100
Barium, 7081	32,000	1,000
Cadmium - 7131	110	50
Chromium (total) - 7191	8,700	500
Copper - 7211	7,400	1,000
Lead - 7421	5,900	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	26,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185944

Reviewed By [illegible] Date 07/15/99

Data File	990937
MW103	11-12.5

INORG

KR059B029920

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 17, 1999	Project Number Chem-99-0937

Sample Identification	MW101D Product	Sample Identification	MW101D Product
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	06-17-99	Sample Date	06-17-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	not requested	Extraction Date	not requested
Analysis Date, Start	not requested	Analysis Date, Total	not requested
Analysis Date, End	not requested	Analysis Date, Amenable	not requested
		Analysis Date, Free	not requested
Control Number	990937-06	Control Number	990937-06

METALS, Total	ug/L	TDL
Arsenic - 7060	-	5.0
Barium, 7081	-	100.0
Cadmium - 7131	-	0.5
Chromium (total) - 7191	-	5.0
Copper - 7211	-	25.0
Lead - 7421	-	3.0
Mercury - 7470	-	0.2
Selenium - 7740	-	5.0
Silver - 7761	-	0.5
Zinc - 7950	-	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010/9013	-	5
Cyanide, Amenable - 9010/9013	-	20
Cyanide, Free - D4282/9013	-	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185945

Reviewed By [signature] Date 07/15-99

Data File 990937
MW101D Pr-

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KR059B029921

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: 1LE31823

SAMPLING TEAM: N. Larabel

DATE SHIPPED: 6/18/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: Pat Berrange

PHONE: 734-454-9900

ANALYSIS REQUESTED

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNA	10 mg metals	CYANIDE	(TOTAL & Amenable)		TOC	REMARKS
9 0937-1	6/17/99	0650	Soil	MW101D (13.5-15)	13.5-15	1							X	
2		0750		MW101D (46-47.5)	46-47.5	1							X	
3		1600		MW103 (0-1)	0-1	2								Hold
4		1630		MW103 (8.5-10)	8.5-10	2	X	X	X	X				
5		1635		MW103 (11-12.5)	11-12.5	2	X	X	X	X				
6	6/17/99	0910	W	MW101D - Product	—	2								Hold for possible "Trace Paint" Analysis

00185946

KR059B029922

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/17/99 1700	Smo Sample Room
Smo Sample Room	6-18-99 920	[signature]

COMMENTS
- MDEQ MDLs & method
- contact Pat Berrange w/ info
- Excess need methanol [illegible]

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number Chem-99-0943

00185947

KR059B029923

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number Chem-99-0943

Sample Identification	MW104D	Sample Identification	MW104D
	(TOC Only)		(TOC Only)
Sample Depth, ft	33.5-35	Sample Depth, ft	33.5-35
Sample Type	soil	Sample Type	soil
Sample Date	06-16-99	Sample Date	06-16-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	84	Percent Solids, %w/w	84
Preservation Date	no sample	Extraction Date	no sample
Preservation Type	no sample	Analysis Date	no sample
Analysis Date	no sample		
Control Number	990943-01	Control Number	990943-01

BTEX, Method 8021	ug/kg	TDL
Benzene	-	50
Toluene	-	50
Ethylbenzene	-	50
m/p-Xylene	-	100
o-Xylene	-	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	-	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	-	330
2-Methylnaphthalene	-	330
Acenaphthylene	-	330
Acenaphthene	-	330
Fluorene	-	330
Phenanthrene	-	330
Anthracene	-	330
Fluoranthene	-	330
Pyrene	-	330
Benzo(a)anthracene	-	330
Chrysene	-	330
Benzo(b)fluoranthene	-	330
Benzo(k)fluoranthene	-	330
Benzo(a)pyrene	-	330
Indeno(1,2,3-cd)pyrene	-	330
Dibenzo(a,h)anthracene	-	330
Benzo(g,h,i)perylene	-	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5		23-120
2-Fluorobiphenyl	-	30-115
p-Terphenyl-d14	-	18-137

KR059B029924

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185948

Reviewed By HW Date 07/15/99

Data File	990943
MW104D	33.5-35

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number Chem-99-0943

Sample Identification	MW103	Sample Identification	MW103
	(TOC Only)		(TOC Only)
Sample Depth, ft	13.5-15	Sample Depth, ft	13.5-15
Sample Type	soil	Sample Type	soil
Sample Date	06-17-99	Sample Date	06-17-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	82	Percent Solids, %w/w	82
Preservation Date	no sample	Extraction Date	no sample
Preservation Type	no sample	Analysis Date	no sample
Analysis Date	no sample		
Control Number	990943-02	Control Number	990943-02

BTEX, Method 8021	ug/kg	TDL
Benzene	-	50
Toluene	-	50
Ethylbenzene	-	50
m/p-Xylene	-	100
o-Xylene	-	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	-	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	-	330
2-Methylnaphthalene	-	330
Acenaphthylene	-	330
Acenaphthene	-	330
Fluorene	-	330
Phenanthrene	-	330
Anthracene	-	330
Fluoranthene	-	330
Pyrene	-	330
Benzo(a)anthracene	-	330
Chrysene	-	330
Benzo(b)fluoranthene	-	330
Benzo(k)fluoranthene	-	330
Benzo(a)pyrene	-	330
Indeno(1,2,3-cd)pyrene	-	330
Dibenzo(a,h)anthracene	-	330
Benzo(g,h,i)perylene	-	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5		23-120
2-Fluorobiphenyl	-	30-115
p-Terphenyl-d14	-	18-137

KR059B029925

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185949

Reviewed By KW Date 07/15/99

Data File	990943
MW103	13.5-15

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number Chem-99-0943

Sample Identification	MW102	Sample Identification	MW102
	(TOC Only)		(TOC Only)
Sample Depth, ft	13.5-15	Sample Depth, ft	13.5-15
Sample Type	soil	Sample Type	soil
Sample Date	06-18-99	Sample Date	06-18-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	83	Percent Solids, %w/w	83
Preservation Date	no sample	Extraction Date	no sample
Preservation Type	no sample	Analysis Date	no sample
Analysis Date	no sample		
Control Number	990943-03	Control Number	990943-03

BTEX, Method 8021	ug/kg	TDL
Benzene	-	50
Toluene	-	50
Ethylbenzene	-	50
m/p-Xylene	-	100
o-Xylene	-	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	-	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	-	330
2-Methylnaphthalene	-	330
Acenaphthylene	-	330
Acenaphthene	-	330
Fluorene	-	330
Phenanthrene	-	330
Anthracene	-	330
Fluoranthene	-	330
Pyrene	-	330
Benzo(a)anthracene	-	330
Chrysene	-	330
Benzo(b)fluoranthene	-	330
Benzo(k)fluoranthene	-	330
Benzo(a)pyrene	-	330
Indeno(1,2,3-cd)pyrene	-	330
Dibenzo(a,h)anthracene	-	330
Benzo(g,h,i)perylene	-	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5		23-120
2-Fluorobiphenyl	-	30-115
p-Terphenyl-d14	-	18-137

KR059B029926

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185950

Reviewed By HLW Date 07/15/99

Data File	990943
MW102	13.5-15

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number Chem-99-0943

Sample Identification	MW102	Sample Identification	MW102
Sample Depth, ft	0-1	Sample Depth, ft	0-1
Sample Type	soil	Sample Type	soil
Sample Date	06-18-99	Sample Date	06-18-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w		Percent Solids, %w/w	
Preservation Date	06-18-99	Extraction Date	not requested
Preservation Type	MeOH	Analysis Date	not requested
Analysis Date	not requested		
Control Number	990943-04	Control Number	990943-04

BTEX, Method 8021	ug/kg	TDL
Benzene	-	50
Toluene	-	50
Ethylbenzene	-	50
m/p-Xylene	-	100
o-Xylene	-	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	-	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	-	330
2-Methylnaphthalene	-	330
Acenaphthylene	-	330
Acenaphthene	-	330
Fluorene	-	330
Phenanthrene	-	330
Anthracene	-	330
Fluoranthene	-	330
Pyrene	-	330
Benzo(a)anthracene	-	330
Chrysene	-	330
Benzo(b)fluoranthene	-	330
Benzo(k)fluoranthene	-	330
Benzo(a)pyrene	-	330
Indeno(1,2,3-cd)pyrene	-	330
Dibenzo(a,h)anthracene	-	330
Benzo(g,h,i)perylene	-	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5		23-120
2-Fluorobiphenyl	-	30-115
p-Terphenyl-d14	-	18-137

KR059B029927

NOTES: TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185951

Reviewed By [illegible] Date 071595

Data File	990943
MW102	0-1

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number Chem-99-0943

Sample Identification	MW102	Sample Identification	MW102
Sample Depth, ft	6-7.5	Sample Depth, ft	6-7.5
Sample Type	soil	Sample Type	soil
Sample Date	06-18-99	Sample Date	06-18-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	93	Percent Solids, %w/w	93
Preservation Date	06-18-99	Extraction Date	06-25-99
Preservation Type	MeOH	Analysis Date	07-01-99
Analysis Date	06-21-99		
Control Number	990943-05	Control Number	990943-05

BTEX, Method 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	95	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	81	23-120
2-Fluorobiphenyl	86	30-115
p-Terphenyl-d14	93	18-137

KR059B029928

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185952

Reviewed By HWJ Date 07/15/99

Data File	990943
MW102	6-7.5

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number Chem-99-0943

Sample Identification	P2D	Sample Identification	P2D
	(TOC Only)		(TOC Only)
Sample Depth, ft	36-37.5	Sample Depth, ft	36-37.5
Sample Type	soil	Sample Type	soil
Sample Date	06-18-99	Sample Date	06-18-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	88	Percent Solids, %w/w	88
Preservation Date	no sample	Extraction Date	no sample
Preservation Type	no sample	Analysis Date	no sample
Analysis Date	no sample		
Control Number	990943-06	Control Number	990943-06

BTEX, Method 8021	ug/kg	TDL
Benzene	-	50
Toluene	-	50
Ethylbenzene	-	50
m/p-Xylene	-	100
o-Xylene	-	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	-	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	-	330
2-Methylnaphthalene	-	330
Acenaphthylene	-	330
Acenaphthene	-	330
Fluorene	-	330
Phenanthrene	-	330
Anthracene	-	330
Fluoranthene	-	330
Pyrene	-	330
Benzo(a)anthracene	-	330
Chrysene	-	330
Benzo(b)fluoranthene	-	330
Benzo(k)fluoranthene	-	330
Benzo(a)pyrene	-	330
Indeno(1,2,3-cd)pyrene	-	330
Dibenzo(a,h)anthracene	-	330
Benzo(g,h,i)perylene	-	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5		23-120
2-Fluorobiphenyl	-	30-115
p-Terphenyl-d14	-	18-137

KR059B029929

NOTES: TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185953

Reviewed By *Hlw* Date 07/15/99

Data File	990943
P2D	36-37.5

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number Chem-99-0943

Sample Identification	P2D	Sample Identification	P2D
Sample Depth, ft	38.5-40	Sample Depth, ft	38.5-40
Sample Type	soil	Sample Type	soil
Sample Date	06-18-99	Sample Date	06-18-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w		Percent Solids, %w/w	
Preservation Date	no sample	Extraction Date	no sample
Preservation Type	no sample	Analysis Date	no sample
Analysis Date	no sample		
Control Number	990943-07	Control Number	990943-07

BTEX, Method 8021	ug/kg	TDL
Benzene	-	50
Toluene	-	50
Ethylbenzene	-	50
m/p-Xylene	-	100
o-Xylene	-	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	-	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	-	330
2-Methylnaphthalene	-	330
Acenaphthylene	-	330
Acenaphthene	-	330
Fluorene	-	330
Phenanthrene	-	330
Anthracene	-	330
Fluoranthene	-	330
Pyrene	-	330
Benzo(a)anthracene	-	330
Chrysene	-	330
Benzo(b)fluoranthene	-	330
Benzo(k)fluoranthene	-	330
Benzo(a)pyrene	-	330
Indeno(1,2,3-cd)pyrene	-	330
Dibenzo(a,h)anthracene	-	330
Benzo(g,h,i)perylene	-	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5		23-120
2-Fluorobiphenyl	-	30-115
p-Terphenyl-d14	-	18-137

KR059B029930

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185954

Reviewed By [illegible] Date 07/15/99

Data File	990943
P2D	38.5-40

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number Chem-99-0943

Sample Identification	MW104D	Sample Identification	MW104D
	(TOC Only)		(TOC Only)
Sample Depth, ft	33.5-35	Sample Depth, ft	33.5-35
Sample Type	soil	Sample Type	soil
Sample Date	06-16-99	Sample Date	06-16-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	84	Percent Solids, %w/w	84
Preparation Date	no sample	Extraction Date	no sample
Analysis Date, Start	no sample	Analysis Date, Total	no sample
Analysis Date, End	no sample	Analysis Date, Amenable	no sample
		Analysis Date, Free	no sample
Control Number	990943-01	Control Number	990943-01

METALS, Total	ug/kg	TDL
Arsenic - 7060	-	100
Barium, 7081	-	1,000
Cadmium - 7131	-	50
Chromium (total) - 7191	-	500
Copper - 7211	-	1,000
Lead - 7421	-	1,000
Mercury - 7470	-	100
Selenium - 7740	-	200
Silver - 7761	-	500
Zinc - 7950	-	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	-	200
Cyanide, Amenable - 9010/9013	-	500
Cyanide, Free - D4282/9013	-	400

KR059B029931

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185955

Reviewed By [illegible] Date 07/15/99

Data File	990943
MW104D	33.5-35

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number Chem-99-0943

Sample Identification	MW103	Sample Identification	MW103
	(TOC Only)		(TOC Only)
Sample Depth, ft	13.5-15	Sample Depth, ft	13.5-15
Sample Type	soil	Sample Type	soil
Sample Date	06-17-99	Sample Date	06-17-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	82	Percent Solids, %w/w	82
Preparation Date	no sample	Extraction Date	no sample
Analysis Date, Start	no sample	Analysis Date, Total	no sample
Analysis Date, End	no sample	Analysis Date, Amenable	no sample
		Analysis Date, Free	no sample
Control Number	990943-02	Control Number	990943-02

METALS, Total	ug/kg	TDL
Arsenic - 7060	-	100
Barium, 7081	-	1,000
Cadmium - 7131	-	50
Chromium (total) - 7191	-	500
Copper - 7211	-	1,000
Lead - 7421	-	1,000
Mercury - 7470	-	100
Selenium - 7740	-	200
Silver - 7761	-	500
Zinc - 7950	-	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	-	200
Cyanide, Amenable - 9010/9013	-	500
Cyanide, Free - D4282/9013	-	400

KR059B029932

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185956

Reviewed By HWJ Date 07/15/99

Data File	990943
MW103	13.5-15

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number Chem-99-0943

Sample Identification	MW102	Sample Identification	MW102
	(TOC Only)		(TOC Only)
Sample Depth, ft	13.5-15	Sample Depth, ft	13.5-15
Sample Type	soil	Sample Type	soil
Sample Date	06-18-99	Sample Date	06-18-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	83	Percent Solids, %w/w	83
Preparation Date	no sample	Extraction Date	no sample
Analysis Date, Start	no sample	Analysis Date, Total	no sample
Analysis Date, End	no sample	Analysis Date, Amenable	no sample
		Analysis Date, Free	no sample
Control Number	990943-03	Control Number	990943-03

METALS, Total	ug/kg	TDL
Arsenic - 7060	-	100
Barium, 7081	-	1,000
Cadmium - 7131	-	50
Chromium (total) - 7191	-	500
Copper - 7211	-	1,000
Lead - 7421	-	1,000
Mercury - 7470	-	100
Selenium - 7740	-	200
Silver - 7761	-	500
Zinc - 7950	-	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	-	200
Cyanide, Amenable - 9010/9013	-	500
Cyanide, Free - D4282/9013	-	400

KR059B029933

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185957

Reviewed By HWJ Date 07/15/9

Data File	990943
MW102	13.5-15

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number Chem-99-0943

Sample Identification	MW102	Sample Identification	MW102
Sample Depth, ft	0-1	Sample Depth, ft	0-1
Sample Type	soil	Sample Type	soil
Sample Date	06-18-99	Sample Date	06-18-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w		Percent Solids, %w/w	
Preparation Date	not requested	Extraction Date	not requested
Analysis Date, Start	not requested	Analysis Date, Total	not requested
Analysis Date, End	not requested	Analysis Date, Amenable	not requested
		Analysis Date, Free	not requested
Control Number	990943-04	Control Number	990943-04

METALS, Total	ug/kg	TDL
Arsenic - 7060	-	100
Barium, 7081	-	1,000
Cadmium - 7131	-	50
Chromium (total) - 7191	-	500
Copper - 7211	-	1,000
Lead - 7421	-	1,000
Mercury - 7470	-	100
Selenium - 7740	-	200
Silver - 7761	-	500
Zinc - 7950	-	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	-	200
Cyanide, Amenable - 9010/9013	-	500
Cyanide, Free - D4282/9013	-	400

KR059B029934

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185958

Reviewed By [illegible] Date 07/15/99

Data File	990943
MW102	0-1

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number Chem-99-0943

Sample Identification	MW102	Sample Identification	MW102
Sample Depth, ft	6-7.5	Sample Depth, ft	6-7.5
Sample Type	soil	Sample Type	soil
Sample Date	06-18-99	Sample Date	06-18-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	93	Percent Solids, %w/w	93
Preparation Date	06-23-99	Extraction Date	06-30-99
Analysis Date, Start	07-06-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990943-05	Control Number	990943-05

METALS, Total	ug/kg	TDL
Arsenic - 7060	3,900	100
Barium, 7081	8,800	1,000
Cadmium - 7131	nd	50
Chromium (total) - 7191	1,900	500
Copper - 7211	2,300	1,000
Lead - 7421	3,200	1,000
Mercury - 7470	nd	100
Selenium - 7740	nd	200
Silver - 7761	nd	500
Zinc - 7950	7,700	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Free - D4282/9013	nd	400

KR059B029935

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185959

Reviewed By HWJ Date 071598

Data File	990943
MW102	6-7.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number Chem-99-0943

Sample Identification	P2D	Sample Identification	P2D
	(TOC Only)		(TOC Only)
Sample Depth, ft	36-37.5	Sample Depth, ft	36-37.5
Sample Type	soil	Sample Type	soil
Sample Date	06-18-99	Sample Date	06-18-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	88	Percent Solids, %w/w	88
Preparation Date	no sample	Extraction Date	no sample
Analysis Date, Start	no sample	Analysis Date, Total	no sample
Analysis Date, End	no sample	Analysis Date, Amenable	no sample
		Analysis Date, Free	no sample
Control Number	990943-06	Control Number	990943-06

METALS, Total	ug/kg	TDL
Arsenic - 7060	-	100
Barium, 7081	-	1,000
Cadmium - 7131	-	50
Chromium (total) - 7191	-	500
Copper - 7211	-	1,000
Lead - 7421	-	1,000
Mercury - 7470	-	100
Selenium - 7740	-	200
Silver - 7761	-	500
Zinc - 7950	-	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	-	200
Cyanide, Amenable - 9010/9013	-	500
Cyanide, Free - D4282/9013	-	400

KR059B029936

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185960

Reviewed By HCW Date 07/15/99

Data File	990943
P2D	36-37.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 16-18, 1999	Project Number Chem-99-0943

Sample Identification	P2D	Sample Identification	P2D
Sample Depth, ft	38.5-40	Sample Depth, ft	38.5-40
Sample Type	soil	Sample Type	soil
Sample Date	06-18-99	Sample Date	06-18-99
Received Date	06-18-99	Received Date	06-18-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w		Percent Solids, %w/w	
Preparation Date	no sample	Extraction Date	no sample
Analysis Date, Start	no sample	Analysis Date, Total	no sample
Analysis Date, End	no sample	Analysis Date, Amenable	no sample
		Analysis Date, Free	no sample
Control Number	990943-07	Control Number	990943-07

METALS, Total	ug/kg	TDL
Arsenic - 7060	-	100
Barium, 7081	-	1,000
Cadmium - 7131	-	50
Chromium (total) - 7191	-	500
Copper - 7211	-	1,000
Lead - 7421	-	1,000
Mercury - 7470	-	100
Selenium - 7740	-	200
Silver - 7761	-	500
Zinc - 7950	-	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	-	200
Cyanide, Amenable - 9010/9013	-	500
Cyanide, Free - D4282/9013	-	400

KR059B029937

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185961

Reviewed By [illegible] Date 07/15/99

Data File	990943
P2D	38.5-40

INORG

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: MGP SITE - KALAMAZOO

PROJECT NUMBER: K63/823

SAMPLING TEAM: N. LARASE

DATE SHIPPED: 6/18/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARASSE, PLYMOUTH

PHONE: 734-454-9900

ANALYSIS REQUESTED

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	TOTAL METALS (CMS)	BTEX	PAH	10 MAJ METALS	CYANIDE	REMARKS
0943-1	6/16/99	0955	Soil	MW104D (33.5-35)	33.5-35	1	X					
2	6/17/99	1640	Soil	MW103 (13.5-15)	13.5-15	1	X					
3	6/18/99	1135	Soil	MW102 (13.5-15)	13.5-15	1	X					
4		1105		MW102 (0-1)	0-1	2						Hold
5		1122		MW102 6-7.5	6-7.5	2						Hold
6		~~0833~~	Soil	P2D (36-37.5)	36-37.5	1						Hold
7		0833		P2D (38.5-40)	38.5-40	1						Hold

00185962

KR059B029938

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	6/18/99 1520	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MDCS & methods
- Methanol Preserve Encores
- Contact Pat Barasse on Plymouth

ORIGINAL TO LAB COPY TO CUSTOMER

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

LOCATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

00185963

KR059B029939

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	SP108	Sample Identification	SP108
Sample Depth, ft	6-8	Sample Depth, ft	6-8
Sample Type	soil	Sample Type	soil
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-23-99	Received Date	06-23-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	75	Percent Solids, %w/w	75
Preservation Date	no sample	Extraction Date	no sample
Preservation Type	no sample	Analysis Date	no sample
Analysis Date	no sample		
Control Number	990961-01	Control Number	990961-01

BTEX, Method 8021	ug/kg	TDL
Benzene	-	50
Toluene	-	50
Ethylbenzene	-	50
m/p-Xylene	-	100
o-Xylene	-	50
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	-	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	-	330
2-Methylnaphthalene	-	330
Acenaphthylene	-	330
Acenaphthene	-	330
Fluorene	-	330
Phenanthrene	-	330
Anthracene	-	330
Fluoranthene	-	330
Pyrene	-	330
Benzo(a)anthracene	-	330
Chrysene	-	330
Benzo(b)fluoranthene	-	330
Benzo(k)fluoranthene	-	330
Benzo(a)pyrene	-	330
Indeno(1,2,3-cd)pyrene	-	330
Dibenzo(a,h)anthracene	-	330
Benzo(g,h,i)perylene	-	330
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	-	23-120
2-Fluorobiphenyl	-	30-115
p-Terphenyl-d14	-	18-137

KR059B029940

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185964

Reviewed By [illegible] Date 07/15/99

Data File	990961
SP108	6-8

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	MW4 GW
Sample Depth, ft	3.5-6.9
Sample Type	water
Sample Date	06-22-99
Received Date	06-23-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-28-99
Control Number	990961-02

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	99	80-120

Sample Identification	MW4 GW
Sample Depth, ft	3.5-6.9
Sample Type	water
Sample Date	06-22-99
Received Date	06-23-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-30-99
Analysis Date	07-08-99
Control Number	990961-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	91	35-114
2-Fluorobiphenyl	93	43-116
p-Terphenyl-d14	99	33-141

KR059B029941

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185965

Reviewed By RWJ Date 07/15/99

Data File	990961
MW4 GW	3.5-6.9

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	P-4 GW
Sample Depth, ft	4.5-7.9
Sample Type	water
Sample Date	06-22-99
Received Date	06-23-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-28-99
Control Number	990961-03

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	97	80-120

Sample Identification	P-4 GW
Sample Depth, ft	4.5-7.9
Sample Type	water
Sample Date	06-22-99
Received Date	06-23-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-30-99
Analysis Date	07-08-99
Control Number	990961-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	92	35-114
2-Fluorobiphenyl	94	43-116
p-Terphenyl-d14	102	33-141

KR059B029942

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185966

Reviewed By HWD Date 07/15/99

Data File	990961
P-4 GW	4.5-7.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	MW3 GW	Sample Identification	MW3 GW
Sample Depth, ft	4.3-7.8	Sample Depth, ft	4.3-7.8
Sample Type	water	Sample Type	water
Sample Date	06-22-99	Sample Date	06-22-99
Received Date	06-23-99	Received Date	06-23-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-30-99
Preservation Type	HCl	Analysis Date	07-08-99
Analysis Date	06-28-99		
Control Number	990961-04	Control Number	990961-04

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	100	80-120

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	89	35-114
2-Fluorobiphenyl	92	43-116
p-Terphenyl-d14	97	33-141

KR059B029943

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185967

Reviewed By HWJ Date 07/15/99

Data File	990961
MW3 GW	4.3-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	P-3 GW
Sample Depth, ft	4.6-7.8
Sample Type	water
Sample Date	06-22-99
Received Date	06-23-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-28-99
Control Number	990961-05

BTEX, Method 8021	ug/L	TDL
Benzene	90	1
Toluene	21	1
Ethylbenzene	330	1
m/p-Xylene	68	1
o-Xylene	230	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	P-3 GW
Sample Depth, ft	4.6-7.8
Sample Type	water
Sample Date	06-22-99
Received Date	06-23-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-30-99
Analysis Date	07-08-99
Control Number	990961-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	21	5
2-Methylnaphthalene	5	5
Acenaphthylene	nd	5
Acenaphthene	9	5
Fluorene	10	5
Phenanthrene	16	5
Anthracene	5	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	88	35-114
2-Fluorobiphenyl	90	43-116
p-Terphenyl-d14	95	33-141

KR059B029944

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185968

Reviewed By *RCW* Date 07/15/99

Data File	990961
P-3 GW	4.6-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	MW2 GW	Sample Identification	MW2 GW
Sample Depth, ft	5.7-8	Sample Depth, ft	5.7-8
Sample Type	water	Sample Type	water
Sample Date	06-22-99	Sample Date	06-22-99
Received Date	06-23-99	Received Date	06-23-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-30-99
Preservation Type	HCl	Analysis Date	07-08-99
Analysis Date	06-28-99		
Control Number	990961-06	Control Number	990961-06

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	100	80-120

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	85	35-114
2-Fluorobiphenyl	86	43-116
p-Terphenyl-d14	98	33-141

KR059B029945

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185969

Reviewed By Hew Date 07/15/99

Data File	990961
MW2 GW	5.7-8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	MW1 GW	Sample Identification	MW1 GW
Sample Depth, ft	9.1-11.6	Sample Depth, ft	9.1-11.6
Sample Type	water	Sample Type	water
Sample Date	06-22-99	Sample Date	06-22-99
Received Date	06-23-99	Received Date	06-23-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-30-99
Preservation Type	HCl	Analysis Date	07-08-99
Analysis Date	06-28-99		
Control Number	990961-07	Control Number	990961-07

BTEX, Method 8021	ug/L	TDL
Benzene	10	1
Toluene	520	1
Ethylbenzene	280	1
m/p-Xylene	500	1
o-Xylene	420	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	97	80-120

PAHs, Method 8270	ug/L	TDL
Naphthalene	50	5
2-Methylnaphthalene	7	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	86	35-114
2-Fluorobiphenyl	90	43-116
p-Terphenyl-d14	100	33-141

KR059B029946

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185970

Reviewed By [illegible] Date 07/15/95

Data File	990961
MW1 GW	9.1-11.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	MW103 GW
Sample Depth, ft	11.4-15.4
Sample Type	water
Sample Date	06-22-99
Received Date	06-23-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-28-99
Control Number	990961-08

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	2	1
m/p-Xylene	2	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	100	80-120

Sample Identification	MW103 GW
Sample Depth, ft	11.4-15.4
Sample Type	water
Sample Date	06-22-99
Received Date	06-23-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-30-99
Analysis Date	07-08-99
Control Number	990961-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	88	35-114
2-Fluorobiphenyl	93	43-116
p-Terphenyl-d14	101	33-141

KR059B029947

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185971

Reviewed By (ew) Date 07/15/99

Data File	990961
MW103 GW	11.4-15.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	MW102 GW
Sample Depth, ft	11.3-14.9
Sample Type	water
Sample Date	06-22-99
Received Date	06-23-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-28-99
Control Number	990961-09

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	100	80-120

Sample Identification	MW102 GW
Sample Depth, ft	11.3-14.9
Sample Type	water
Sample Date	06-22-99
Received Date	06-23-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-30-99
Analysis Date	07-08-99
Control Number	990961-09

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	90	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	102	33-141

KR059B029948

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185972

Reviewed By Alex J Date 07/15/99

Data File	990961
MW102 GW	11.3-14.9

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	SP108	**Sample Identification**	SP108
	(TOC Only)		
Sample Depth, ft	6-8	Sample Depth, ft	6-8
Sample Type	soil	Sample Type	soil
Sample Date	06-03-99	Sample Date	06-03-99
Received Date	06-23-99	Received Date	06-23-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	75	Percent Solids, %w/w	75
Preparation Date	no sample	Extraction Date	no sample
Analysis Date, Start	no sample	Analysis Date, Total	no sample
Analysis Date, End	no sample	Analysis Date, Amenable	no sample
		Analysis Date, Free	no sample
Control Number	990961-01	Control Number	990961-01

METALS, Dissolved	**ug/kg**	**TDL**
Arsenic - 7060	-	100
Barium, 7081	-	1,000
Cadmium - 7131	-	50
Chromium (total) - 7191	-	500
Copper - 7211	-	1,000
Lead - 7421	-	1,000
Mercury - 7470	-	100
Selenium - 7740	-	200
Silver - 7761	-	500
Zinc - 7950	-	1,000

INORGANICS	**ug/kg**	**TDL**
Cyanide, Total - 9010	-	200
Cyanide, Amenable - 9010	-	500
Cyanide, Free - D4282	-	400

KR059B029949

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00185973

Reviewed By HWO Date 07/15/99

Data File	990961
SP108	6-8

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	MW4 GW	Sample Identification	MW4 GW
Sample Depth, ft	3.5-6.9	Sample Depth, ft	3.5-6.9
Sample Type	water	Sample Type	water
Sample Date	06-22-99	Sample Date	06-22-99
Received Date	06-23-99	Received Date	06-23-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	-
Analysis Date, Start	07-01-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990961-02	Control Number	990961-02

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium, 7081	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	nd	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

KR059B029950

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185974

Reviewed By HLW Date 07/15/99

Data File	990961
MW4 GW	3.5-6.9

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	P-4 GW	Sample Identification	P-4 GW
Sample Depth, ft	4.5-7.9	Sample Depth, ft	4.5-7.9
Sample Type	water	Sample Type	water
Sample Date	06-22-99	Sample Date	06-22-99
Received Date	06-23-99	Received Date	06-23-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	-
Analysis Date, Start	07-01-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990961-03	Control Number	990961-03

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium, 7081	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	nd	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

KR059B029951

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185975

Reviewed By HWJ Date 07/15/99

Data File	990961
P-4 GW	4.5-7.9

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	MW3 GW
Sample Depth, ft	4.3-7.8
Sample Type	water
Sample Date	06-22-99
Received Date	06-23-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date, Start	07-01-99
Analysis Date, End	07-12-99
Control Number	990961-04

METALS, Dissolved	**ug/L**	**TDL**
Arsenic - 7060	9	5.0
Barium, 7081	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

Sample Identification	MW3 GW
Sample Depth, ft	4.3-7.8
Sample Type	water
Sample Date	06-22-99
Received Date	06-23-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-09-99
Control Number	990961-04

INORGANICS	**ug/L**	**TDL**
Cyanide, Total - 9010	10	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

KR059B029952

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185976

Reviewed By HCW Date 071595

Data File	990961
MW3 GW	4.3-7.8

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	P-3 GW	Sample Identification	P-3 GW
Sample Depth, ft	4.6-7.8	Sample Depth, ft	4.6-7.8
Sample Type	water	Sample Type	water
Sample Date	06-22-99	Sample Date	06-22-99
Received Date	06-23-99	Received Date	06-23-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	-
Analysis Date, Start	07-01-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990961-05	Control Number	990961-05

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium, 7081	150	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	66	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

KR059B029953

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185977

Reviewed By [illegible] Date 07/15/99

Data File	990961
P-3 GW	4.6-7.8

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	MW2 GW	Sample Identification	MW2 GW
Sample Depth, ft	5.7-8	Sample Depth, ft	5.7-8
Sample Type	water	Sample Type	water
Sample Date	06-22-99	Sample Date	06-22-99
Received Date	06-23-99	Received Date	06-23-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	-
Analysis Date, Start	07-01-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990961-06	Control Number	990961-06

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium, 7081	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	40	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

KR059B029954

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185978

Reviewed By [signature] Date 07/15/99

Data File	990961
MW2 GW	5.7-8

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	MW1 GW	Sample Identification	MW1 GW
Sample Depth, ft	9.1-11.6	Sample Depth, ft	9.1-11.6
Sample Type	water	Sample Type	water
Sample Date	06-22-99	Sample Date	06-22-99
Received Date	06-23-99	Received Date	06-23-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	-
Analysis Date, Start	07-01-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990961-07	Control Number	990961-07

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	8	5.0
Barium, 7081	190	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	8	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

KR059B029955

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185979

Reviewed By [illegible] Date 07/15/99

Data File	990961
MW1 GW	9.1-11.6

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	MW103 GW	Sample Identification	MW103 GW
Sample Depth, ft	11.4-15.4	Sample Depth, ft	11.4-15.4
Sample Type	water	Sample Type	water
Sample Date	06-22-99	Sample Date	06-22-99
Received Date	06-23-99	Received Date	06-23-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	-
Analysis Date, Start	07-01-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990961-08	Control Number	990961-08

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	5	5.0
Barium, 7081	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	14	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

KR059B029956

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185980

Reviewed By KWJ Date 07/15/99

Data File	990961
MW103 GW	11.4-15.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 03 & 22, 1999	Project Number Chem-99-0961

Sample Identification	MW102 GW
Sample Depth, ft	11.3-14.9
Sample Type	water
Sample Date	06-22-99
Received Date	06-23-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date, Start	07-01-99
Analysis Date, End	07-12-99
Control Number	990961-09

Sample Identification	MW102 GW
Sample Depth, ft	11.3-14.9
Sample Type	water
Sample Date	06-22-99
Received Date	06-23-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-09-99
Control Number	990961-09

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium, 7081	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	nd	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

KR059B029957

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185981

Reviewed By *Hewl* Date 07/15/99

Data File	990961
MW102 GW	11.3-14.9

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CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE31823

SAMPLING TEAM: N. Larsel

DATE SHIPPED: 6/23/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Burrasse, Plymouth - SME, PHONE: 734-454-9900

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	TPC	BTEX	PNA	10 MT metals	CYANIDE			REMARKS
D961-1	6/3/99	1050	Soil	SP108 6-8	6-8	1	X							
2	6/22/99	0915	GW	MW4 GW	3.5-6.9	5		X	X	X	X			
3		1000		P-4 GW	4.5-7.9			X	X	X	X			
4		1015		MW3 GW	4.3-7.8			X	X	X	X			
5		1125		P-3 GW	4.6-7.8			X	X	X	X			
6		1145		MW2 GW	5.7-8			X	X	X	X			
7		1230		MW1 GW	9.1-11.6			X	X	X	X			
8		1345		MW103 GW	11.4-15.4			X	X	X	X			
9		1400		MW102 GW	11.3-14.9			X	X	X	X			

KR059B029958

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/22/99	SME Sample Rec
SME Sample Rec	6/23/99 1350	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MDLs + methods
- contact Pat Burrasse w/ Questions

00185982

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

.OCATION	KALAMAZOO, Former MGP - *SME Project # KE31823* - Sampling Date Of June 22-24, 1999	Project Number *Chem-99-0971*

00185983

KR059B029959

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	MW104 GW
Sample Depth, ft	6-9.4
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	07-02-99
Control Number	990971-01

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	99	80-120

Sample Identification	MW104 GW
Sample Depth, ft	6-9.4
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-30-99
Analysis Date	07-08-99
Control Number	990971-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	89	35-114
2-Fluorobiphenyl	93	43-116
p-Terphenyl-d14	99	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185984

Reviewed By HW Date 07/15/99

Data File	990971
MW104 GW	6-9.4

ORG KR059B029960

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	MW104D GW
Sample Depth, ft	30-35
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	07-02-99
Control Number	990971-02

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	1	1
Ethylbenzene	1	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	100	80-120

Sample Identification	MW104D GW
Sample Depth, ft	30-35
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-30-99
Analysis Date	07-08-99
Control Number	990971-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	16	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	90	43-116
p-Terphenyl-d14	97	33-141

KR059B029961

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185985

Reviewed By MWJ Date 07 15 99

Data File	990971
MW104D GW	30-35

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	MW101 GW
Sample Depth, ft	13.3-17
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	07-02-99
Control Number	990971-03

BTEX, Method 8021	ug/L	TDL
Benzene	62	1
Toluene	4,100	1
Ethylbenzene	760	1
m/p-Xylene	4,300	1
o-Xylene	1,300	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	93	80-120

Sample Identification	MW101 GW
Sample Depth, ft	13.3-17
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-30-99
Analysis Date	07-08-99
Control Number	990971-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	2,800	10
2-Methylnaphthalene	55	10
Acenaphthylene	75	10
Acenaphthene	nd	10
Fluorene	25	10
Phenanthrene	24	10
Anthracene	nd	10
Fluoranthene	nd	10
Pyrene	nd	10
Benzo(a)anthracene	nd	20
Chrysene	nd	20
Benzo(b)fluoranthene	nd	20
Benzo(k)fluoranthene	nd	20
Benzo(a)pyrene	nd	20
Indeno(1,2,3-cd)pyrene	nd	30
Dibenzo(a,h)anthracene	nd	30
Benzo(g,h,i)perylene	nd	30
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	diluted out	35-114
2-Fluorobiphenyl	diluted out	43-116
p-Terphenyl-d14	diluted out	33-141

KR059B029962

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185986

Reviewed By HWJ Date 07/15/99

Data File	990971
MW101 GW	13.3-17

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	MW101D GW
Sample Depth, ft	13.3-39.5
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	07-02-99
Control Number	990971-04

BTEX, Method 8021	ug/L	TDL
Benzene	2	1
Toluene	12	1
Ethylbenzene	170	1
m/p-Xylene	810	1
o-Xylene	62	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	97	80-120

Sample Identification	MW101D GW
Sample Depth, ft	13.3-39.5
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-30-99
Analysis Date	07-08-99
Control Number	990971-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	3,100	10
2-Methylnaphthalene	210	10
Acenaphthylene	190	10
Acenaphthene	nd	10
Fluorene	25	10
Phenanthrene	nd	10
Anthracene	nd	10
Fluoranthene	nd	10
Pyrene	nd	10
Benzo(a)anthracene	nd	20
Chrysene	nd	20
Benzo(b)fluoranthene	nd	20
Benzo(k)fluoranthene	nd	20
Benzo(a)pyrene	nd	20
Indeno(1,2,3-cd)pyrene	nd	30
Dibenzo(a,h)anthracene	nd	30
Benzo(g,h,i)perylene	nd	30
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	diluted out	35-114
2-Fluorobiphenyl	diluted out	43-116
p-Terphenyl-d14	diluted out	33-141

KR059B029963

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185987

Reviewed By LEW Date 07/15/99

Data File	990971
MW101D GW	13.3-39.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	P2 GW
Sample Depth, ft	8.9-12
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	07-02-99
Control Number	990971-05

BTEX, Method 8021	ug/L	TDL
Benzene	140	1
Toluene	160	1
Ethylbenzene	130	1
m/p-Xylene	420	1
o-Xylene	190	1
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	98	80-120

Sample Identification	P2 GW
Sample Depth, ft	8.9-12
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-30-99
Analysis Date	07-08-99
Control Number	990971-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	200	5
2-Methylnaphthalene	15	5
Acenaphthylene	8	5
Acenaphthene	38	5
Fluorene	23	5
Phenanthrene	24	5
Anthracene	8	5
Fluoranthene	10	5
Pyrene	5	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	85	35-114
2-Fluorobiphenyl	91	43-116
p-Terphenyl-d14	98	33-141

KR059B029964

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185988

Reviewed By HWJ Date 07/17/99

Data File	990971
P2 GW	8.9-12

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO. Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	P2D GW	Sample Identification	P2D GW
Sample Depth, ft	9.6-40	Sample Depth, ft	9.6-40
Sample Type	water	Sample Type	water
Sample Date	06-23-99	Sample Date	06-23-99
Received Date	06-24-99	Received Date	06-24-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-30-99
Preservation Type	HCl	Analysis Date	07-08-99
Analysis Date	07-02-99		
Control Number	990971-06	Control Number	990971-06

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	100	80-120

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	5	5
Anthracene	6	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	93	43-116
p-Terphenyl-d14	100	33-141

KR059B029965

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185989

Reviewed By HWJ Date 07/15/99

Data File	990971
P2D GW	9.6-40

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	DUPLICATE GW
Sample Depth, ft	-
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	07-02-99
Control Number	990971-07

BTEX, Method 8021	**ug/L**	**TDL**
Benzene	200	1
Toluene	150	1
Ethylbenzene	140	1
m/p-Xylene	390	1
o-Xylene	210	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	97	80-120

Sample Identification	DUPLICATE GW
Sample Depth, ft	-
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date	no sample
Control Number	990971-07

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	5
Chrysene	-	5
Benzo(b)fluoranthene	-	5
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	5
Indeno(1,2,3-cd)pyrene	-	5
Dibenzo(a,h)anthracene	-	5
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

KR059B029966

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185990

Reviewed By HWJ Date 07/15/99

Data File	990971
DUPLICATE	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	EQUIPMENT BLANK TUB GW
Sample Depth, ft	-
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	07-02-99
Control Number	990971-08

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	100	80-120

Sample Identification	EQUIPMENT BLANK TUI GW
Sample Depth, ft	-
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date	no sample
Control Number	990971-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	5
Chrysene	-	5
Benzo(b)fluoranthene	-	5
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	5
Indeno(1,2,3-cd)pyrene	-	5
Dibenzo(a,h)anthracene	-	5
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

KR059B029967

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185991

Reviewed By HWJ Date 07/15/99

Data File	990971
EQUIPMENT	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	EQUIPMENT BLANK LEVE	Sample Identification	EQUIPMENT BLANK LEV
	GW		GW
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	06-23-99	Sample Date	06-23-99
Received Date	06-24-99	Received Date	06-24-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	no sample
Preservation Type	HCl	Analysis Date	no sample
Analysis Date	07-02-99		
Control Number	990971-09	Control Number	990971-09

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	99	80-120

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	5
Chrysene	-	5
Benzo(b)fluoranthene	-	5
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	5
Indeno(1,2,3-cd)pyrene	-	5
Dibenzo(a,h)anthracene	-	5
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

KR059B029968

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185992

Reviewed By HW Date 07/15/99

Data File	990971
EQUIPMENT	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	P-1 GW
Sample Depth, ft	10-11
Sample Type	water
Sample Date	06-22-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	07-02-99
Control Number	990971-10

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	99	80-120

Sample Identification	P-1 GW
Sample Depth, ft	10-11
Sample Type	water
Sample Date	06-22-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date	no sample
Control Number	990971-10

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	5
Chrysene	-	5
Benzo(b)fluoranthene	-	5
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	5
Indeno(1,2,3-cd)pyrene	-	5
Dibenzo(a,h)anthracene	-	5
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

KR059B029969

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185993

Reviewed By HWD Date 07/15/99

Data File	990971
P-1 GW	10-11

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	MW105 GW
Sample Depth, ft	11-15
Sample Type	water
Sample Date	06-24-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	07-02-99
Control Number	990971-11

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	100	80-120

Sample Identification	MW105 GW
Sample Depth, ft	11-15
Sample Type	water
Sample Date	06-24-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-30-99
Analysis Date	07-08-99
Control Number	990971-11

PAHs, Method 8270	ug/L	TDL
Naphthalene	6	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	86	35-114
2-Fluorobiphenyl	90	43-116
p-Terphenyl-d14	97	33-141

KR059B029970

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185994

Reviewed By HWJ Date 07/15/99

Data File	990971
MW105 GW	11-15

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	MW105D GW
Sample Depth, ft	38.5-43.5
Sample Type	water
Sample Date	06-24-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	07-02-99
Control Number	990971-12

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	2	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	99	80-120

Sample Identification	MW105D GW
Sample Depth, ft	38.5-43.5
Sample Type	water
Sample Date	06-24-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	06-30-99
Analysis Date	07-08-99
Control Number	990971-12

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	88	35-114
2-Fluorobiphenyl	93	43-116
p-Terphenyl-d14	101	33-141

KR059B029971

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185995

Reviewed By HLW Date 07/15/99

Data File	990971
MW105D GW	38.5-43.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	MW104 GW
Sample Depth, ft	6-9.4
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date, Start	07-01-99
Analysis Date, End	07-12-99
Control Number	990971-01

Sample Identification	MW104 GW
Sample Depth, ft	6-9.4
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-09-99
Control Number	990971-01

METALS, Dissolved	**ug/L**	**TDL**
Arsenic - 7060	5	5.0
Barium, 7081	340	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	**ug/L**	**TDL**
Cyanide, Total - 9010	28	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

KR059B029972

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185996

Reviewed By HCW Date 07/15/99

Data File	990971
MW104 GW	6-9.4

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	MW104D GW
Sample Depth, ft	30-35
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date, Start	07-01-99
Analysis Date, End	07-12-99
Control Number	990971-02

METALS, Dissolved	**ug/L**	**TDL**
Arsenic - 7060	16	5.0
Barium, 7081	230	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

Sample Identification	MW104D GW
Sample Depth, ft	30-35
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-09-99
Control Number	990971-02

INORGANICS	**ug/L**	**TDL**
Cyanide, Total - 9010	5	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

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NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185997

Reviewed By HWJ Date 07/15/99

Data File	990971
MW104D GW	30-35

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	MW101 GW	Sample Identification	MW101 GW
Sample Depth, ft	13.3-17	Sample Depth, ft	13.3-17
Sample Type	water	Sample Type	water
Sample Date	06-23-99	Sample Date	06-23-99
Received Date	06-24-99	Received Date	06-24-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	
Analysis Date, Start	07-01-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990971-03	Control Number	990971-03

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	7	5.0
Barium, 7081	760	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	46	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

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NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185998

Reviewed By HLW Date 07 15 99

Data File	990971
MW101 GW	13.3-17

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	MW101D GW
Sample Depth, ft	13.3-39.5
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date, Start	07-01-99
Analysis Date, End	07-12-99
Control Number	990971-04

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	16	5.0
Barium, 7081	420	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

Sample Identification	MW101D GW
Sample Depth, ft	13.3-39.5
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-09-99
Control Number	990971-04

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	6	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

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NOTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00185999

Reviewed By *[illegible]* Date 07/15/99

Data File	990971
MW101D GW	13.3-39.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	P2 GW	Sample Identification	P2 GW
Sample Depth, ft	8.9-12	Sample Depth, ft	8.9-12
Sample Type	water	Sample Type	water
Sample Date	06-23-99	Sample Date	06-23-99
Received Date	06-24-99	Received Date	06-24-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	
Analysis Date, Start	07-01-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990971-05	Control Number	990971-05

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	8	5.0
Barium, 7081	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	460	5
Cyanide, Amenable - 9010	31	20
Cyanide, Free - D4282	nd	10

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NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00186000

Reviewed By HLW Date 07/15/99

Data File	990971
P2 GW	8.9-12

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	P2D GW	Sample Identification	P2D GW
Sample Depth, ft	9.6-40	Sample Depth, ft	9.6-40
Sample Type	water	Sample Type	water
Sample Date	06-23-99	Sample Date	06-23-99
Received Date	06-24-99	Received Date	06-24-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	
Analysis Date, Start	07-01-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990971-06	Control Number	990971-06

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium, 7081	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	nd	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

KR059B029977

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00186001

Reviewed By HWJ Date 07/15/99

Data File	990971
P2D GW	9.6-40

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	DUPLICATE GW	**Sample Identification**	DUPLICATE GW
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	06-23-99	Sample Date	06-23-99
Received Date	06-24-99	Received Date	06-24-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	
Analysis Date, Start	no sample	Analysis Date, Total	no sample
Analysis Date, End	no sample	Analysis Date, Amenable	no sample
		Analysis Date, Free	no sample
Control Number	990971-07	Control Number	990971-07

METALS, Dissolved	**ug/L**	**TDL**
Arsenic - 7060	-	5.0
Barium, 7081	-	100.0
Cadmium - 7131	-	0.5
Chromium (total) - 7191	-	5.0
Copper - 7211	-	25.0
Lead - 7421	-	3.0
Mercury - 7470	-	0.2
Selenium - 7740	-	5.0
Silver - 7761	-	0.5
Zinc - 7950	-	20.0

INORGANICS	**ug/L**	**TDL**
Cyanide, Total - 9010	-	5
Cyanide, Amenable - 9010	-	20
Cyanide, Free - D4282	-	10

KR059B029978

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00186002

Reviewed By [illegible] Date 07/15/99

Data File	990971
DUPLICATE	-

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	EQUIPMENT BLANK TUBE
Sample Depth, ft	-
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date, Start	no sample
Analysis Date, End	no sample
Control Number	990971-08

Sample Identification	EQUIPMENT BLANK TUBE
Sample Depth, ft	-
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	
Analysis Date, Total	no sample
Analysis Date, Amenable	no sample
Analysis Date, Free	no sample
Control Number	990971-08

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	-	5.0
Barium, 7081	-	100.0
Cadmium - 7131	-	0.5
Chromium (total) - 7191	-	5.0
Copper - 7211	-	25.0
Lead - 7421	-	3.0
Mercury - 7470	-	0.2
Selenium - 7740	-	5.0
Silver - 7761	-	0.5
Zinc - 7950	-	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	-	5
Cyanide, Amenable - 9010	-	20
Cyanide, Free - D4282	-	10

KR059B029979

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00186003

Reviewed By *Hwo* Date 07/15/99

Data File 990971
EQUIPMENT -

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	EQUIPMENT BLANK LEVEL
Sample Depth, ft	-
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date, Start	no sample
Analysis Date, End	no sample
Control Number	990971-09

Sample Identification	EQUIPMENT BLANK LEVEL
Sample Depth, ft	-
Sample Type	water
Sample Date	06-23-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	
Analysis Date, Total	no sample
Analysis Date, Amenable	no sample
Analysis Date, Free	no sample
Control Number	990971-09

METALS, Dissolved	**ug/L**	**TDL**
Arsenic - 7060	-	5.0
Barium, 7081	-	100.0
Cadmium - 7131	-	0.5
Chromium (total) - 7191	-	5.0
Copper - 7211	-	25.0
Lead - 7421	-	3.0
Mercury - 7470	-	0.2
Selenium - 7740	-	5.0
Silver - 7761	-	0.5
Zinc - 7950	-	20.0

INORGANICS	**ug/L**	**TDL**
Cyanide, Total - 9010	-	5
Cyanide, Amenable - 9010	-	20
Cyanide, Free - D4282	-	10

KR059B029980

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00186004

Reviewed By HLW Date 07 15 99

Data File	990971
EQUIPMENT	-

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	P-1 GW	Sample Identification	P-1 GW
Sample Depth, ft	10-11	Sample Depth, ft	10-11
Sample Type	water	Sample Type	water
Sample Date	06-22-99	Sample Date	06-22-99
Received Date	06-24-99	Received Date	06-24-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	
Analysis Date, Start	no sample	Analysis Date, Total	no sample
Analysis Date, End	no sample	Analysis Date, Amenable	no sample
		Analysis Date, Free	no sample
Control Number	990971-10	Control Number	990971-10

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	-	5.0
Barium, 7081	-	100.0
Cadmium - 7131	-	0.5
Chromium (total) - 7191	-	5.0
Copper - 7211	-	25.0
Lead - 7421	-	3.0
Mercury - 7470	-	0.2
Selenium - 7740	-	5.0
Silver - 7761	-	0.5
Zinc - 7950	-	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	-	5
Cyanide, Amenable - 9010	-	20
Cyanide, Free - D4282	-	10

KR059B029981

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00186005

Reviewed By [signature] Date 07/15/99

Data File	990971
P-1 GW	10-11

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	MW105 GW	Sample Identification	MW105 GW
Sample Depth, ft	11-15	Sample Depth, ft	11-15
Sample Type	water	Sample Type	water
Sample Date	06-24-99	Sample Date	06-24-99
Received Date	06-24-99	Received Date	06-24-99
Report Date	07-15-99	Report Date	07-15-99
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	-	Extraction Date	
Analysis Date, Start	07-01-99	Analysis Date, Total	07-09-99
Analysis Date, End	07-12-99	Analysis Date, Amenable	07-09-99
		Analysis Date, Free	07-09-99
Control Number	990971-11	Control Number	990971-11

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium, 7081	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	nd	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

KR059B029982

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00186006

Reviewed By HWJ Date 07/15/99

Data File	990971
MW105 GW	11-15

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP - SME Project # KE31823 - Sampling Date Of June 22-24, 1999	Project Number Chem-99-0971

Sample Identification	MW105D GW
Sample Depth, ft	38.5-43.5
Sample Type	water
Sample Date	06-24-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date, Start	07-01-99
Analysis Date, End	07-12-99
Control Number	990971-12

METALS, Dissolved	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium, 7081	150	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7211	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0

Sample Identification	MW105D GW
Sample Depth, ft	38.5-43.5
Sample Type	water
Sample Date	06-24-99
Received Date	06-24-99
Report Date	07-15-99
Percent Solids, %w/w	-
Extraction Date	
Analysis Date, Total	07-09-99
Analysis Date, Amenable	07-09-99
Analysis Date, Free	07-09-99
Control Number	990971-12

INORGANICS	ug/L	TDL
Cyanide, Total - 9010	nd	5
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

KR059B029983

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00186007

Reviewed By *pewd* Date 07/15/99

Data File	990971
MW105D GW	38.5-43.5

INORG

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. LaRose

DATE SHIPPED: 6/24/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Bourassie, SMG - PLYMOUTH

PHONE: 734-459-5900

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 MT metals	CYAN POP				REMARKS
0971-1	6/23/99	0800	W	MW104 GW	6-24'	5	X	X	X	X				✓
2		1100		MW104D GW	30-35'		X	X	X	X				✓
3		1230		MW101 GW	13.3-17'		X	X	X	X				✓
4		1440		MW101D GW	13-39.5'		X	X	X	X				✓
5		1600		~~MW~~ PZ GW	8.9-12'		X	X	X	X				✓
6		1800		PZD GW	7.6-40'		X	X	X	X				✓
7	6/23	—	W	DUPLICATE	—	2	X							✓
8		—		EQUIPMENT BLANK-TUBE	—	2	X							✓
9		—		EQUIPMENT BLANK-Fuel	—	2	X							✓
10	6/22	1442	W	P-1 GW	10-11	1	X							

KR059B029984

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[signature]	6/23/99	SMG Sample Rec
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
SMG Sample Rec	6/24/99 1345	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MDLSS methods
- CONTACT PAT BOURASSE w/ info.

ORIGINAL TO LAB

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CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE31823

SAMPLING TEAM: N. Larsel

DATE SHIPPED: 6/24/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARBASSE SME-PLYMOUTH PHONE: 734-454-9900

ANALYSIS REQUESTED

OPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 Ref Acts	CYANIDE				REMARKS
0971-11	6/24/99	0735	W	MW105 GW	11-15	5	X	X	X	X				✓
↓ 12	↓	1030	↓	MW105D GW	385-435	5	X	X	X	X				✓

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[signature]	6/24/99 1370	John R. Ander
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

- MDEQ MDLs & methods
- Contact PAT BARBASSE with Questions.

ORIGINAL TO LAB COPY TO CUSTOMER

KR059B029986

Soil and Materials Engineers, Inc. 43980 Plymouth Oaks Blvd. Plymouth, Michigan 48170

Date: June 23, 1999

Number of pages including cover sheet: 9

To: Bill Voigt	From: Pat Barrese
Firm: LCS	Firm: SME
Phone: (517) 788-0392	Phone: (734) 454-9900
Fax: (517) 788-1104	Fax: (734) 454-0629

REMARKS: ☐ Urgent ☒ For your review ☐ Reply ASAP ☐ Please comment

SME PROJECT NUMBER: KE31823

SME PROJECT NAME: Kalamazoo MGP

KR059B029987

Bill:

Please find attached copies of the COCs for samples your lab currently has and were collected at the site on June 3, 4, 9, 16, 17 and 18, 1999. Per our recent telephone conversation, I am submitting these to you so we can verify the selected samples are being run for the selected parameters. I will give you a call later to go over. Thanks.

00186010

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LABORATORY COMMERCIAL SERVICES

Consumers Energy

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SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE31823

PAGE 1 OF 2

SEND REPORT TO: Ann Bacarse, SME - Plymouth, PHONE: 734-454-7200

SAMPLING TEAM: N. Lobsel

DATE SHIPPED: 6/4/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 Aro Mtlic	Cyanide	TAL + Reactivity			REMARKS
	6/3/99	~~Soil~~ 0920	Soil	IA-7 A	11-12	3	X	X	X	X				
		1015	↓	SP109 (3-4)	3-4	3	X	X	X	X				
		1025	GW	SP109 GW	5-8	5	X	X	X	X				
		1120	GW	SP108 GW	6-10	5	X	X	X	X				
		1210	Soil	SP107 (5-7)	5-7	3	X	X	X	X				
		1245	GW	SP107 GW	7.5-10	5	X	X	X	X				
		1350	Soil	SP106 (0-1)	0-1	3	X	X	X	X				
		~~1400~~ 1420	GW	SP106 GW	5.5-10	5	X	X	X	X				
		1450	Soil	SP104 (0-1)	0-1	3	X	X	X	X				
		1455	↓	SP104 (4-5)	4-5	1		X						+PNAs only
		1515	GW	SP104 GW	6.5-10	5	X	X	X	X				
		1600	Soil	SP105 (0-1)	0-1	3	X	X	X	X				

00186011

KR059B029988

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	6/3/99 2000	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	6-4-99 0730	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ Methods + MQLs
- Excess Acid 4oz methanol Pres.
- Per R [illegible]

10/19/99 10:01 PM NO.089

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. Urbas

DATE SHIPPED: 6/4/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 2

SEND REPORT TO: Ms Bressler, SMS - Plymouth

PHONE: 734-454-9511

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAHs	Ni, Pb, Cr, Cd	CYANIDE	PAHs	Arsenic		REMARKS
	6/3/99	1625	GW	SP105 GW	5-10	5	X	X	X	X				
		1810	Soil	SP102 (0-1)	0-1	3	X	X	X	X				
		1820		SP102 (2-3)	2-3	3	X	X	X	X				~~HOLD~~ NA 6/4/99
		1848		SP101 (051)	051	3	X	X	X	X				
		1920		SP103 (0.5-1)	0.5-1	3	X	X	X	X				
		1925		SP103 (4-5)	4-5	3	X	X	X	X				~~HOLD~~ NA 6/4/99
		1930		SP103 (7-8)	7-8	3	X	X	X	X				~~HOLD~~ NA 6/4/99

00186012

KR059B029989

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/3/99 2:00 pm	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6-4-99 04:30	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS: See Page #1

06/04/99 16:01 :19/19 NO:089
16163233553
KALAMAZOO

06/04/99 16:01 ☎ :15/19 NO:089
☎ 16165255555
KALAMAZOO : 00186013

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP
PROJECT NUMBER: KE 31823
SAMPLING TEAM: N. LaRabel
DATE SHIPPED: 6/4/99
SITE SKETCH ATTACHED? CIRCLE ONE: YES NO
PAGE 1 OF 3
SEND REPORT TO: Pat Barnese SMG - Alymouth
PHONE: 734-454-5900

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	Kmi Mrb	Cyanide	Metal	Amerable	REMARKS
	6/4/99	0700	Soil	SP110 0-0.5	0-0.5	3	X	X	X	X			
		0713		SP111 0-0.5	0-0.5	3	X	X	X	X			
		0725		SP112 0-0.5	0-0.5	3	X	X	X	X			
		0725		SP112 2-4	2-4	3	X	X	X	X			
		0730		SP113 0-0.5	0-0.5	3	X	X	X	X			
		0730		SP113 2-4	2-4	3	X	X	X	X			
		0738		SP114 0-0.5	0-0.5	3	X	X	X	X			
		0738		SP114 2-4	2-4	3	X	X	X	X			
		0745		SP115 0-0.5	0-0.5	3	X	X	X	X			
		0745		SP115 2-4	2-4	3	X	X	X	X			
		0758		SP116 0-0.5	0-0.5	3	X	X	X	X			KR059B029990
		0810		SP117 0-0.5	0-0.5	3	X	X	X	X			

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	6/4/99 1540	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MDLs & methods
- Encores and Hake Preservation

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. Lamarel

DATE SHIPPED: 6/4/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 3

SEND REPORT TO: Pat Bourque
SMB - Plymouth
PHONE: 734-454-5800

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAHs	10 mi metals	CYANIDE	TOXICITY	Ammonia		REMARKS
	6/4/99	0810	Soil	SP117 2-4	2-4	3	X	U	U	U				
		0845		SP118 0-0.5	0-0.5	3	X	U	U	U				
		0845		SP118 2-4	2-4	3	X	U	U	U				
		0852		SP119 0-0.5	0-0.5	3	X	U	U	U				
		0852		SP119 2-4	2-4	3	X	U	U	U				
		0900		SP120 0-0.5	0-0.5	3	X	U	U	U				
		0900		SP120 2-4	2-4	3	U	U	U	U				
		0925		SP121 1.5-2.5	1.5-2.5	3	U	U	U	U				
		0930		SP122 0-0.5	0-0.5	3	U	U	U	U				
		0930		SP122 2-4	2-4	3	U	U	U	U				
		0955		SP123 0-0.5	0-0.5	3	U	U	U	U				KR059B029991
		0955		SP123 2-4	2-4	3	U	U	U	U				

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	6/4/99 1540	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS: See Page #1

00186014

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KG 31823

SAMPLING TEAM: N. LARABEL

DATE SHIPPED: 6/4/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 3 OF 3

SEND REPORT TO: Pat Rabouse, BMB - Plymouth

PHONE: 734-454-9540

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAHs	10 m. metals	Cyanide	TPH & Mineral		REMARKS
	6/4	Soil 1010	Soil	SP124 0-0.5	0-0.5	3	X	X	X	X			
		1010		SP124 2-4	2-4	3	X	X	X	X			
		1020		SP125 0-0.5	0-0.5	3	X	X	X	X			
		1020		SP125 2-4	2-4	3	X	X	X	X			
		1115	W	SP102 GW	45-9	5	X	X	X	X			
		1215	W	SP103 GW	7-10	5	X	X	X	X			
	6/3/99	1050	Soil	SP108 4-5	4-5	3	X	X	X	X			

KR059B029992

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	6/4/99 1540	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS: See Note on Page #1

00186015

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: K-Zoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. Carabel

DATE SHIPPED: 6/9/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

ANALYSIS REQUESTED

PAGE 1 OF 1

SEND REPORT TO: Pat Sullivan, SME - Plymouth

PHONE: 734-954-[illegible]

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNA	10 MS methods	CLP VOC	Zinc & Arsenic			REMARKS
	6/9/99	0915	Soil	SP101 (4-5)	4-5	3	+	O	C	D				Please Encore
	↓	0945	↓	SP101 (11-12)	11-12	3	X	X	X	X				

Date 6/21 Pg 1
Fax Note 671671
To Pat B
Fax#
From Nick L
Phone#

KR059B029993

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	6/9/99 1445	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MDLs & methods
- Encore needs 48hr methanol preservation

06/21/99 15:50 :01/01 NO:405

9109 9100 0018 6016

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Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. Larabel

DATE SHIPPED: 6/18/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Barrance

PHONE: 734-454-550

ANALYSIS REQUESTED

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAHs	10 mL Methanol	CYANIDE	(TOTAL or Amenable)	TOC	REMARKS
	6/17/99	0650	Soil	MW101 D (13.5-15)	13.5-15	1						X	
		0750		MW101 D (46-47.5)	46-47.5	1						X	
		1600		MW103 (0-1)	0-1	2							HOLD
		1630		MW103 (8.5-10)	8.5-10	2	X	X	X	X			
		1635		MW103 (11-12.5)	11-12.5	2	X	X	X	X			
	6/17/99	0910	W	MW101D - Product	—	2							Hold for possible "Fingerprint" Analysis

KR059B029994

Fax Note 7671 Date 6/21 # of pages 1
To PAT
Fax#
From Nick
Phone#

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/17/99 7:20	Smo Sample Rec
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Smo Sample Rec	6/18/99 9:20	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MEG MOLS of methanol
- contact Pat Barrance w/ info
- Excess need methanol Alternative w/ Pat

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: MGP Site - Kalamazoo

PROJECT NUMBER: KL 51823

SAMPLING TEAM: N. Lawson

DATE SHIPPED: 6/18/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Paradise, Plymouth, PHONE: 734-454-5700

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	Total Metals	PAH	BTEX	DNA	10 Metals	Cyanide	REMARKS
	6/14/99	0955	Soil	MW 104D (33.5-35)	33.5-35	1	X						
	6/14/99	1640	Soil	MW103 (13.5-15)	13.5-15	1	X						
	6/15/99	1135	Soil	MW102 (13.5-15)	13.5-15	1	X						
	↓	1105	↓	MW102 (0-1)	0-1	2							Hold
	↓	1122	↓	MW102 6-7.5	6-7.5	2			X	X	X	X	D.O. 6-22-99 ~~Hold~~
	↓	~~0833~~	Soil	P2D (36-37.5)	36-37.5	1	X	P.C.B.			6-22-99		Hold
	↓	0833	↓	P2D (38.5-40)	38.5-40	1							Hold

KR059B029995

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	6/18/99 1520	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MRBCA methods
- Millipore Disposal Encores
- Contact Pat Paradise in Plymouth

00186018

CONSUMERS ENERGY Memorandum

RECEIVED
SEP 13 1999
SME PLYMOUTH

To: RGNeumann, P-22-520

From: HWVoigt, T-260

Date: September 08, 1999

Subject: KALAMAZOO, FORMER MGP
- SME Project # KE31823
- Sampling Date of July 26, 1999

File Index No.
529917-450-154

CC: GLKelterborn, T-258

CC: Pat Barrese
Soil & Materials Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

On July 27, 1999 the Chemistry Section (CHEM) of Laboratory Services received soil samples collected at KALAMAZOO, FORMER MGP.

The samples were returned to CHEM for the determination of

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Michigan 10-Metals
Cyanide, Amenable and Free

Analytical results are attached for your review

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Commercial Services for analysis.

VOC Sample Collection - VOC samples were collected by DEQ-ORGLAB-11, Methanol Preservation Protocol (Method 5035).

Aromatic Volatile Organics (BTEX) - Method 8021, Halogenated And Aromatic Volatiles By Gas Chromatography Using Electrolytic Conductivity And Photoionization Detectors In Series: Capillary Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide Soil Extraction - Method 9013, Cyanide Extraction Procedure For Solids and Oils. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Total and Amenable - Method 9010, Total and Amenable Cyanide. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Total Metals Preparation - Soils - Method 7000, Microwave Assisted Digestion Of Sediments, Sludges, Soils and Oils. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	SW-846 Method
Arsenic	7060
Barium	7081
Cadmium	7131
Chromium	7191
Copper	7211
Lead	7421
Mercury	7470
Selenium	7740
Silver	7661
Zinc	7950

Consumers Energy Company
Laboratory Commercial Services

Laboratory Services - Chemistry Section
135 West Trail Street
Jackson, MI 49201

TO:	Pat Barrese
	Soil and Material Engineers, Inc.
	43980 Plymouth Oaks Blvd.
	Plymouth, MI 48170-9837
Fax Phone	734-454-0629
Phone	734-454-9900

FROM:	HW (Bill) Voigt
	Consumers Energy Company
Fax Phone	517-788-1104
Phone	517-788-0392

DATE:	09/03/99

Number Of Pages Including Cover Sheet	8

MARK AS:	For Your Review

MESSAGE: Pat: Attached are Kalamazoo samples HA-1 (1-2) and HA-1 (0.05) only
Your fax of July 28 with additional picks was placed in the lab
project work file. However, the work order was not updated to
reflect the changes. Therefore, the additional picks were not analyzed.
* We will start preparations today, but the sample results will need to
be flagged as being past the holding time. Should have results
for organics and cyanide by Sep 10th and metals by Sep 14th. *
Advise.

*Did not start prep per Pat B. HWV 090399

bill

KR059B029998

00186021

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP SME Project # KE31823 Sampling Date Of July 26, 1999	Project Number CHEM-99-1154

Sample Identification	HA-1	Sample Identification	HA-1
Sample Depth, ft	1-2	Sample Depth, ft	1-2
Sample Type	soil	Sample Type	soil
Sample Date	07-26-99	Sample Date	07-26-99
Received Date	07-27-99	Received Date	07-27-99
Report Date	09-02-99	Report Date	09-02-99
Percent Solids, %w/w	85	Percent Solids, %w/w	85
Preservation Date	07-27-99	Extraction Date	08-05--99
Preservation Type	MeOH	Analysis Date	08-07-99
Analysis Date	08-05-99		
Control Number	991154-02	Control Number	991154-02

BTEX, Method 8021	ug/kg	TDL
Benzene	2,600	50
Toluene	3,700	50
Ethylbenzene	1,100	50
m/p-Xylene	5,900	100
o-Xylene	4,000	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	91	80-120

PAHs, Method 8270	ug/kg	TDL
Naphthalene	310,000	330
2-Methylnaphthalene	98,000	330
Acenaphthylene	110,000	330
Acenaphthene	20,000	330
Fluorene	110,000	330
Phenanthrene	380,000	330
Anthracene	220,000	330
Fluoranthene	350,000	330
Pyrene	700,000	330
Benzo(a)anthracene	170,000	330
Chrysene	160,000	330
Benzo(b)fluoranthene	560,000	330
Benzo(k)fluoranthene	450,000	330
Benzo(a)pyrene	280,000	330
Indeno(1,2,3-cd)pyrene	97,000	330
Dibenzo(a,h)anthracene	37,000	330
Benzo(g,h,i)perylene	61,000	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	diluted out	23-120
2-Fluorobiphenyl	diluted out	30-115
p-Terphenyl-d14	diluted out	18-137

KR059B029999

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00186022

Reviewed By *[illegible]* Date 090399

Data File	991154
HA-1	1-2

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP SME Project # KE31823 Sampling Date Of July 26, 1999	Project Number CHEM-99-1154

Sample Identification	HA-1
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	07-26-99
Received Date	07-27-99
Report Date	09-02-99
Percent Solids, %w/w	96
Preservation Date	07-27-99
Preservation Type	MeOH
Analysis Date	08-05-99
Control Number	991154-03

BTEX, Method 8021	ug/kg	TDL
Benzene	600	50
Toluene	2,000	50
Ethylbenzene	720	50
m/p-Xylene	2,900	100
o-Xylene	2,100	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	94	80-120

Sample Identification	HA-1
Sample Depth, ft	0-0.5
Sample Type	soil
Sample Date	07-26-99
Received Date	07-27-99
Report Date	09-02-99
Percent Solids, %w/w	96
Extraction Date	08-05--99
Analysis Date	08-07-99
Control Number	991154-03

PAHs, Method 8270	ug/kg	TDL
Naphthalene	31,000	330
2-Methylnaphthalene	7,100	330
Acenaphthylene	13,000	330
Acenaphthene	1,900	330
Fluorene	8,900	330
Phenanthrene	44,000	330
Anthracene	9,200	330
Fluoranthene	27,000	330
Pyrene	62,000	330
Benzo(a)anthracene	11,000	330
Chrysene	9,700	330
Benzo(b)fluoranthene	16,000	330
Benzo(k)fluoranthene	11,000	330
Benzo(a)pyrene	17,000	330
Indeno(1,2,3-cd)pyrene	6,200	330
Dibenzo(a,h)anthracene	2,700	330
Benzo(g,h,i)perylene	5,800	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	80	23-120
2-Fluorobiphenyl	87	30-115
p-Terphenyl-d14	89	18-137

KR059B030000

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00186023

Reviewed By HW Date 090395

Data File	991154
HA-1	0-0.5

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP SME Project # KE31823 Sampling Date Of July 26, 1999	Project Number CHEM-99-1154

Sample Identification	HA-1	Sample Identification	HA-1
Sample Depth, ft	1-2	Sample Depth, ft	1-2
Sample Type	soil	Sample Type	soil
Sample Date	07-26-99	Sample Date	07-26-99
Received Date	07-27-99	Received Date	07-27-99
Report Date	09-02-99	Report Date	09-02-99
Percent Solids, %w/w	85	Percent Solids, %w/w	85
Preparation Date	08-11-99	Extraction Date	08-30-99
Analysis Date, Start	08-30-99	Analysis Date, Total	09-02-99
Analysis Date, End	09-02-99	Analysis Date, Amenable	09-02-99
Control Number	991154-02	Control Number	991154-02

METALS, Total	ug/kg	TDL
Arsenic - 7060	35,000	100
Barium, 7081	64,000	1,000
Cadmium - 7131	88	50
Chromium (total) - 7191	8,800	500
Copper - 7211	24,000	1,000
Lead - 7421	49,000	1,000
Mercury - 7470	140	100
Selenium - 7740	1,800	200
Silver - 7761	nd	500
Zinc - 7950	16,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	31,000	200
Cyanide, Amenable - 9010/9013	nd	500

KR059B030001

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00186024

Reviewed By HWJ Date 090399

Data File	991154
HA-1	1-2

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	KALAMAZOO, Former MGP SME Project # KE31823 Sampling Date Of July 26, 1999	Project Number CHEM-99-1154

Sample Identification	HA-1	Sample Identification	HA-1
Sample Depth, ft	0-0.5	Sample Depth, ft	0-0.5
Sample Type	soil	Sample Type	soil
Sample Date	07-26-99	Sample Date	07-26-99
Received Date	07-27-99	Received Date	07-27-99
Report Date	09-02-99	Report Date	09-02-99
Percent Solids, %w/w	96	Percent Solids, %w/w	96
Preparation Date	08-11-99	Extraction Date	08-30-99
Analysis Date, Start	08-30-99	Analysis Date, Total	09-02-99
Analysis Date, End	09-02-99	Analysis Date, Amenable	09-02-99
Control Number	991154-03	Control Number	991154-03

METALS, Total	ug/kg	TDL
Arsenic - 7060	30,000	100
Barium, 7081	58,000	1,000
Cadmium - 7131	230	50
Chromium (total) - 7191	12,000	500
Copper - 7211	24,000	1,000
Lead - 7421	24,000	1,000
Mercury - 7470	nd	100
Selenium - 7740	770	200
Silver - 7761	nd	500
Zinc - 7950	110,000	1,000

INORGANICS	ug/kg	TDL
Cyanide, Total - 9010/9013	nd	200
Cyanide, Amenable - 9010/9013	nd	500

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00186025

Reviewed By HWD Date 090399

Data File	991154
HA-1	0-0.5

INORG KR059B030002

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KG 31823

SAMPLING TEAM: N. Larabel

DATE SHIPPED: 7/27/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Breaise, SMG Plymouth

PHONE: 734-455-5511

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAH	10 minerals	CYANIDE				REMARKS
1154-1	7/26/99	0930	Soil	~~HA1~~ HA6 Black material	—	2								Hold
1154-2		0945		HA1 (1-2)	1-2	2	X	X	X	X				
1154-3		1010		HA1 (0-0.5)	0-0.5	2	X	X	X	X				
1154-4		1225	Soil	HA2 (1')	1'	2								Hold
1154-5		1234		HA3 (1.5')	1.5	2								
1154-6		1240		HA4 (0.75')	0.75	2								
1154-7		1245		HA5 (1.5')	1.5	2								

00186026

KR059B030003

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	7/27/99 0930	John R. [signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- Added MDLs & methods
- Ensure QC and results within Protocol
- Contact Pat Breaise for info

ORIGINAL TO LAB COPY TO CUSTOMER

Soil and Materials Engineers, Inc. 43980 Plymouth Oaks Blvd. Plymouth, Michigan 48170

Date: July 28, 1999

Number of pages including cover sheet: 2

To: Bill Voigt	From: Pat Barrese
Firm: LCS	Firm: SME
Phone: (517) 788-0392	Phone: (734) 454-9900
Fax: (517) 788-1104	Fax: (734) 454-0629

REMARKS: ☐ Urgent ☒ For your review ☐ Reply ASAP ☐ Please comment

SME Project Number: KE31823

SME Project Name: Kalamazoo MGP

Bill:

Please find attached a copy of the COC with additional sample picks for the samples collected on July 26. Can we do any kind of petroleum ID for the sample of "Black Material?" I will give you a call later to discuss. Thanks.

KR059B030004

Warning Confidentiality Notice

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Consultants in the geosciences, materials and the environment

00186027

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788

Fax Note 7671 Date 7/27 Pages 1
To Pat
Fax #
From Hale
Phone #

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KG 31823

SAMPLING TEAM: N. Larabel

DATE SHIPPED: 7/27/99

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Bourque, Sue Aymond

PHONE: 734-454-9600

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAH	10 minute	Chlorine	TO (?)			REMARKS
	7/26/99	0930	Soil	~~HA1~~ HA4 Black material	—	2	X	X	X	X	X			A.C.B. 7-28-99 Hold
		0945		HA1 (1-2)	1-2	2	X	X	X	X				
		1010		HA1 (0-0.5)	0-0.5	2	X	X	X	X				
[redacted]	[redacted]	[redacted]	Soil	HA2 (1')	1'	2	X	X	X	X				A.C.B. 7-28-99
		1234		HA3 (1.5')	1.5	2	X	X	X	X				Hold
		1240		HA4 (0.75')	0.75	2	X	X	X	X				
		1245		HA5 (1.5')	1.5	2	X	X	X	X				

00186028

KR059B030005

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	7/27/99 0530	John R. Rich
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MADEU MOLS + methods
- ENCORES AND 40ml vials Preservative
- CONTACT PAT BOURQUE for info

** CONFIRMATION REPORT **

TRANSMISSION
TRANSACTION(S) COMPLETED

NO.	DATE/TIME	DESTINATION	DURATION	PGS	STATUS	MODE
399	SEP. 3 8:29	734 454 0629	0° 04' 22"	008	OK	N ECM

00186029

APPENDIX H

LABORATORY ANALYTICAL REPORTS FOR SOIL VAPOR SAMPLES COLLECTED IN JULY, 1999 AND CALCULATIONS FOR ALLOWABLE SOIL GAS CONCENTRATIONS

KR059B030008

00186031

Fibertec
Environmental
Services

August 6, 1999

Fibertec Project # 59694
Project Identification: Kalamazoo MGP/ KE31823

Mr. Pat Barrese
SME
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170

Dear Mr. Barrese,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed as requested and the results compiled in the enclosed report. Please note samples will be disposed of 30 days after reporting date.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

Daryl P. Strandbergh
Laboratory Director

DPS/th

Enclosures

KR059B030009

00186032

2280 Aurelius Road Holt, Michigan 48842 Telephone: (517) 699-0345 Facsimile: (517) 699-0388
29300 Wall Street Wixom, Michigan 48393 Telephone: (248) 348-5598 Facsimile: (248) 348-4896

Fibertec
Environmental
Services

ANALYTICAL LABORATORY RESULTS

CLIENT IDENTIFICATION: SME

FIBERTEC PROJ. NO.: 59694

FIBERTEC SAMPLE NO.: 001

SAMPLE MATRIX: AIR

CLIENT SAMPLE INFORMATION

PROJECT IDENTIFICATION: KALAMAZOO MGP

SAMPLE DESC.: SV-1 (6-8')

PROJECT NUMBER: KE31823

SAMPLE NUMBER: 1

DATE SAMPLED: 7/20/99

C.O.C. NUMBER: 15583

ANALYTE	RESULTS	UNITS	DL	METHOD	BATCH NO.	DATE OF PREPARATION	DATE OF ANALYSIS	TECH. INIT.
BENZENE	0.19	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
TOLUENE	0.071	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
ETHYLBENZENE	0.016	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
TOTAL XYLENES	0.086	mg/m^3	0.030	8260	13379	7/30/99	7/30/99	AL

COMMENTS:

KR059B030010

ND = NOT DETECTED AT OR ABOVE DETECTION LIMIT
DL = DETECTION LIMIT

00186033

2280 Aurelius Road Holt, Michigan 48842 Telephone: (517) 699-0345 Facsimile: (517) 699-0388
29300 Wall Street Wixom, Michigan 48393 Telephone: (248) 348-5598 Facsimile: (248) 348-4896

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ANALYTICAL LABORATORY RESULTS

CLIENT IDENTIFICATION: SME

FIBERTEC PROJ. NO.: 59694

FIBERTEC SAMPLE NO.: 002

SAMPLE MATRIX: AIR

CLIENT SAMPLE INFORMATION

PROJECT IDENTIFICATION: KALAMAZOO MGP

SAMPLE DESC.: SV-2 (6-8')

PROJECT NUMBER: KE31823

SAMPLE NUMBER: 2

DATE SAMPLED: 7/20/99

C.O.C. NUMBER: 15583

ANALYTE	RESULTS	UNITS	DL	METHOD	BATCH NO.	DATE OF PREPARATION	DATE OF ANALYSIS	TECH. INIT.
BENZENE	0.068	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
TOLUENE	0.060	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
ETHYLBENZENE	0.012	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
TOTAL XYLENES	0.057	mg/m^3	0.030	8260	13379	7/30/99	7/30/99	AL

COMMENTS:

KR059B030011

ND = NOT DETECTED AT OR ABOVE DETECTION LIMIT
DL = DETECTION LIMIT

00186034

2280 Aurelius Road Holt, Michigan 48842 Telephone: (517) 699-0345 Facsimile: (517) 699-0388
29300 Wall Street Wixom, Michigan 48393 Telephone: (248) 348-5598 Facsimile: (248) 348-4896

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ANALYTICAL LABORATORY RESULTS

CLIENT IDENTIFICATION: SME

FIBERTEC PROJ. NO.: 59694

FIBERTEC SAMPLE NO.: 003

SAMPLE MATRIX: AIR

CLIENT SAMPLE INFORMATION

PROJECT IDENTIFICATION: KALAMAZOO MGP

SAMPLE DESC.: SV-3 (6-8')

PROJECT NUMBER: KE31823

SAMPLE NUMBER: 3

DATE SAMPLED: 7/20/99

C.O.C. NUMBER: 15583

ANALYTE	RESULTS	UNITS	DL	METHOD	BATCH NO.	DATE OF PREPARATION	DATE OF ANALYSIS	TECH. INIT.
BENZENE	0.024	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
TOLUENE	0.043	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
ETHYLBENZENE	0.015	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
TOTAL XYLENES	0.085	mg/m^3	0.030	8260	13379	7/30/99	7/30/99	AL

COMMENTS:

KR059B030012

ND = NOT DETECTED AT OR ABOVE DETECTION LIMIT
DL = DETECTION LIMIT

00186035

2280 Aurelius Road Holt, Michigan 48842 Telephone: (517) 699-0345 Facsimile: (517) 699-0388
29300 Wall Street Wixom, Michigan 48393 Telephone: (248) 348-5598 Facsimile: (248) 348-4896

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ANALYTICAL LABORATORY RESULTS

CLIENT IDENTIFICATION: SME

FIBERTEC PROJ. NO.: 59694

FIBERTEC SAMPLE NO.: 004

SAMPLE MATRIX: AIR

CLIENT SAMPLE INFORMATION

PROJECT IDENTIFICATION: KALAMAZOO MGP

SAMPLE DESC.: SV-4 (6-8')

PROJECT NUMBER: KE31823

SAMPLE NUMBER: 4

DATE SAMPLED: 7/20/99

C.O.C. NUMBER: 15583

ANALYTE	RESULTS	UNITS	DL	METHOD	BATCH NO.	DATE OF PREPARATION	DATE OF ANALYSIS	TECH. INIT.
BENZENE	1.0	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
TOLUENE	0.13	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
ETHYLBENZENE	0.10	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
TOTAL XYLENES	0.17	mg/m^3	0.030	8260	13379	7/30/99	7/30/99	AL

COMMENTS:

KR059B030013

ND = NOT DETECTED AT OR ABOVE DETECTION LIMIT
DL = DETECTION LIMIT

00186036

2280 Aurelius Road Holt, Michigan 48842 Telephone: (517) 699-0345 Facsimile: (517) 699-0388
29300 Wall Street Wixom, Michigan 48393 Telephone: (248) 348-5598 Facsimile: (248) 348-4896

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ANALYTICAL LABORATORY RESULTS

CLIENT IDENTIFICATION: SME

FIBERTEC PROJ. NO.: 59694

FIBERTEC SAMPLE NO.: 005

SAMPLE MATRIX: AIR

CLIENT SAMPLE INFORMATION

PROJECT IDENTIFICATION: KALAMAZOO MGP

SAMPLE DESC.: SV-5 (8-10')

PROJECT NUMBER: KE31823

SAMPLE NUMBER: 5

DATE SAMPLED: 7/20/99

C.O.C. NUMBER: 15583

ANALYTE	RESULTS	UNITS	DL	METHOD	BATCH NO.	DATE OF PREPARATION	DATE OF ANALYSIS	TECH. INIT.
BENZENE	0.034	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
TOLUENE	0.052	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
ETHYLBENZENE	0.020	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
TOTAL XYLENES	0.070	mg/m^3	0.030	8260	13379	7/30/99	7/30/99	AL

COMMENTS:

KR059B030014

ND = NOT DETECTED AT OR ABOVE DETECTION LIMIT
DL = DETECTION LIMIT

00186037

2280 Aurelius Road Holt, Michigan 48842 Telephone: (517) 699-0345 Facsimile: (517) 699-0388
29300 Wall Street Wixom, Michigan 48393 Telephone: (248) 348-5598 Facsimile: (248) 348-4896

Fibertec
Environmental
Services

ANALYTICAL LABORATORY RESULTS

CLIENT IDENTIFICATION: SME

FIBERTEC PROJ. NO.: 59694

FIBERTEC SAMPLE NO.: 006

SAMPLE MATRIX: AIR

CLIENT SAMPLE INFORMATION

PROJECT IDENTIFICATION: KALAMAZOO MGP

SAMPLE DESC.: BLANK

PROJECT NUMBER: KE31823

SAMPLE NUMBER: 6

DATE SAMPLED: 7/20/99

C.O.C. NUMBER: 15583

ANALYTE	RESULTS	UNITS	DL	METHOD	BATCH NO.	DATE OF PREPARATION	DATE OF ANALYSIS	TECH. INIT.
BENZENE	ND	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
TOLUENE	0.017	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
ETHYLBENZENE	ND	mg/m^3	0.010	8260	13379	7/30/99	7/30/99	AL
TOTAL XYLENES	ND	mg/m^3	0.030	8260	13379	7/30/99	7/30/99	AL

COMMENTS:

KR059B030015

ND = NOT DETECTED AT OR ABOVE DETECTION LIMIT
DL = DETECTION LIMIT

00186038

2280 Aurelius Road Holt, Michigan 48842 Telephone: (517) 699-0345 Facsimile: (517) 699-0388
29300 Wall Street Wixom, Michigan 48393 Telephone: (248) 348-5598 Facsimile: (248) 348-4896

59694

FIBERTEC INCORPORATED
ENVIRONMENTAL SERVICES

DATE: 7-23-99

COC # 15583

FIBERTEC # CLIENT NAME: SME
CONTACT PERSON: Pat Barrese

PROJECT NAME, ADDRESS & PROJECT NUMBER
Kalamazoo MGP
KE31823

SAMPLE #	DATE	TIME	IDENTIFICATION	MATRIX	# OF CONTAINERS	PRESERVED	PARAMETERS: BTEX BY 8260									COMMENTS
001	7/20	10:15	SV-1 (6-8')		2	-	X									
2		11:31	SV-2 (6-8')		2	-	X									
3		12:15	SV-3 (6-8')		2	-	X									
4		1:25	SV-4 (6-8')		2	-	X									
5		2:28	SV-5 (8-10')		2	-	X									
6		3:05	Blank		2	-	X									

TURNAROUND REQUESTED:
- [ ] 24 HOUR RUSH
- [ ] 48 HOUR RUSH
- [x] NORMAL
- [ ] OTHER: SPECIFY _____

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:
	7/20	Sheryl Avedisian
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:

REMARKS
Fax# 734-454-0629
phone # 734-454-9900

KR059B030016

PURCHASE ORDER # _____

0018603 9

FROM "PART 201 GENERIC GROUNDWATER AND SOIL VOLATIZATION TO INDOOR AIR INHALATION CRITERIA: TECHNICAL SUPPORT DOMUMENT," MDEQ-ERD, AUGUST 31, 1998

Attachment C

Method for Calculating Chemical-Specific Soil Gas Concentrations Protective of Unacceptable Indoor Air Inhalation Health Risks: An Option for Demonstrating Compliance with SVIIC

As an example, the acceptable indoor air vapor concentration, $C_{building}$, for the residential land use exposure assumptions for carcinogenic chemicals is: (*Note that the adjusted inhalation rate, AIR, parameter would need to be multiplied in the numerator for commercial/industrial land use calculations*)

$$C_{building} = \frac{TR \times AT}{IURF \times EF \times ED} = \frac{ug}{m^3}$$

where,

TR	(Target risk)	= 1E-5
AT	(Averaging time)	= 25,550 days (70 x 365)
$IURF$	(Inhalation unit risk factor)	= chemical-specific, $(ug/m^3)^{-1}$
EF	(Exposure frequency)	= 350 days/year (Residential)
		= 245 days/year (Commercial/Industrial)
ED	(Exposure duration)	= 30 years (Residential)
		= 21 years (Commercial/Industrial)

The acceptable soil gas (vapor) concentration, C_{source}, can be back-calculated given that:

$$C_{building} = \alpha \times C_{source}$$

where,

α	(Attenuation coefficient)	= unitless (see equation 8)

Since the contaminant source is assumed to lie directly below the foundation for generic SVIIC calculations, the source-to-building separation distance approaches zero and α can be approximated by $Q_{soil}/Q_{building}$. Therefore,

$$C_{building} = \frac{Q_{soil}}{Q_{building}} \times C_{source}$$

KR059B030017

where,

Q_{soil}	(Volumetric flow rate of soil vapor into the building)	= 0.81 cm^3/s (Residential)
		= 2.10 cm^3/s (Commercial/Industrial)
$Q_{building}$	(Building ventilation rate)	= 1.51E+5 cm^3/s (Residential)
		= 5.04E+5 cm^3/s (Commercial/Industrial)

Attachment C (Continued)

Algebraically,

$$C_{source} = C_{building} \times \frac{Q_{building}}{Q_{soil}}$$

The generic land use-specific default assumptions for Q_{soil} and $Q_{building}$ must be used to derive the correct soil gas concentration, C_{source}, in units of ug/m^3, that corresponds to the generic GVIIC and SVIIC. These units can be converted to ppm by volume (ppmv), if necessary, for comparison to site-specific soil gas measurements using the ideal gas law as follows:

$$SG = \frac{R \times T}{p \times mw} \times C_{source} \times 10^{-6} g / ug$$

where,

SG	Soil gas concentration	= cm^3/m^3 or ppmv (chemical-specific)
R	Universal gas constant	= 82.05 atm-cm^3/mol-K
T	Absolute temperature	= 293.16 K (20° C)
p	Absolute pressure of gas	= 1 atm
mw	Molecular weight	= chemical-specific (g/mol)

Calculation of Soil Gas Concentrations Protective of Unacceptable Indoor Air Inhalation Health Risks
Indoor Air Pathway Evaluation
Kalamazoo MGP
Kalamazoo, Michigan

	Benzene	Toluene	Ethylbenzene	Xylenes
TR	0.00001	na	na	na
THQ	na	1	1	1
$AT_{carcinogen}$ (days)	25550	na	na	na
$AT_{noncarcinogen}$ (days)	na	7665	7665	7665
AIR	2	na	na	na
IURF$(ug/m^3)^{-1}$	8.30E-06	na	na	na
RfC (ug/m^3)	na	400	1,000	4,400
EF (days/year)	245	245	245	245
ED (years)	21	21	21	21
$C_{building}$ (ug/m^3)	11.97	595.92	1489.80	6555.10
Q_{soil} (cm^3/s)	2.1	2.1	2.1	2.1
$Q_{building}$ (cm^3/s)	504,000	504,000	504,000	504,000
C_{source} (ug/m^3)	2,871,896	143,020,408	357,551,020	1,573,224,490
R $(atm\text{-}cm^3/mol\text{-}K)$	82.05	82.05	82.05	82.05
T (K) (20°C)	293.16	293.16	293.16	293.16
p (atm)	1	1	1	1
mw (g/mole)	78.11	92.14	106.17	106.17
SG (ppm_v)	884	37,336	81,006	356,428
SG (mg/m3)	2,824	140,701	351,755	1,547,728

Calculations performed using the method described in the "Part 201 Generic Groundwater and Soil Volatilization to Indoor Air Inhalation Criteria: Technical Support Document," Michigan Department of Environmental Quality - Environmental Response Division, August 31, 1998 (Attachment C).

Values used were supplied in the above referenced MDEQ document, with the exception of IURF, RfC, and mw. These values were referenced from the MDEQ Interim ERD Operational Memorandum #18, "Attachment B: Toxilogical and Chemical-Physical Data for Part 201 Clean-up Criteria," dated August 31, 1998.

na = not applicable

EXHIBIT MGP-5

Pharmacia & Upjohn

7000 Portage Road
Kalamazoo, MI 49001-0199
Telephone: (616) 833-4000

received
1/10/00
PN

January 9, 2000

WORKING COPY

File 50111.3

Ms. Carol Weaver
Michigan Department of Environmental Quality
Environmental Response Division
1342 SR-89, Suite B
Plainwell, MI 49080-1915

RE: Accidental Release Report Follow Up - Building 152
Pharmacia & Upjohn
301 Henrietta Street
Kalamazoo, Michigan

Dear Ms. Weaver:

The following correspondence contains information to follow-up the 10-day accidental release report that was submitted to your office on October 21, 1999 for the above-referenced site. Based on visual observation of the impacted area, telephone notification was made to you on October 11, 1999.

As described in the October 21, 1999 10-day accidental release report, drain material from a bay area of B. 152 as well as approximately 15 cubic yards of surrounding soil were excavated on October 12, 1999. These combined materials were stored on site in a lined and covered roll-off container until disposal at the Orchard Hills Sanitary Landfill on November 22, 1999. This roll-off container was transported by Best Way Disposal and, based on analytical characterization of the drain material, was disposed of as non-hazardous. A copy of the receipt document from the landfill is included with this letter.

Subsequent to remedial excavation activities, soil samples were obtained from the excavation. These samples included four sidewall and two floor samples that were submitted to KAR Laboratories for the analysis of volatile organic carbons, PNAs, arsenic, cadmium, chromium (total), lead, silver, and cyanide (total). Laboratory analysis of these samples concluded that elevated levels of metals and PNAs remain in the surrounding soil. A copy of the analytical results is also included with this letter.

It is believed that the constituents remaining in the soil surrounding the remedial excavation area are related to former manufactured gas plant (MGP) activities at the site as historically

conducted by Consumers Energy Company. These remaining constituents are addressed in Consumers Energy's Interim Report of Remedial Investigation, and will be further addressed by Consumers Energy as part of their "Part 201, Section 7a and 14(1)(g) Plan" as presented to the MDEQ on June 3, 1997.

If you have any questions or concerns, please feel free to contact either Mark Lemons at (616)833-9159, or Janna Muller at (616)833-6351.

Sincerely,

Mark E. Lemons
Environmental Manager
Pharmacia & Upjohn Company

Janna L. Muller
Contract Hydrogeologist

enc.

c Consumers Energy Company RC Lewis, RG Neumann*

cc P&U FJ Einspahr, RF Gendernalik*, MC Henderson, LJ Kenaga*, PJ Maas, JS Mehring, TP Pokorski*, KM Walsh, JW Whitlock*

301560- 3024

255

BEST WAY DISPOSAL

2314 MILLER ROAD
KALAMAZOO, MICHIGAN 49001
(616) 388-3300

☐ DEL. ☑ PICK UP ☐ EXCHANGE ☐ C.O.D.

CUSTOMER'S ORDER NO. | TIME | DATE 11-22 19 99

NAME Pharmacia + Upjohn Austin Co

ADDRESS SLD. Decca. 90N Bldg #152-

1.0 YD. CONT ____ 10 YD. CONT ____

1.5 YD. CONT. ____ 20 YD. CONT. 1

2.0 YD. CONT. ____ 30 YD. CONT. ____

3.0 YD. CONT. ____ 40 YD. CONT. ____

4.0 YD. CONT. ____ 42 YD. CONT. ____

6.0 YD. CONT. ____ __ YD. CONT ____

COMMENTS

DRIVER 10 | CUSTOMERS SIGNATURE [signature] AUSTIN CO.

SERVICES ACCEPTED SUBJECT TO THE TERMS AND CONDITIONS ON THE REVERSE SIDE.

To go to LANDFILL

Thank You

KR059B030023

00118

KAR *Laboratories, Inc.*

4425 Manchester Road
Kalamazoo, MI 49001
Phone 616 381-9666
Fax 616 381-9698
www.karlabs.com

Pharmacia & Upjohn, Inc.
7000 Portage Road, 6602-41-016
Kalamazoo, MI 49001

Attn : ***Ms. Janna Muller***

KAR Project No. :	***995192***
Date Reported :	***10/29/99***
Date Activated :	***10/14/99***
Date Due :	***10/29/99***
Date Validated :	***10/29/99***

Project Description : ***Analysis of six soil samples from B-152 (MS97-2094).***

Dear Client,

Your laboratory data is presented to you in this report. Unless otherwise stated under the "Comments" heading, all tests were performed within the maximum allowable holding times, have met or exceeded QC requirements and the result represents the sample as it was received.

If you wish to contact us about this work please mention KAR Project No. 995192. To arrange additional sampling or testing please contact our Client Services Department. If you have a question regarding quality assurance please contact William Rauch.

Thank you for the opportunity to serve you. Please do not hesitate to call if we can provide additional assistance.

Respectfully submitted,

Michael J. Jaeger
Director of Laboratories

KAR Laboratories, Inc. maintains Full Certification status for Bacteriology, Inorganics, Regulated Organics and Synthetic Organics through USEPA, Michigan Department of Public Health and Indiana State Department of Health. This report may only be reproduced in full and not without the written consent of **Pharmacia & Upjohn, Inc.**.

POSITIVE RESULTS SUMMARY REPORT

Client: *Pharmacia & Upjohn, Inc.*

KAR Project No.: *995192*

Date Reported: *10/29/1999*

Project Description: *Analysis of six soil samples from B-152 (MS97-2094).*

Sample Description: *"North Sidewall"*

Test	Positive Result Concentration	Units
Acenaphthylene	350	ug/kg dry sample
Anthracene	560	ug/kg dry sample
Arsenic, total	17.5	mg/kg dry sample
Benzo(a)anthracene	3700	ug/kg dry sample
Benzo(a)pyrene	4900	ug/kg dry sample
Benzo(b)fluoranthene	5800	ug/kg dry sample
Benzo(ghi)perylene	920	ug/kg dry sample
Benzo(k)fluoranthene	2900	ug/kg dry sample
Chromium, total	24	mg/kg dry sample
Chrysene	1900	ug/kg dry sample
Dibenzo(ah)anthracene	1600	ug/kg dry sample
Dry weight solids	86.49	% by weight
Fluoranthene	5300	ug/kg dry sample
Indeno(123cd)pyrene	1700	ug/kg dry sample
Lead, total	167	mg/kg dry sample
Phenanthrene	2100	ug/kg dry sample
Pyrene	3700	ug/kg dry sample

Sample Description: *"East Sidewall"*

Test	Positive Result Concentration	Units
Arsenic, total	9.2	mg/kg dry sample
Chromium, total	12	mg/kg dry sample
Cyanide, total	0.6	mg/kg dry sample
Dry weight solids	86.36	% by weight
Lead, total	73	mg/kg dry sample
O-Xylene	73	ug/kg dry sample

Sample Description: *"South Sidewall"*

Test	Positive Result Concentration	Units
Arsenic, total	22.7	mg/kg dry sample
Benzo(a)pyrene	420	ug/kg dry sample
Benzo(b)fluoranthene	330	ug/kg dry sample
Chromium, total	10	mg/kg dry sample
Cyanide, total	0.3	mg/kg dry sample
Dry weight solids	72.98	% by weight
Fluoranthene	390	ug/kg dry sample
Lead, total	109	mg/kg dry sample
Phenanthrene	370	ug/kg dry sample

Sample Description: *"West Sidewall"*

Test	Positive Result Concentration	Units
Arsenic, total	17.3	mg/kg dry sample
Chromium, total	13	mg/kg dry sample
Cyanide, total	1.5	mg/kg dry sample
Dry weight solids	77.48	% by weight
Lead, total	221	mg/kg dry sample

This Positive Results Summary Report is intended to provide an overview of the sample set and contains only results above the reporting limit. It should not be used as a substitute for the attached detail report. This report may only be reproduced in full and not without the written consent of Pharmacia & Upjohn, Inc..

KAR *Laboratories, Inc.*

(616) 381-9666

POSITIVE RESULTS SUMMARY REPORT

Client: *Pharmacia & Upjohn, Inc.*

KAR Project No.: *995192*

Date Reported: *10/29/1999*

Project Description: *Analysis of six soil samples from B-152 (MS97-2094).*

Sample Description: *"East Floor"*

Test	Positive Result Concentration	Units
Arsenic, total	4.0	mg/kg dry sample
Chromium, total	4	mg/kg dry sample
Cyanide, total	0.2	mg/kg dry sample
Dry weight solids	82.78	% by weight
Lead, total	9	mg/kg dry sample

Sample Description: *"West Floor"*

Test	Positive Result Concentration	Units
Arsenic, total	10.0	mg/kg dry sample
Chromium, total	7	mg/kg dry sample
Dry weight solids	32.76	% by weight
Lead, total	45	mg/kg dry sample

This Positive Results Summary Report is intended to provide an overview of the sample set and contains only results above the reporting limit. It should not be used as a substitute for the attached detail report. This report may only be reproduced in full and not without the written consent of Pharmacia & Upjohn, Inc..

LABORATORY DETAIL REPORT

KAR Project No. : 995192

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/29/99*

Project Description : *Analysis of six soil samples from B-152 (MS97-2094).*

Sample ID : *"North Sidewall"*

Sampled By : *JM of P&U*

Sample Date : *10/12/1999*

Sample Time : *2:05pm*

Date Received : *10/12/1999*

Sample Type : *soil*

KAR Sample No. : *995192-01*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
Prep, metals	Completed		EPA 3050	10/19/99	JPA	
Arsenic, total	17.5	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Cadmium, total	<0.5	mg/kg dry sample	EPA 7131A	10/26/99	DBL	
Chromium, total	24	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Lead, total	167	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Silver, total	<0.5	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Cyanide, total	<0.2	mg/kg dry sample	EPA 335.2	10/26/99	JMS	
Dry weight solids	86.49	% by weight	SM(18) 2540B mod	10/18/99	FBA	
MDNR Scan 1 & 2	See below		EPA 8260	10/19/99	LAE	
Prep, VOA	Completed		EPA 5035	10/14/99	DLB	Sample collected in an EnCore sampler.
1,1,1-Trichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1,2,2-Tetrachloroethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1,2-Trichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1-Dichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,2-Dichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,2-Dichloropropane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Benzene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Bromodichloromethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Bromoform	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Bromomethane	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Carbon tetrachloride	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chlorobenzene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chloroethane	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chloroform	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chloromethane	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Cis-1,2-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Cis-1,3-Dichloropropene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Dibromochloromethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Ethylbenzene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
M-and/or p-xylene	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Methylene chloride	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
O-Xylene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Tetrachloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Toluene	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trans-1,2-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trans-1,3-Dichloropropene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trichlorofluoromethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Vinyl chloride	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
MDNR Scan 7	See below		EPA 8270	10/26/99	KTL	
Prep, SV BN	Completed		EPA 3545	10/21/99	SAS	
Acenaphthene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Acenaphthylene	350	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Anthracene	560	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(a)anthracene	3700	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(a)pyrene	4900	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(b)fluoranthene	5800	ug/kg dry sample	EPA 8270	10/26/99	KTL	

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LABORATORY DETAIL REPORT

KAR Project No. : *995192*

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/29/99*

Project Description : *Analysis of six soil samples from B-152 (MS97-2094).*

Sample ID : *"North Sidewall"*

Sampled By : *JM of P&U*

Sample Date : *10/12/1999*

Sample Time : *2:05pm*

Date Received : *10/12/1999*

Sample Type : *soil*

KAR Sample No. : *995192-01*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
Benzo(ghi)perylene	920	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(k)fluoranthene	2900	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Chrysene	1900	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Dibenzo(ah)anthracene	1600	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Fluoranthene	5300	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Fluorene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Indeno(123cd)pyrene	1700	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Naphthalene by Method 8270	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Phenanthrene	2100	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Pyrene	3700	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Prep. ECD	Completed		EPA 3545	10/21/99	SAS	
PCB Aroclor 1260	<330	ug/kg dry sample	EPA 8082	10/25/99	MSZ	

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LABORATORY DETAIL REPORT

KAR Project No. : 995192

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/29/99*

Project Description : *Analysis of six soil samples from B-152 (MS97-2094).*

Sample ID : *"East Sidewall"*
Sampled By : *JM of P&U*
Sample Date : *10/12/1999*
Sample Time : *1:55pm*

Date Received : *10/12/1999*
Sample Type : *soil*
KAR Sample No. : *995192-02*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
Prep, metals	Completed		EPA 3050	10/19/99	JPA	
Arsenic, total	9.2	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Cadmium, total	<0.5	mg/kg dry sample	EPA 7131A	10/26/99	DBL	
Chromium, total	12	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Lead, total	73	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Silver, total	<0.5	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Cyanide, total	0.6	mg/kg dry sample	EPA 335.2	10/26/99	JMS	
Dry weight solids	86.36	% by weight	SM(18) 2540B mod	10/18/99	FBA	
MDNR Scan 1 & 2	See below		EPA 8260	10/19/99	LAE	
Prep, VOA	Completed		EPA 5035	10/14/99	DLB	Sample collected in an EnCore sampler.
1,1,1-Trichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1,2,2-Tetrachloroethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1,2-Trichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1-Dichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,2-Dichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,2-Dichloropropane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Benzene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Bromodichloromethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Bromoform	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Bromomethane	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Carbon tetrachloride	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chlorobenzene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chloroethane	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chloroform	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chloromethane	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Cis-1,2-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Cis-1,3-Dichloropropene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Dibromochloromethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Ethylbenzene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
M-and/or p-xylene	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Methylene chloride	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
O-Xylene	73	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Tetrachloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Toluene	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trans-1,2-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trans-1,3-Dichloropropene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trichlorofluoromethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Vinyl chloride	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
MDNR Scan 7	See below		EPA 8270	10/26/99	KTL	
Prep, SV BN	Completed		EPA 3545	10/21/99	SAS	
Acenaphthene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Acenaphthylene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Anthracene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(a)anthracene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(a)pyrene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(b)fluoranthene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	

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LABORATORY DETAIL REPORT

KAR Project No. : *995192*

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/29/99*

Project Description : *Analysis of six soil samples from B-152 (MS97-2094).*

Sample ID : *"East Sidewall"*

Sampled By : *JM of P&U*

Sample Date : *10/12/1999*

Sample Time : *1:55pm*

Date Received : *10/12/1999*

Sample Type : *soil*

KAR Sample No. : *995192-02*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
Benzo(ghi)perylene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(k)fluoranthene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Chrysene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Dibenzo(ah)anthracene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Fluoranthene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Fluorene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Indeno(123cd)pyrene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Naphthalene by Method 8270	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Phenanthrene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Pyrene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Prep. ECD	Completed		EPA 3545	10/21/99	SAS	
PCB Aroclor 1260	<330	ug/kg dry sample	EPA 8082	10/25/99	MSZ	

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LABORATORY DETAIL REPORT

KAR Project No. : 995192

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/29/99*

Project Description : *Analysis of six soil samples from B-152 (MS97-2094).*

Sample ID : *"South Sidewall"*

Sampled By : *JM of P&U*

Sample Date : *10/12/1999*

Sample Time : *1:45pm*

Date Received : *10/12/1999*

Sample Type : *soil*

KAR Sample No. : *995192-03*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
Prep, metals	Completed		EPA 3050	10/19/99	JPA	
Arsenic, total	22.7	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Cadmium, total	<0.5	mg/kg dry sample	EPA 7131A	10/26/99	DBL	
Chromium, total	10	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Lead, total	109	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Silver, total	<0.5	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Cyanide, total	0.3	mg/kg dry sample	EPA 335.2	10/26/99	JMS	
Dry weight solids	72.98	% by weight	SM(18) 2540B mod	10/18/99	FBA	
MDNR Scan 1 & 2	See below		EPA 8260	10/19/99	LAE	
Prep, VOA	Completed		EPA 5035	10/15/99	DLB	Sample collected in an EnCore sampler.
1,1,1-Trichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1,2,2-Tetrachloroethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1,2-Trichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1-Dichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,2-Dichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,2-Dichloropropane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Benzene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Bromodichloromethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Bromoform	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Bromomethane	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Carbon tetrachloride	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chlorobenzene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chloroethane	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chloroform	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chloromethane	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Cis-1,2-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Cis-1,3-Dichloropropene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Dibromochloromethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Ethylbenzene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
M-and/or p-xylene	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Methylene chloride	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
O-Xylene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Tetrachloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Toluene	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trans-1,2-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trans-1,3-Dichloropropene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trichlorofluoromethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Vinyl chloride	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
MDNR Scan 7	See below		EPA 8270	10/26/99	KTL	
Prep, SV BN	Completed		EPA 3545	10/21/99	SAS	
Acenaphthene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Acenaphthylene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Anthracene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(a)anthracene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(a)pyrene	420	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(b)fluoranthene	330	ug/kg dry sample	EPA 8270	10/26/99	KTL	

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LABORATORY DETAIL REPORT

KAR Project No. : *995192*

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/29/99*

Project Description : *Analysis of six soil samples from B-152 (MS97-2094).*

Sample ID : *"South Sidewall"*

Sampled By : *JM of P&U*

Sample Date : *10/12/1999*

Sample Time : *1:45pm*

Date Received : *10/12/1999*

Sample Type : *soil*

KAR Sample No. : *995192-03*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
Benzo(ghi)perylene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(k)fluoranthene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Chrysene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Dibenzo(ah)anthracene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Fluoranthene	390	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Fluorene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Indeno(123cd)pyrene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Naphthalene by Method 8270	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Phenanthrene	370	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Pyrene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Prep. ECD	Completed		EPA 3545	10/21/99	SAS	
PCB Aroclor 1260	<330	ug/kg dry sample	EPA 8082	10/25/99	MSZ	

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LABORATORY DETAIL REPORT

KAR Project No. : *995192*

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/29/99*

Project Description : *Analysis of six soil samples from B-152 (MS97-2094).*

Sample ID : *"West Sidewall"*
Sampled By : *JM of P&U*
Sample Date : *10/12/1999*
Sample Time : *2:10pm*

Date Received : *10/12/1999*
Sample Type : *soil*
KAR Sample No. : *995192-04*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
Prep. metals	Completed		EPA 3050	10/19/99	JPA	
Arsenic, total	17.3	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Cadmium, total	<0.5	mg/kg dry sample	EPA 7131A	10/26/99	DBL	
Chromium, total	13	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Lead, total	221	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Silver, total	<0.5	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Cyanide, total	1.5	mg/kg dry sample	EPA 335.2	10/26/99	JMS	
Dry weight solids	77.48	% by weight	SM(18) 2540B mod	10/18/99	FBA	
MDNR Scan 1 & 2	See below		EPA 8260	10/19/99	LAE	
Prep, VOA	Completed		EPA 5035	10/14/99	DLB	Sample collected in an EnCore sampler.
1,1,1-Trichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1,2,2-Tetrachloroethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1,2-Trichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1-Dichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,2-Dichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,2-Dichloropropane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Benzene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Bromodichloromethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Bromoform	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Bromomethane	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Carbon tetrachloride	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chlorobenzene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chloroethane	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chloroform	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chloromethane	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Cis-1,2-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Cis-1,3-Dichloropropene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Dibromochloromethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Ethylbenzene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
M-and/or p-xylene	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Methylene chloride	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
O-Xylene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Tetrachloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Toluene	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trans-1,2-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trans-1,3-Dichloropropene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trichlorofluoromethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Vinyl chloride	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
MDNR Scan 7	See below		EPA 8270	10/26/99	KTL	
Prep, SV BN	Completed		EPA 3545	10/21/99	SAS	
Acenaphthene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Acenaphthylene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Anthracene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(a)anthracene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(a)pyrene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(b)fluoranthene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	

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LABORATORY DETAIL REPORT

KAR Project No. : *995192*

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/29/99*

Project Description : ***Analysis of six soil samples from B-152 (MS97-2094).***

Sample ID : ***"West Sidewall"***

Sampled By : *JM of P&U*

Sample Date : *10/12/1999*

Sample Time : *2:10pm*

Date Received : *10/12/1999*

Sample Type : *soil*

KAR Sample No. : *995192-04*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
Benzo(ghi)perylene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(k)fluoranthene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Chrysene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Dibenzo(ah)anthracene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Fluoranthene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Fluorene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Indeno(123cd)pyrene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Naphthalene by Method 8270	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Phenanthrene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Pyrene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Prep. ECD	Completed		EPA 3545	10/21/99	SAS	
PCB Aroclor 1260	<330	ug/kg dry sample	EPA 8082	10/25/99	MSZ	

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LABORATORY DETAIL REPORT

KAR Project No. : 995192

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/29/99*

Project Description : *Analysis of six soil samples from B-152 (MS97-2094).*

Sample ID : *"East Floor"*
Sampled By : *JM of P&U*
Sample Date : *10/12/1999*
Sample Time : *1:35pm*

Date Received : *10/12/1999*
Sample Type : *soil*
KAR Sample No. : *995192-05*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
Prep. metals	Completed		EPA 3050	10/19/99	JPA	
Arsenic, total	4.0	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Cadmium, total	<0.5	mg/kg dry sample	EPA 7131A	10/26/99	DBL	
Chromium, total	4	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Lead, total	9	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Silver, total	<0.5	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Cyanide, total	0.2	mg/kg dry sample	EPA 335.2	10/26/99	JMS	
Dry weight solids	82.78	% by weight	SM(18) 2540B mod	10/18/99	FBA	
MDNR Scan 1 & 2	See below		EPA 8260	10/19/99	LAE	
Prep, VOA	Completed		EPA 5035	10/14/99	DLB	Sample collected in an EnCore sampler.
1,1,1-Trichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1,2,2-Tetrachloroethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1,2-Trichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1-Dichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,1-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,2-Dichloroethane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
1,2-Dichloropropane	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Benzene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Bromodichloromethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Bromoform	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Bromomethane	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Carbon tetrachloride	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chlorobenzene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chloroethane	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chloroform	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Chloromethane	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Cis-1,2-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Cis-1,3-Dichloropropene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Dibromochloromethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Ethylbenzene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
M-and/or p-xylene	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Methylene chloride	<250	ug/kg dry sample	EPA 8260	10/19/99	LAE	
O-Xylene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Tetrachloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Toluene	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trans-1,2-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trans-1,3-Dichloropropene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trichloroethene	<50	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Trichlorofluoromethane	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
Vinyl chloride	<100	ug/kg dry sample	EPA 8260	10/19/99	LAE	
MDNR Scan 7	See below		EPA 8270	10/26/99	KTL	
Prep, SV BN	Completed		EPA 3545	10/21/99	SAS	
Acenaphthene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Acenaphthylene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Anthracene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(a)anthracene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(a)pyrene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(b)fluoranthene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	

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LABORATORY DETAIL REPORT

KAR Project No. : *995192*

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/29/99*

Project Description : *Analysis of six soil samples from B-152 (MS97-2094).*

Sample ID : *"East Floor"*
Sampled By : *JM of P&U*
Sample Date : *10/12/1999*
Sample Time : *1:35pm*

Date Received : *10/12/1999*
Sample Type : *soil*
KAR Sample No. : *995192-05*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
Benzo(ghi)perylene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Benzo(k)fluoranthene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Chrysene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Dibenzo(ah)anthracene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Fluoranthene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Fluorene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Indeno(123cd)pyrene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Naphthalene by Method 8270	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Phenanthrene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Pyrene	<330	ug/kg dry sample	EPA 8270	10/26/99	KTL	
Prep. ECD	Completed		EPA 3545	10/21/99	SAS	
PCB Aroclor 1260	<330	ug/kg dry sample	EPA 8082	10/25/99	MSZ	

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LABORATORY DETAIL REPORT

KAR Project No. : *995192*

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/29/99*

Project Description : *Analysis of six soil samples from B-152 (MS97-2094).*

Sample ID : *"West Floor"*
Sampled By : *JM of P&U*
Sample Date : *10/12/1999*
Sample Time : *1:30pm*

Date Received : *10/12/1999*
Sample Type : *soil*
KAR Sample No. : *995192-06*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
Prep, metals	Completed		EPA 3050	10/19/99	JPA	
Arsenic, total	10.0	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Cadmium, total	<0.5	mg/kg dry sample	EPA 7131A	10/26/99	DBL	
Chromium, total	7	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Lead, total	45	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Silver, total	<0.5	mg/kg dry sample	EPA 6020	10/25/99	DBL	
Cyanide, total	<0.6	mg/kg dry sample	EPA 335.2	10/26/99	JMS	
Dry weight solids	32.76	% by weight	SM(18) 2540B mod	10/18/99	FBA	
MDNR Scan 1 & 2	See below		EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Prep, VOA	Completed		EPA 5035	10/14/99	DLB	Sample collected in an EnCore sampler.
1,1,1-Trichloroethane	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
1,1,2,2-Tetrachloroethane	<400	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
1,1,2-Trichloroethane	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
1,1-Dichloroethane	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
1,1-Dichloroethene	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
1,2-Dichloroethane	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
1,2-Dichloropropane	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Benzene	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Bromodichloromethane	<400	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Bromoform	<400	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Bromomethane	<625	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Carbon tetrachloride	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Chlorobenzene	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Chloroethane	<625	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Chloroform	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Chloromethane	<625	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Cis-1,2-Dichloroethene	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Cis-1,3-Dichloropropene	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Dibromochloromethane	<400	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Ethylbenzene	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
M-and/or p-xylene	<400	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Methylene chloride	<625	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
O-Xylene	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Tetrachloroethene	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Toluene	<400	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.

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LABORATORY DETAIL REPORT

KAR Project No. : *995192*

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/29/99*

Project Description : *Analysis of six soil samples from B-152 (MS97-2094).*

Sample ID : *"West Floor"*

Sampled By : *JM of P&U*

Sample Date : *10/12/1999*

Sample Time : *1:30pm*

Date Received : *10/12/1999*

Sample Type : *soil*

KAR Sample No. : *995192-06*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
Trans-1,2-Dichloroethene	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Trans-1,3-Dichloropropene	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Trichloroethene	<200	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Trichlorofluoromethane	<400	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
Vinyl chloride	<400	ug/kg dry sample	EPA 8260	10/19/99	LAE	Elevated detection limit due to low solids content.
MDNR Scan 7	See below		EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Prep. SV BN	Completed		EPA 3545	10/21/99	SAS	
Acenaphthene	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Acenaphthylene	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Anthracene	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Benzo(a)anthracene	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Benzo(a)pyrene	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Benzo(b)fluoranthene	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Benzo(ghi)perylene	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Benzo(k)fluoranthene	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Chrysene	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Dibenzo(ah)anthracene	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Fluoranthene	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Fluorene	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Indeno(123cd)pyrene	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Naphthalene by Method 8270	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Phenanthrene	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Pyrene	<990	ug/kg dry sample	EPA 8270	10/26/99	KTL	Elevated detection limit due to low solids content.
Prep. ECD	Completed		EPA 3545	10/21/99	SAS	
PCB Aroclor 1260	<330	ug/kg dry sample	EPA 8082	10/25/99	MSZ	

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KAR Laboratories, Inc. (616-381-9666) (Client must complete shaded areas)

Client: PSC
7000 Portage Rd
Kzoo 49001
Attn: Janna Miller
Phone: (616) 833-6351 Fax: (616) 833-3560

Project Name: B 152
Project #:
P.O. #:
Sampled by: ☐ KAR ☒ Client Initials: JLM

Turnaround Time: ☐ 10-day ☐ Emergency (quote) ☒ 5-day (x 1.5) ☐ 3-day (x 2.0) ☐ Monthly

Samples rec'd cold: (Y) N ___ °C intact: (Y) N

KAR use only: Proj#: 995192 Login: 5356 Date: 10/18/99
c-of-c (Y) N
labels (Y) N
LODs Y (N)
contain (Y) N
headspace Y (N)
amount (Y) N
hold time Y (N)
rush cost Y (N)

#	Sample Identification	Sample Info Date	Time	Matrix	Sample Containers Type	Size	#	Requested Analyses: Metals Pb								Remarks
05	East Floor	10-12	1:35	S		1 quart	2	✓								
06	West Floor		1:30					✓								
02	East Sidewall		1:55					✓								
01	North Sidewall		2:05					✓								
03	South Sidewall		1:45					✓								
04	West Sidewall		2:10					✓								

KR059B030039

Relinquished By: J Miller
Received By: J Erwin
Date/Time: 10/12/99 3:15pm
Relinquished By:
Received By:
Date/Time:

Notes: Analysis pending results of "black material" collected 10-11-99 please preserve En-Cores.

00134

KAR *Laboratories, Inc.*

4425 Manchester Road

Kalamazoo, MI 49001

Phone 616 381-9666

Fax 616 381-9698

Pharmacia & Upjohn, Inc.
7000 Portage Road, 6602-41-016
Kalamazoo, MI 49001

Attn : ***Ms. Janna Muller***

KAR Project No. :	***995108***
Date Reported :	***10/13/99***
Date Activated :	***10/11/99***
Date Due :	***10/13/99***
Date Validated :	***10/13/99***

Project Description : ***Analysis of one soil sample from Building 152 (MS97-2094).***

Dear Client,

Your laboratory data is presented to you in this report. All tests were performed within the maximum allowable holding times, have met or exceeded QC requirements and the result represents the sample as it was received - unless otherwise stated under the "Comments" heading.

If you wish to contact us about this work please mention KAR Project No. 995108. To arrange additional sampling or testing please contact our Client Services Department. If you have a question regarding quality assurance please contact William Rauch.

Thank you for the opportunity to serve you. Please do not hesitate to call if we can provide additional assistance.

Respectfully submitted,

Michael J. Jaeger
Director of Laboratories

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LABORATORY REPORT

KAR Project No. : *995108*

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/13/99*

Project Description : *Analysis of one soil sample from Building 152 (MS97-2094).*

Sample ID : *"Black Material"*

Sampled By : *JM of P&U*
Sample Date : *10/11/99*
Sample Time : *2:00pm*

Date Received : *10/11/99*
Sample Type : *soil*
KAR Sample No. : *995108-01*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
Prep, Hg	Completed		EPA 7471A	10/12/99	PML	
Prep, metals	Completed		EPA 3050	10/12/99	PML	
Arsenic, total, low level	7.7	mg/kg dry sample	EPA 6020	10/13/99	DBL	
Barium, total, low level	123	mg/kg dry sample	EPA 6020	10/13/99	DBL	
Cadmium, total, low level	19.4	mg/kg dry sample	EPA 6020	10/13/99	DBL	
Chromium, total, low level	65.2	mg/kg dry sample	EPA 6010B	10/13/99	PML	
Copper, total	441	mg/kg dry sample	EPA 6010B	10/13/99	PML	
Lead, total	550	mg/kg dry sample	EPA 6020	10/13/99	DBL	
Mercury, total, low level	<0.1	mg/kg dry sample	EPA 7471A	10/13/99	DBL	
Selenium, total, low level	<0.2	mg/kg dry sample	EPA 7740	10/13/99	PML	
Silver, total	<1	mg/kg dry sample	EPA 6010B	10/13/99	PML	Elevated detection limit due to low solids content.
Zinc, total	1530	mg/kg dry sample	EPA 6010B	10/13/99	PML	
Cyanide, total	0.8	mg/kg dry sample	EPA 335.2	10/12/99	JMS	
Dry weight solids	53.25	% by weight	SM(18) 2540B mod	10/12/99	FBA	
MDNR Scan 1 & 2	See below		EPA 8260	10/12/99	LAE	
Prep, VOA	Completed		EPA 5035	10/11/99	DLB	Sample collected in an EnCore sampler.
1,1,1-Trichloroethane	<50	ug/kg dry sample	EPA 8260	10/12/99	LAE	
1,1,2,2-Tetrachloroethane	<100	ug/kg dry sample	EPA 8260	10/12/99	LAE	
1,1,2-Trichloroethane	<50	ug/kg dry sample	EPA 8260	10/12/99	LAE	
1,1-Dichloroethane	<50	ug/kg dry sample	EPA 8260	10/12/99	LAE	
1,1-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/12/99	LAE	
1,2-Dichloroethane	<50	ug/kg dry sample	EPA 8260	10/12/99	LAE	
1,2-Dichloropropane	<50	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Benzene	<50	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Bromodichloromethane	<100	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Bromoform	<100	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Bromomethane	<250	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Carbon tetrachloride	<50	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Chlorobenzene	<50	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Chloroethane	<250	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Chloroform	<50	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Chloromethane	<250	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Cis-1,2-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Cis-1,3-Dichloropropene	<50	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Dibromochloromethane	<100	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Ethylbenzene	1400	ug/kg dry sample	EPA 8260	10/12/99	LAE	
M-and/or p-xylene	5700	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Methylene chloride	<250	ug/kg dry sample	EPA 8260	10/12/99	LAE	
O-Xylene	3700	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Tetrachloroethene	310	ug/kg dry sample	EPA 8260	10/12/99	LAE	

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LABORATORY REPORT

KAR Project No. : *995108*

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/13/99*

Project Description : *Analysis of one soil sample from Building 152 (MS97-2094).*

Sample ID : *"Black Material"*

Sampled By : *JM of P&U*
Sample Date : *10/11/99*
Sample Time : *2:00pm*

Date Received : *10/11/99*
Sample Type : *soil*
KAR Sample No. : *995108-01*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
Toluene	1700	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Trans-1,2-Dichloroethene	<50	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Trans-1,3-Dichloropropene	<50	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Trichloroethene	<100	ug/kg dry sample	EPA 8260	10/12/99	LAE	Elevated detection limit due to low solids content.
Trichlorofluoromethane	130	ug/kg dry sample	EPA 8260	10/12/99	LAE	
Vinyl chloride	<100	ug/kg dry sample	EPA 8260	10/12/99	LAE	
MDNR Scan 7	See below		EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Prep, SV BN	Completed		EPA 3545	10/12/99	SAS	
Acenaphthene	<10,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Acenaphthylene	<10,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Anthracene	<10,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Benzo(a)anthracene	11,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Benzo(a)pyrene	<10,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Benzo(b)fluoranthene	17,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Benzo(ghi)perylene	<10,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Benzo(k)fluoranthene	12,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Chrysene	<10,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Dibenzo(ah)anthracene	<10,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Fluoranthene	13,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Fluorene	<10,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Indeno(123cd)pyrene	<10,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Naphthalene by Method 8270	12,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Phenanthrene	11,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Pyrene	15,000	ug/kg dry sample	EPA 8270	10/12/99	KTL	Elevated detection limit due to sample matrix interference.
Prep, ECD	Completed		EPA 3545	10/12/99	SAS	
PCB	See below		EPA 8082	10/13/99	MSZ	
PCB Aroclor 1016	<1	mg/kg dry sample	EPA 8082	10/13/99	MSZ	
PCB Aroclor 1221	<1	mg/kg dry sample	EPA 8082	10/13/99	MSZ	
PCB Aroclor 1232	<1	mg/kg dry sample	EPA 8082	10/13/99	MSZ	
PCB Aroclor 1242	<1	mg/kg dry sample	EPA 8082	10/13/99	MSZ	
PCB Aroclor 1248	<1	mg/kg dry sample	EPA 8082	10/13/99	MSZ	
PCB Aroclor 1254	<1	mg/kg dry sample	EPA 8082	10/13/99	MSZ	

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LABORATORY REPORT

KAR Project No. : *995108*

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/13/99*

Project Description : *Analysis of one soil sample from Building 152 (MS97-2094).*

Sample ID : *"Black Material"*

Sampled By : *JM of P&U*
Sample Date : *10/11/99*
Sample Time : *2:00pm*

Date Received : *10/11/99*
Sample Type : *soil*
KAR Sample No. : *995108-01*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
PCB Aroclor 1260	1.8	mg/kg dry sample	EPA 8082	10/13/99	MSZ	
PCB Aroclors, total	1.8	mg/kg dry sample	EPA 8082	10/13/99	MSZ	

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KAR *Laboratories, Inc.*

4425 Manchester Road

Kalamazoo, MI 49001

Phone 616 381-9666

Fax 616 381-9698

Pharmacia & Upjohn, Inc.
7000 Portage Road, 6602-41-016
Kalamazoo, MI 49001

Attn : ***Ms. Janna Muller***

KAR Project No. :	***995222***
Date Reported :	***10/19/99***
Date Activated :	***10/15/99***
Date Due :	***10/19/99***
Date Validated :	***10/19/99***

Project Description : ***Analysis of one soil sample from Building 152 (P&U #MS97-2094).***

Dear Client,

Your laboratory data is presented to you in this report. All tests were performed within the maximum allowable holding times, have met or exceeded QC requirements and the result represents the sample as it was received - unless otherwise stated under the "Comments" heading.

If you wish to contact us about this work please mention KAR Project No. 995222. To arrange additional sampling or testing please contact our Client Services Department. If you have a question regarding quality assurance please contact William Rauch.

Thank you for the opportunity to serve you. Please do not hesitate to call if we can provide additional assistance.

Respectfully submitted,

Michael J. Jaeger
Director of Laboratories

KAR Laboratories, Inc. maintains Full Certification status for Bacteriology, Inorganics, Regulated Organics and Synthetic Organics through USEPA, Michigan Department of Public Health and Indiana State Department of Health. This report may only be reproduced in full and not without the written consent of Pharmacia & Upjohn, Inc..

LABORATORY REPORT

KAR Project No. : *995222*

Client: *Pharmacia & Upjohn, Inc.*

Date Reported : *10/19/99*

Project Description : *Analysis of one soil sample from Building 152 (P&U #MS97-2094).*

Sample ID : *"Black Material"*

Sampled By : *JM of P&U*
Sample Date : *10/11/1999*
Sample Time : *2:00pm*

Date Received : *10/15/1999*
Sample Type : *soil*
KAR Sample No. : *995222-01*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
TCLP extraction	Completed		EPA 1311	10/15/99	MCB	
TCLP report	See comment			10/19/99	KKB	This material does not exhibit the Toxicity Characteristic with respect to the RCRA metals.

Sample ID : *TCLP Leachate of Black Material*

Sampled By :
Sample Date :
Sample Time :

Date Received : *10/15/1999*
Sample Type : *TCLP*
KAR Sample No. : *995222-01T*

Test	Result	Units of Measure	Method	Analyzed	Analyst	Comments
TC Metals	Completed		EPA 6010B	10/19/99	PML	
Prep, Hg	Completed		EPA 7470	10/17/99	PML	
Prep, metals	Completed		EPA 30xx,200.x	10/18/99	JPA	
Arsenic, total, by ICP	<0.5	mg/L	EPA 6010B	10/19/99	PML	TC regulatory limit is 5.0 mg/L.
Barium, total	0.61	mg/L	EPA 6010B	10/19/99	PML	TC regulatory limit is 100 mg/L.
Cadmium, total	<0.025	mg/L	EPA 6010B	10/19/99	PML	TC regulatory limit is 1.0 mg/L.
Chromium, total	<0.05	mg/L	EPA 6010B	10/19/99	PML	TC regulatory limit is 5.0 mg/L.
Lead, total, by ICP	<0.25	mg/L	EPA 6010B	10/19/99	PML	TC regulatory limit is 5.0 mg/L.
Mercury, total	<0.0005	mg/L	EPA 7470A	10/18/99	PML	TC regulatory limit is 0.2 mg/L.
Selenium, total, by ICP	<0.5	mg/L	EPA 6010B	10/19/99	PML	TC regulatory limit is 1.0 mg/L.
Silver, total	<0.025	mg/L	EPA 6010B	10/19/99	PML	TC regulatory limit is 5.0 mg/L.

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KAR Laboratories, Inc. (616-381-9666)

(Client must complete shaded areas)

Client: Pharmacia & Upjohn
7000 Portage Rd
Kalamazoo, MI 49001
Attn: Janna Muller
Phone: 616 833-6351 Fax: 616 833-2056

Project Name: B152
Project #
P.O. #
Sampled by: ☐ KAR ☒ Client Initials: JLM

Turnaround Time: ☐ 10 day ☐ Emergency (quote) ☐ 5 day (x 1.6) ☐ 3 day (x 2.0) ☐ Monthly

Samples rec'd
cold: Y (N) ___ °C intact: (Y) N

Requested Analyses

KAR use only
Proj#: 995108
Login: JJE
Date: 10/11/99
c-of-c (Y) N
labels (Y) N
LODs (Y) N
contain (Y) N
headspace Y (N)
amount (Y) N
hold time Y (N)
rush cost (Y) N

#	Sample Identification	Sample Info Date	Time	Matrix	Sample Containers Type	Size	#	Scan 1	Scan 2	Scan 3	PCB	Metals					Remarks
	Black material	10-11-99	2pm	S			2	X	X	X	X	X					

Relinquished By: J Muller
Received By: Garrett Ewin
Date/Time: 10/11/99 2:25pm
Notes:

Relinquished By:
Received By:
Date/Time:

KR059B030046

EXHIBIT MGP-6

REPORT OF
SECOND PHASE OF REMEDIAL INVESTIGATION
AND
GROUNDWATER MONITORING ACTIVITIES

CONSUMERS ENERGY COMPANY
KALAMAZOO MGP SITE
KALAMAZOO, MICHIGAN

SEPTEMBER 21, 2000
SME PROJECT NO. KE31823

KR059B030048

Consultants in the geosciences, materials and the environment

- *Caissons/Piles*
- *Corrosion*
- *Dewatering*
- *Drilling*
- *Earth Retention Systems*
- *Foundation Engineering*
- *Geodynamics/Vibrations*
- *Geophysical Survey*
- *Geosynthetics*
- *Ground Modification*
- *Instrumentation*
- *Settlement Analysis*
- *Site Condition Assessment*
- *Slope Stability*
- *Building Restoration*
- *Coatings*
- *Concrete*
- *Condition Survey*
- *Construction Materials Services*
- *Facility Asset Management*
- *Forensic Engineering*
- *Masonry/Stone*
- *Metals*
- *Nondestructive Testing*
- *Pavement Evaluation/Design*
- *Roof System Management*
- *Sealants/Waterproofing*
- *Structural Steel/Welding*
- *Air Quality*
- *Asbestos/Lead Based Paint*
- *Baseline Environmental Assessment*
- *Due Care Analysis*
- *Environmental Site Assessment*
- *Hydrogeologic Evaluation*
- *Industrial Hygiene*
- *Landfill Services*
- *Pollution Prevention*
- *Regulatory Compliance*
- *Remediation*
- *Risk Assessment*
- *Storm Water Discharge*
- *Underground Storage Tanks*

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EXECUTIVE SUMMARY

SME conducted a second phase of remedial investigation activities at Consumers Energy Company's (Consumers Energy's) Kalamazoo former manufactured gas plant (MGP). The Kalamazoo MGP is located in the City of Kalamazoo, Kalamazoo County, Michigan.

Field activities for the remedial investigation were conducted in February, April and May, 1999. The remedial investigation activities consisted of conducting 2 quarters of groundwater monitoring, as well as advancing 4 soil probes and installing 1 shallow and 2 deep monitoring wells. Additionally, vertical groundwater sampling was conducted at each monitoring well location. With the exception of vertical groundwater samples, soil and groundwater samples were evaluated for BTEX, PNAs, cyanide (total, amenable and/or free) and the 10 Michigan Metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc). Vertical groundwater samples were evaluated for BTEX and PNAs only. Groundwater samples collected from site monitoring wells for the quarterly groundwater monitoring events were also evaluated for natural attenuation parameters consisting of dissolved oxygen, dissolved iron, nitrate, sulfate and alkalinity. A total of 5 soil samples and 56 groundwater samples were submitted for laboratory analysis.

Generally, the results of remedial investigation activities conducted in February, April and June, 2000 at the site were consistent with the results of previous remedial investigation activities conducted at the site and documented in the December 28, 1999, "Interim Report of Remedial Investigation." The additional remedial investigation activities indicate groundwater impact at concentrations exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI is migrating off-site towards the southeast based on analytical results for vertical groundwater samples collected at MW201, as well as the groundwater sample collected from the permanent well MW201. The downgradient migration of identified groundwater impact in the vicinity of MW201 needs to be further evaluated for influence by the storm sewer located beneath Lovell Street.

A more detailed presentation of the investigation is presented below.

Soil

1. Coal tar was not encountered SP401 through SP404 which were advanced on the north side of Lovell Street.

2. BTEX, PNA, metal and cyanide concentrations for subsurface soil samples collected from SP401 through SP404 did not exceed Part 201 Commercial II Cleanup Criteria for Groundwater Contact Protection, Volatilization to Indoor Air, Direct Contact, Ambient Air Inhalation and Soil Saturation.

3. Benzene, naphthalene, arsenic, mercury and selenium concentrations for soil samples collected from SP401, SP403 and/or SP404 did exceed the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI. The Drinking Water and GSI exposure pathways for arsenic, mercury and selenium may not be relevant exposure issues based on analytical results for groundwater samples collected at the site. However, for benzene and naphthalene, the Drinking Water and GSI pathways appear to be an issue since these parameters have been detected in groundwater samples collected north of Lovell Street at concentrations exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI.

4. Amenable cyanide concentrations for subsurface soil samples collected from SP401 through SP404 did not exceed Part 201 Commercial II Cleanup Criteria. However, the amenable cyanide concentration for soil sample SP401-S3 was reported by the analytical laboratory to be indeterminate at the required Target Detection Level. Additionally at SP401, blue staining indicative of potential cyanide impact was identified at a depth of approximately 10.5 feet BG which corresponds to a depth of approximately 4.5 feet below the water table.

Groundwater

1. BTEX, PNA, metal and cyanide impact to groundwater at concentrations exceeding Part 201 Commercial II Cleanup Criteria has not been detected in monitoring wells located south of Lovell Street for groundwater monitoring events conducted in February, 1999; June, 1999; February, 2000 and May, 2000.

2. Groundwater flow for the northern portion of the site, where former MGP production components, storage structures and transfer lines were principally located appears to be to the southeast. This interpretation is based on four groundwater level gauging events conducted in February, 1999; June, 1999; February, 2000 and May, 2000. Groundwater flow appears to be consistent with site topography.

3. BTEX, PNA, metals and cyanide concentrations for groundwater samples collected at locations north of Lovell Street, both soil probes and monitoring wells, did not exceed Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, Groundwater Contact, Flammability/Explosivity, Acute Inhalation and Water Solubility.

4. BTEX and/or PNA impact to groundwater was identified at sampling locations north of Lovell Street at concentrations exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI. BTEX and PNA impact to groundwater in this area appears to be delineated to the north and south, however, the extent of impact does not appear to be delineated to the southeast. Additionally, the vertical extent of BTEX and/or PNA impact does not appear to have been delineated at well pair P-3/P-3D, as well at MW201 based on vertical sampling results. Groundwater impact appears to be migrating southeast, which is consistent with the interpreted direction of groundwater flow. The interpreted lateral extent of groundwater impact also suggests that the storm sewer located beneath Lovell Street needs to be further evaluated as a potential migration pathway for groundwater impact at the water table.

5. Detections of metals and cyanide in groundwater at concentrations exceeding Part 201 Commercial II Cleanup Criteria has not occurred in downgradient, off-site monitoring wells and the detections exceeding Part 201 Commercial II Cleanup Criteria have not been consistent in site monitoring wells.

6. Initial DO and dissolved iron, and possibly alkalinity, concentrations suggest that natural attenuation may be occurring within the plume of impacted groundwater.

The summary presented above is general in nature and should not be considered apart from the entire text of the report with all the qualifications and considerations mentioned therein. Details of our findings and recommendations are discussed in the following sections and in the appendices of this report.

00237058

1. INTRODUCTION

This document presents the results of the second phase of remedial investigation activities conducted at Consumers Energy Company's (Consumers Energy's) Kalamazoo former manufactured gas plant (MGP). The Kalamazoo MGP is located between Pitcher Street and Portage Street at Lovell Street in the City of Kalamazoo, Kalamazoo County, Michigan. Figure No. 1 of Appendix A shows a site location diagram. Remedial investigation activities were conducted at the site in February, April and May of 2000. The scope of work conducted for these remedial investigation activities is presented in detail in Section 4.2 of this report.

Previous remedial investigation activities were conducted at the site by SME in 1999. The results of these remedial investigation activities were presented in the "Interim Report of Remedial Investigation," dated December 28, 1999. The "Interim Report of Remedial Investigation," dated December 28, 1999 also presented recommendations to implement the remedial investigation activities conducted at the site in February, April and May 2000. However, the recommendations did not include conducting soil probes within Lovell Street. The need to conduct soil probes within Lovell Street was based on discussions with representatives of the City of Kalamazoo (City) to provide the City with analytical data to evaluate their potential "due care" responsibilities as stipulated in Section 20107a of Part 201 of Michigan Public Act 451 of 1994, as amended. The "Interim Report of Remedial Investigation," dated December 28, 1999 was submitted by Consumers Energy to the MDEQ-ERD, Plainwell District Office for review on January 4, 2000.

2. PROJECT INFORMATION

2.1 Former MGP Operations

Gas was manufactured at this MGP from 1856 to 1956. The property was owned by Consumers Energy from 1917 to 1965. Several railroad spurs serviced the site. Structures associated with MGP production, i.e. gas holders, tar well(s), water gas plant, coke ovens, gas purifiers etc., appeared to have occupied the northern half of the site; while coal and/or coke were stockpiled on the southern half of the site. Figure No. 2 of Appendix A shows the layout of the former MGP operations in 1937.

2.2 Current Site Description

The site covers approximately 7.8 acres in area and is located on five individually described contiguous parcels of property in the City of Kalamazoo, Michigan. As previously stated, the site is located between Pitcher Street and Portage Street near east Lovell Street and what was once known as Spring Street. The approximate southern quarter of the site is

currently owned and operated by Consumers Energy. Within this area, a natural gas regulator station is located near the intersection of Lovell Street and Pitcher Street and an electrical substation is located near the intersection of Lovell Street and Portage Street. The remainder of the site, with the exception of that area inclusive of Lovell Street, is owned and operated by The Pharmacia Company (Pharmacia). Within this area there is currently 1 building (Building No. 300) and a power plant (Building No. 214) with associated parking and sidewalks. Figure No. 3 of Appendix A shows the current site features.

For the portion of the site located north of Lovell Street, a closed fence and 24-hour security personnel limits accessibility by the general public. The portion of the site located south of Lovell Street is generally accessible to the public with the exception of Consumers Energy's natural gas regulator building and electrical substation. However, at this time Pharmacia is in the process of evaluating renovations that may include installing a closed fence with 24 hour security monitoring around the parking lot south of Lovell Street.

A review of a City of Kalamazoo zoning map indicates the site is zoned for Light Manufacturing. Properties adjacent to the site to the north, south and west also appear to be zoned for Light Manufacturing. The adjacent property to the east, across Pitcher Street, appears to be zoned for General Manufacturing.

With respect to Part 201 land use categories presented in the MDEQ's Interim Environmental Response Division Operation Memorandum #18: Part 201 Generic Cleanup Criteria Tables, dated August 31, 1998, the appropriate land use category appears to be, under current conditions, Commercial Subcategory II (Commercial II). This land use designation is primarily based on the consideration that access to the public is reliably restricted for the majority of site, i.e. presence of fence and 24-hour security.

The site is served by municipal water. However, a review of water well and pump records at the Kalamazoo County Environmental Health Office (KCEHO) identified 7 domestic wells, 5 dewatering wells, 25 test/monitoring wells and 16 public supply wells located within a one-mile radius of the site. The test/monitoring wells and public supply wells are associated with the City of Kalamazoo Central Well Field, which is generally located within the vicinity of the intersection of Crosstown Parkway and Stockbridge Avenue. The Central Well Field is located about 3,200 feet south-southwest of the site, in the inferred upgradient direction. Water well and pump records at the KCEHO did not identify the presence of any wells on properties in the inferred downgradient direction of the site, between the site and the Kalamazoo River.

The nearest surface water body is Portage Creek which is located east of the site at distances ranging from approximately 100 feet at the south end of the site to approximately

300 feet at the north end of the site. Portage Creek generally flows from south to north and discharges to the Kalamazoo River located approximately 0.5 miles northeast of the site.

3. SCOPE OF WORK - FEBRUARY, APRIL AND MAY, 2000

The scope of work for the remedial investigation activities conducted in February, April and May, 2000 is presented below. Figure No. 4 of Appendix A shows the locations of previous and new soil probes, soil borings and monitoring wells.

1. Collected groundwater samples from MW-1 through MW-4, P-2, P-2D, P-3, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105 and MW105D on February 15, 16 and 22, 2000. A groundwater sample was not collected from P-1 because the well was dry.

2. Advanced 4 soil probes, SP401 through SP404, on April 24, 2000. The soil probes were advanced in Lovell Street to provide the City of Kalamazoo (City) with data to assist the City in evaluating potential "due care" responsibilities as stipulated in Section 20107a of Part 201 of Michigan Public Act 451 of 1994, as amended.

3. Advanced one soil probe, B203, on April 24, 2000. The purpose of the soil probe was to further evaluate the extent of groundwater impact off-site to the east of Pitcher.

4. Installed 3 monitoring wells, P-3D, MW201, and MW202D on April 25 and 26, 2000. Because of subsurface utility concerns, the soil boring for MW201 was initially advanced using a soil probe. The purpose of the monitoring wells were to further evaluate the extent of groundwater impact both on-site and off-site, east of Pitcher Street.

5. Conducted vertical groundwater sampling at P-3D, MW201 and MW202D to evaluate the vertical extent of impact to groundwater.

6. Collected groundwater samples from MW-1 through MW-4, P-2, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW201 and MW202D on May 22, 23 and 24, 2000.

7. Conducted an elevation survey at each soil probe and monitoring well location advanced and installed, respectively, in April, 2000. At each monitoring well, the mean sea level elevations for both top-of-casing and ground level were determined.

Soil probe services were provided by Brye Environmental Soil Testing (BEST) of Okemos, Michigan. Monitoring well installation services were provided by Stearns Drilling of Dutton, Michigan. Surveying services were provided by Brave Controls & Engineering of Battle Creek, Michigan. Laboratory analytical services for soil and groundwater samples were provided by Consumers Energy's Chemistry Section - Environmental & Laboratory Services Department of Jackson, Michigan.

4. PROCEDURES

4.1 Soil Probes

Soil probes were advanced with an ATV-mounted, pneumatically driven, direct-push coring device. Soil samples were collected continuously from grade to the termination depth of the soil probes, which ranged from approximately 7 feet to 22 feet BG.

Soil samples from the direct-push coring device were collected using a 48-inch long, 2-inch outside diameter (OD) Geoprobe ® Macro Sampler lined with a disposable acetate liner. With the exception of soil samples collected for BTEX analysis, soil samples were collected from the acetate liner by cutting open the liner with a utility knife and transferring the soil to pre-cleaned jars provided by the analytical laboratory using a disposable plastic or stainless steel putty knife. Soil samples collected for BTEX analysis were obtained in accordance with EPA VOC sediment sampling Method 5035 using a disposable Encore ® sampling device.

Soil samples collected from the soil probes were physically classified and recorded on probe logs by the SME field staff. Copies of soil probe logs are presented in Appendix B.

One or 2 soil samples collected from each soil probe, SP401 through SP404, were submitted for laboratory analysis of BTEX, PNAs, cyanide (amenable) and the 10 Michigan Metals. Soil samples were not submitted from MW201 and B203 for laboratory analysis. The selection of soil samples to be submitted for laboratory analysis was based on sample depth, as well as soil characteristics, i.e soil type, odors, staining, etc. The analytical methods, target detection limits (TDLs) and containers for the indicated analytical parameters are listed below.

Analytical Parameter	EPA Method Number	Target Detection Limits	Container w/ Preservative
BTEX	8021	50	2 oz. glass /Methanol
PNAs	8270	330	16 oz. glass/NP
Cyanide, amenable	9010/9013	500	16 oz. glass/NP
Arsenic	7061	100	16 oz. glass/NP
Barium	7081	1,000	16 oz. glass/NP
Cadmium	7131	50	16 oz. glass/NP
Chromium(total)	7191	2,500	16 oz. glass/NP
Copper	7211	1,000	16 oz. glass/NP
Lead	7421	1,000	16 oz. glass/NP

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Analytical Parameter	EPA Method Number	Target Detection Limits	Container w/ Preservative
Mercury	7470	100	16 oz. glass/NP
Selenium	7741	500	16 oz. glass/NP
Silver	7761	500	16 oz. glass/NP
Zinc	7950	1,000	16 oz. glass/NP

Notes:
1. TDLs are presented in parts per billion (ppb or micrograms per kilogram (ug/kg)).
2. NP = No preservative.

Groundwater samples were collected from SP401 through SP404 and B203. Groundwater samples from SP401 through SP404 were collected from the water table surface which ranged in depth from 4 to 7 feet. Groundwater samples from B203 were collected at the water table, 4 to 6 feet BG, and 7 to 9 feet BG.

Groundwater samples were collected using either a 0.5-inch inside diameter (ID) or 1-inch ID temporary well driven into the saturated zone at the water table surface. The screen for the 0.5-inch ID temporary well was two feet in length, while the screen for the 1-inch ID temporary well was five feet in length. Both screens had a slot size of 0.010 inches. Groundwater samples were obtained from the screened area by pumping the groundwater through 0.25-inch ID polyethylene tubing using a peristaltic pump. Approximately three casing volumes were purged from the temporary well prior to sampling.

Groundwater samples were submitted for laboratory analysis of BTEX, PNAs, cyanide (available and free) and the 10 Michigan Metals. Groundwater samples collected for PNAs and cyanide were collected in a laboratory supplied container directly from the effluent end of the pump tubing. Groundwater samples collected for the 10 Michigan Metals were collected in a laboratory supplied container directly from the effluent end of the pump tubing after passing through a 0.45 micron filter. Groundwater samples collected for BTEX analysis were collected by crimping the polyethylene tubing at grade and withdrawing the tubing from the temporary well. The groundwater sample was then gravity drained from the influent end of the pump tubing into the appropriate container to minimize negative pressure effects from the peristaltic pump. The analytical methods, TDLs and containers for the indicated analytical parameters are listed below.

Analytical Parameter	EPA Method Number	Target Detection Limits	Container w/ Preservative
BTEX	8021	1	40 ml VOA/HCl
PNAs	8270	5	1 L glass amber/ /NP
Cyanide, available	OIA 1677	20	250 ml glass amber/NaOH
Cyanide, free	ASTM-D4282-95/9013	10	250 ml glass amber/NaOH
Arsenic	7061	5	250 ml plastic/HNO3
Barium	7081	200	250 ml plastic/HNO3
Cadmium	7131	0.5	250 ml plastic/HNO3
Chromium(total)	7191	50	250 ml plastic/HNO3
Copper	7211	25	250 ml plastic/HNO3
Lead	7421	3	250 ml plastic/HNO3
Mercury	7470	0.2	250 ml plastic/HNO3
Selenium	7741	5.0	250 ml plastic/HNO3
Silver	7761	0.5	250 ml plastic/HNO3
Zinc	7950	20	250 ml plastic/HNO3

Notes:
1. TDLs are presented in parts per billion (ppb or micrograms per Liter (ug/L)).
2. NP = No preservative.

For both soil and groundwater samples, pre-cleaned containers and preservatives were supplied by the analytical laboratory. After sample collection, the containerized samples were kept cool, i.e. refrigerated, until delivery to the analytical laboratory. Chain of custody procedures documenting the sample handling sequence was followed by the SME field staff.

Soil cuttings generated from the soil probes were returned to the corresponding soil probe hole after sampling activities were completed. The remaining space in the soil probe holes was then backfilled with bentonite chips. Acetate liners and any excess soil cuttings that could not be returned to the soil probe holes were containerized in labeled, Michigan Department of Transportation (MDOT) approved, 55-gallon drums. Purged groundwater obtained from the soil probe temporary wells was also containerized in labeled, MDOT approved, 55-gallon drums. A detailed description of decontamination and waste disposal procedures is presented in Sections 4.6 and 4.7, respectively.

4.2 Monitoring Well Installation

Soil borings for P-3D, MW201 and MW202D were advanced with a truck-mounted drill rig using 4.25-inch ID hollow stem augers. As previously stated, the soil boring for MW201 was initially advanced using the ATV-mounted, pneumatically driven, direct-push coring device because of the potential presence of subsurface utilities. Soil samples coll

from P-3D and MW202D were obtained using a 24-inch long split-barrel sampler that was driven into undisturbed soil ahead of the augers. The soil boring corresponding to MW201 was blind drilled because subsurface conditions had already been characterized at the location using the soil probe. Soil samples at P-3D were collected at various intervals, no greater than 5 feet, from grade to the termination depth of the boring, which was approximately 40 feet. Soil samples at MW202D were also collected at various intervals, no greater than 5 feet, from approximately 43 feet BG to the termination depth of the boring, which was approximately 60 feet BG. Soil samples at MW202D were not collected from grade to 43 feet BG because soil conditions over this interval had already been characterized at IA-1 and MW101D which are adjacent to MW202D.

Soil samples collected from P-3D, MW201 and MW202D were not submitted for laboratory analysis because either there was no evidence of impact in vadose soil or sufficient characterization of impact based on soil samples collected from soil probes and/or soil borings conducted during previous remedial investigation activities. Methods for the classification of soil samples were consistent with those methods previously described in Section 4.1 for soil samples collected from soil probes. The only variation from Section 4.1 is that acetate liners were not used for soil sampling.

Each monitoring well was constructed with a 5-foot long, 2-inch ID, schedule 40 PVC well screen and 2-inch ID, schedule 40 PVC riser pipe. The well screens have a slot size of 0.010 inch. For the monitoring well with the well screen set at the water table surface (MW201) an attempt was made to set the well screen with approximately 3 feet of screen set below the depth where groundwater was encountered during drilling. For monitoring wells with well screens set at depth below the water table (P-3D and MW202D) final screen depths were based on depth and estimated vertical extent of impact. The annular space surrounding the well screens for each monitoring well was packed with washed silica sand to a level approximately 2 feet above the top of the screens. For MW201, a hydrated bentonite pellet seal was set above the sand pack to approximately 1 foot BG because the top of the sand pack was within 5 feet of grade. For P-3D and MW202D, a hydrated bentonite pellet seal approximately 1 to 2 feet in thickness was set above the sand pack; while the remaining annular space was backfilled with a cement/bentonite grout to approximately 1 foot BG. Each monitoring well was completed at grade with a water-tight, traffic-rated, flush-mount well guard installed in concrete. Each well casing was capped with a water tight, locking lid at the completion of well construction activities.

Monitoring wells were developed by intermittent surging of the screened interval with a surge block followed by pumping of the screened interval with a down-hole pump. The

wells were developed until a minimum of six casing volumes of water had been removed and/or the development water was judged to be sufficiently clear.

The final completion depths for the monitoring wells, as well as the associated sand packs and seals were documented by the SME field staff. The condition of the well development water, i.e odors, turbidity, etc., as well as final volume were also documented by the SME field staff.

Soil cuttings generated from the soil borings and groundwater generated from well development activities were containerized in appropriately labeled, MDOT approved, 55-gallon drums. A detailed description of decontamination and waste disposal procedures is presented in Sections 4.6 and 4.7, respectively.

4.3 Vertical Groundwater Sampling

Vertical groundwater sampling was conducted in soil borings corresponding to P-3D and MW202D prior to installation of permanent monitoring wells in the same borings. Vertical groundwater sampling was also conducted at MW201 using soil probe methods. Vertical groundwater samples from P-3D were collected continuously from 8 to 28 feet BG, and at 30 to 35 feet BG and 35 to 40 feet BG. Vertical groundwater samples from MW202D were collected at 15 to 20 feet BG and continuously from 40 to 60 feet BG. Vertical groundwater samples from MW201 were collected at depths of 8 to 10 feet BG, 18 to 20 feet BG and 28 to 30 feet BG.

Vertical groundwater samples at P-3D and MW202D were collected using a 5-foot long, 4.25–inch ID screened hollow stem auger. The screened auger was advanced to the desired depth for collection of a groundwater sample. Groundwater samples were obtained by lowering a Keck® Sampling Pump and a suction pack into the well and pumping through a 0.5-inch ID polyethylene tubing. The suction pack was placed directly above the screened portion of the auger to prevent downward migration of groundwater within the augers. Approximately three volumes were purged prior to sampling.

Vertical groundwater samples collected from the soil probe corresponding to MW201 was collected using a 0.5-inch ID temporary well driven into the saturated zone. The screen for the 0.5-inch ID temporary well was two feet in length with a slot size of 0.010 inches. Groundwater samples were obtained from the screened area by pumping the groundwater through 0.25-inch ID polyethylene tubing using a peristaltic pump. Approximately three casing volumes were purged from the temporary well prior to sampling.

Vertical groundwater samples were submitted for laboratory analysis of BTEX and PNAs. The samples were collected in laboratory supplied containers directly from the effluent end of the pump tubing. The analytical methods, TDLs and containers for the indicated analytical parameters were previously listed under Section 4.1.

4.4 Soil Probe and Monitoring Well Surveying

Ground surface elevations for soil probes, as well as ground surface and top-of-casing elevations for monitoring wells were surveyed relative to mean sea level with an accuracy of +/-0.01 feet.

4.5 Monitoring Well Sampling

Prior to conducting monitoring well purging and sampling, well caps at each monitoring well were removed to allow the water level within the well casing to equilibrate with respect to atmospheric pressure for a minimum of 15 minutes. After equilibration occurred, the depth to water and total well depth were gauged referenced to the top-of-casing using an electronic water level meter incremented to 0.01 feet.

After gauging the depth to water and total well depth, each well was purged using a variable flow rate, portable peristaltic pump with 3/8-inch ID silicone tubing, or equivalent, at a low pumping rate of 100 to 400 milliliters per minute (ml/min), until a minimum of 3 casing volumes was purged and the discharged groundwater appeared to be relatively sediment free. For monitoring wells with well screens set at the water table surface (MW-1 through MW-4, P-1 through P-4, MW101 through MW105 and MW201) purging consisted of slowly lowering the pump intake to a level approximately half-way between the water level surface and the bottom of the well. For monitoring wells with well screens set at depth below the water table (P-2D, P-3D, MW101D, MW104D, MW105D, and MW202D) purging consisted of slowly lowering the pump intake through the portion of the water column above the screened interval where approximately one-casing volume was purged, then the pump intake was lowered to the center of the screened interval and purging was continued until a minimum of 2 more casing volumes had been purged and the discharged groundwater appeared to be relatively sediment free.

After purging was completed, groundwater samples were collected at the same flow rate for the following parameters in the order presented: PNAs, 10 Michigan Metals, cyanide (available and free) and BTEX. PNAs and cyanide samples were pumped directly from the pump outlet into the appropriate container. Metals samples were field filtered prior to containerization by inserting a 0.45 micron filter into the pump outlet. Groundwater samples were collected for BTEX analysis by crimping the silicone tubing at grade and withdrawing the tubing from the well. The groundwater sample was then gravity drained from the influent end of the pump tubing into the appropriate container to minimize negative pressure effects from the peristaltic pump. Analytical methods, TDLs and sample containers were consistent with those previously presented under Section 4.1 for groundwater samples collected from soil probes.

Groundwater samples collected from site monitoring wells are also being submitted for laboratory analysis of various inorganic parameters to evaluate the potential for natural attenuation occurring on the site. The parameters, analytical methods, TDLs and sample containers are presented below.

Analytical Parameter	EPA Method Number	Target Detection Limits	Container w/ Preservative
Iron	6010	100	250 ml plastic/HNO3
Nitrate	353.2	100	250 ml plastic/NP
Sulfate	375.2	1,000	250 ml plastic/NP
Alkalinity as CaCO3	310.1	--	40 ml VOA/NP

Notes:
1. TDLs are presented in parts per billion (ppb or micrograms per Liter (ug/L)).
2. NP = No preservative.

As previously stated, for the February, 2000 groundwater sampling event, groundwater samples were not collected from P-1 because the well was dry.

As a quality assurance/quality control measure for the February and May, 2000 sampling events, a duplicate groundwater sample from MW101 was submitted to the analytical laboratory for BTEX analysis.

For groundwater samples, pre-cleaned containers with appropriate preservatives were supplied by the analytical laboratory. After sample collection, the containerized samples were kept cool, i.e. refrigerated, until delivery to the analytical laboratory. Chain of custody procedures documenting the sample handling sequence were followed by the SME field staff.

Depths to groundwater, total well depths, purge volumes, field descriptions of purge water condition (i.e. color, odors, etc.) and other relevant information were documented by the SME field staff.

Purge water from monitoring well sampling activities was containerized in labeled MDOT approved 55-gallon drums. A detailed description of decontamination and waste disposal procedures is presented in Sections 4.6 and 4.7, respectively.

4.6 Decontamination

Downhole soil probe and drilling tools, i.e augers, drill-rod, probe-rods, etc., were decontaminated with a high pressure/temperature wash prior to conducting each soil probe and soil boring. Downhole and reusable soil sampling equipment, i.e. Macro Samplers, split-barrel samplers, stainless steel putty knives, were decontaminated with a laboratory grade detergent and rinsed with distilled water prior to each sampling event. Downhole and

reusable groundwater sampling equipment, i.e. temporary well screens, water level meter, were decontaminated with a laboratory grade detergent and rinsed with distilled water prior to each sampling event. For groundwater sampling, new polyethylene or silicone tubing, as well as new groundwater filter elements were used at each sampling location, i.e. soil probes or monitoring wells.

Monitoring well materials were either pre-cleaned and wrapped in plastic from the manufacturer or cleaned on-site with a high pressure/temperature wash.

Waste water generated from decontamination activities was containerized in labeled MDOT approved 55-gallon drums. A more detailed description of waste disposal procedures is presented under Section 4.7.

4.7 Solid and Liquid Disposal

As previously stated, residual soil and acetate liners generated from soil probe activities; soil cuttings generated during soil boring activities; groundwater generated during soil probe sampling, well development and monitoring well sampling activities, and wash water generated during the decontamination of soil and groundwater sampling equipment were containerized in labeled, MDOT approved 55-gallon drums and stored on-site pending waste characterization by Consumers Energy.

The MDOT approved 55-gallon drums were provided by SME's subcontractors. Drum labels were provided by Consumers Energy. The drum labels were marked using a water-proof, indelible pen with the following information:

- Contents: Type of material, i.e. soil cuttings, acetate liners, purge water and/or decon water.
- Origin of Materials: Source of material, i.e. MW202D.
- Address: 1945 W. Parnall Road/Jackson, MI
- Contact: Robert Neumann
- SME Project No.: KE31823
- Date: Date material was placed in drum.

Consumers Energy has disposed of the soil and liquid wastes generated during the remedial investigation activities at licensed disposal facilities.

5. GEOLOGY/HYDROGEOLOGY

5.1 Soil Stratigraphy

As previously reported, the site is located within the Kalamazoo River Valley. Unconsolidated sediments within the Kalamazoo River Valley range in thickness from about 50 to 100 feet and generally consist of interbedded sands and silts. The deposition of the unconsolidated sediments can be primarily attributed to alluvial processes, i.e. stream and

river action. The underlying bedrock unit is the Coldwater Shale. A more detailed presentation of site stratigraphy is presented below.

Generally, the soil conditions encountered during remedial investigation activities conducted in April, 2000 were consistent with soil conditions encountered during previous remedial investigation activities conducted in 1999.

At SP401, SP402, SP403, SP404, P-3D and MW202D, approximately 2.5 to 4 inches of asphaltic concrete was encountered at grade. Additionally at SP401, SP402 and SP403, approximately 3 to 4 inches of cement concrete was encountered beneath the asphaltic concrete. At MW201 and B203 the surficial materials consisted of sand or gravel fill.

Below surficial material, the soil stratigraphy at the site is characterized as follows:

Stratum A: Fill. Fill consisting predominantly of sand was encountered beneath the surficial materials at each soil probe and soil boring location. The sand fill varied in grain size and contained various amounts of silt, clay and gravel. In addition, the fill at SP402, SP403, SP404, and P-3D, contained varying amounts of coal, slag, cinders and brick pieces. At SP403, the fill also contained a trace of peat and at MW202D, the fill contained occasional silty clay clumps. The fill extended to depths varying from approximately 6 feet to approximately 10 feet.

Stratum B: Fibrous Peat. Fibrous peat was encountered at SP401, SP403, SP404, MW201, B203 and P-3D. The peat was encountered beneath the fill of Stratum A at each of the locations. The peat ranged in thickness from approximately 0.8 feet at B203 to approximately 5.5 feet at SP401. Occasional root pieces and sand partings were encountered within the peat. SP401 and SP404 were terminated in the peat layer at depths of 12 and 7 feet, respectively. At the remaining locations where peat was encountered, the peat extended to depths ranging from approximately 6.8 feet to approximately 11 feet.

Stratum C: Native Sands and Silts. Natural sand and/or silt layers were encountered either beneath the fill of Stratum A or the fibrous peat of Stratum B at SP402, SP403, P-3D, MW201, MW202D and B203. The native sand layers were assorted in grain size and contained variable amounts of silt and a trace of gravel and clay at various locations. The native silt layers included clayey silt and sandy silt with sand seams and partings at various locations. SP402, SP403, P-3D, MW201, B203 and MW202D terminated in the natural sands or silts of Stratum C. These borings were advanced to depths ranging from approximately 9 feet to approximately 60 feet.

Figure No. 5 of Appendix A is a site map showing the locations of the section lines for geologic cross sections A-A' and B-B'. Figure Nos. 6 and 7 of Appendix A are updated geologic cross sections A-A' and B-B' from the December 28, 1999 "Interim Report of Remedial Investigation," respectively, which show the interpreted correlation of the soil stratigraphy described above. The soil stratigraphy is consistent with the depositional environment of the area.

Stained soil and/or odors were noted at MW202D to extend from the water table, approximately 15 feet BG, to approximately 40 feet BG. At SP401, the soil was observed to

be partially blue in color at a depth of approximately 10.5 feet BG. In addition, the groundwater encountered at SP401 was observed to have a bluish tint.

5.2 Groundwater Conditions

During soil probing and well installation activities conducted in April, 2000 groundwater was encountered at depths ranging from approximately 4 to 14 feet BG.

Figure No. 8 of Appendix A shows the groundwater elevation contours for groundwater levels gauged in site monitoring wells on February 15, 2000, and Figure No. 9 of Appendix A shows the groundwater elevation contours for groundwater levels gauged in site monitoring wells on May 22, 2000. Table 1 of Appendix C lists groundwater elevation data for the February and May, 2000 groundwater monitoring events, as well as previous groundwater monitoring events.

Groundwater elevations gauged at P-2D, MW101D, MW104D and MW105D were not used to interpret groundwater flow conditions at the water table because the well screens are set below the static water table surface. For the February, 2000 groundwater monitoring event, P-1 was reported to be dry. For the May, 2000 groundwater monitoring event, the groundwater elevation gauged at MW201 was not used to interpret groundwater flow due to a potential anomalous reading.

5.2.1 February 15, 2000

Groundwater was encountered at depths below ground surface ranging from approximately 4.5 feet at MW-4 to approximately 14.3 feet at MW101D. With the exception of P-4, groundwater elevations for February, 2000 were lower by approximately 0.1 to 0.7 feet compared with groundwater elevations gauged in June, 1999. At P-4 the groundwater elevation was approximately 0.04 feet higher for February, 2000 compared with the groundwater elevation gauged in June, 1999.

For the northern portion of the site, the principal former MGP operations area, groundwater flow appears to be to the southeast with a calculated horizontal hydraulic gradient of 0.003 feet per foot. For the southern portion of the site, groundwater flow appears to be generally to the northeast with a calculated horizontal hydraulic gradient also of 0.003 feet per foot. The interpreted direction of groundwater flow and horizontal gradients are consistent with previous groundwater gauging events.

Vertical hydraulic gradients were calculated for the following well pairs, P-2/P-2D, MW101/MW101D, MW104/MW104D and MW105/MW105D. The following table summarizes the calculated vertical gradients.

Location	Gradient (feet per foot) and Direction
P-2/P-2D	0.03 – Downward
MW101/MW101D	0.01 – Downward
MW104/MW104D	0.003 – Upward
MW105/MW105D	0.03 – Downward

Generally, the calculated vertical hydraulic gradients are consistent with previous groundwater gauging events.

5.2.2 May 22, 2000

Groundwater was encountered at depths below ground surface ranging from approximately 3.2 feet at MW-4 to approximately 12.7 feet at MW202D. Where comparative data is available, groundwater elevations for May, 2000 were higher by approximately 1.1 to 1.8 feet compared with groundwater elevations gauged in February, 2000.

For the northern portion of the site, the principal former MGP operations area, groundwater flow appears to be to the southeast with a calculated horizontal hydraulic gradient of 0.007 feet per foot. For the southern portion of the site, groundwater flow appears to be generally to the east with a calculated horizontal hydraulic gradient of 0.003 feet per foot. The interpreted direction of groundwater flow and horizontal gradients are generally consistent with previous groundwater gauging events.

Vertical hydraulic gradients were calculated for the following well pairs, P-2/P-2D, MW101/MW101D, MW104/MW104D, MW105/MW105D, and P-3/P-3D. The following table summarizes the calculated vertical gradients.

Location	Gradient (feet per foot) and Direction
P-2/P-2D	0.02 – Downward
P-3/P-3D	0.02 – Upward
MW101/MW101D	0.01 – Downward
MW104/MW104D	0.004 – Upward
MW105/MW105D	0.04 – Downward

Where comparative data is available, the calculated vertical hydraulic gradients are generally consistent with previous groundwater gauging events.

6. ANALYTICAL RESULTS FOR MGP PARAMETERS

The following sections present the analytical results for subsurface soil and groundwater samples collected during remedial investigation activities conducted at the site in February, April and May, 2000. As previously stated, the land use category believed to be appropriate for the evaluation of analytical data under Part 201 is Commercial II.

GSI Protection and GSI criteria for barium, cadmium, copper, lead and zinc were calculated using the MDEQ spreadsheet "Calculation of Generic Facility-Specific Part 201 Groundwater Surface Water Interface (GSI) Criteria for {G} Footnoted Hazardous Substances," dated June 23, 2000. This spreadsheet incorporates the Final Chronic Value (FCV) formula presented in Footnote {G} of the tabulated Part 201 Generic Cleanup Criteria and Screening Levels dated June 7, 2000. The surface water hardness value used in the FCV formula was 265 parts per million based on data obtained for the Kalamazoo River in the U.S. Geological Survey Water Resources Data-Michigan for 1994. Hardness data for Portage Creek was not available. For the purposes of establishing GSI Protection and GSI Criteria, it is assumed that Portage Creek is not a drinking water source. The GSI Protection Criteria used for these metals was the higher of the Soil-Water Partition Value for GSI or (20x) the calculated GSI criteria. However, for soil, where the GSI Protection Criteria is less than the Statewide Default Background Concentration, the Statewide Default Background Concentration is used for comparison.

6.1 Subsurface Soil

Laboratory testing results for five subsurface soil samples submitted for analysis are listed on Tables 2 and 3 of Appendix C. Tables 2 and 3 also list the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection, Groundwater Contact Protection, GSI Protection, Volatilization to Indoor Air Inhalation and Direct Contact. Laboratory analytical reports for the subsurface soil samples are presented in Appendix D.

BTEX, PNAs, cyanide and metals concentrations for subsurface soil samples were less than the Part 201 Commercial II Cleanup Criteria for Groundwater Contact Protection, Volatilization to Indoor Air Inhalation, Ambient Air Inhalation and Direct Contact. Additionally, BTEX concentrations for subsurface soil samples were less than the Part 201 Commercial II Cleanup Criteria for Soil Saturation. The MDEQ has not provided soil saturation criteria for the remaining MGP parameters.

6.1.1 BTEX

The benzene concentration for SP403-S1 exceeded the Part 201 Commercial II Drinking Water Protection Criterion. Toluene, ethylbenzene and xylene concentrations for SP403 were less than the Part 201 Commercial II Cleanup Criteria. SP403 was advanced on the north side of Lovell Street approximately 150 feet to the west of Pitcher Street.

BTEX concentrations for other subsurface soil samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

6.1.2 PNAs

Naphthalene concentrations for SP401-S3 and SP404-S1 exceeded the Part 201 Commercial II Cleanup Criterion for GSI Protection. The concentrations of remaining PNAs for these samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria. SP401 and SP404 were advanced on the north side of Lovell Street, approximately 300 feet and 75 feet west, respectively of Pitcher Street.

PNA concentrations for other subsurface soil samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

6.1.3 Michigan 10 Metals

Arsenic, mercury and selenium concentrations for SP401-S3 were detected at concentrations which exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection and/or GSI Protection. The concentrations of remaining metals for this sample were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

For SP404-S1, the selenium concentration exceeded the Part 201 Commercial II Cleanup Criteria for GSI Protection. The concentrations of remaining metals for this sample were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Metals concentrations for other subsurface soil samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

6.1.4 Cyanide

The amenable cyanide concentration for SP401-S3 was indeterminate at the required TDL. Amenable cyanide concentrations for other subsurface soil samples were less than the TDL.

6.2 Groundwater – Soil Probes

Laboratory testing results for six groundwater samples collected from SP401 through SP404 and B203 are summarized on Table 4 of Appendix C. Table 4 also list the Part 201 Commercial II Cleanup Criteria for Drinking Water, GSI, Volatilization to Indoor Air Inhalation and Groundwater Contact. Laboratory analytical reports for the groundwater samples are presented in Appendix D.

BTEX and PNA concentrations for groundwater samples collected from soil probes were less than the Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air Inhalation, Groundwater Contact, Flammability/Explosivity, Water Solubility and Acute Inhalation.

Metals concentrations for groundwater samples were less than the TDLs or Part 201 Commercial II Cleanup Criteria.

6.2.1 BTEX

Benzene, ethylbenzene and xylene(s) concentrations for the groundwater sample collected from B203 at 7 to 9 feet BG exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI.

BTEX concentrations for other groundwater samples collected from soil probes were less than the TDL.

6.2.2 PNAs

Naphthalene and acenaphthene concentrations for the groundwater sample collected from B203 at 7 to 9 feet BG exceeded the Part 201 Commercial II Cleanup Criteria for GSI. The concentrations of remaining PNA constituents for this sample were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

PNA concentrations for other groundwater samples collected from soil probes were less than the TDL.

6.2.3 Cyanide

Available and free cyanide concentrations at SP401 exceeded the Part 201 Commercial II Cleanup Criterion for GSI.

Available and free cyanide concentrations for other groundwater samples collected from soil probes were either less than the TDL or Part 201 Commercial II Cleanup Criteria.

6.3 Groundwater – Vertical Groundwater Sampling

Laboratory testing results for 14 vertical groundwater samples collected from P-3D, MW201 and MW202D are summarized on Table 5 of Appendix C. Table 5 also lists the Part 201 Commercial II Cleanup Criteria for Drinking Water, GSI, Volatilization to Indoor Air Inhalation and Groundwater Contact. Laboratory analytical reports for the vertical groundwater samples collected are presented in Appendix D.

BTEX and PNA concentrations for vertical groundwater samples were less than the Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air Inhalation, Groundwater Contact, Flammability/Explosivity, Water Solubility and Acute Inhalation.

6.3.1 P-3D

BTEX

Benzene, toluene, ethylbenzene and/or xylene(s) concentrations exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI at depths of 8 to 13 feet BG, 13 to 18 feet BG, 18 to 23 feet BG, 23 to 28 feet BG, 30 to 35 feet BG and 35 to 40 feet BG.

PNAs

Naphthalene concentrations exceeded the Part 201 Commercial II Cleanup Criteria for GSI at depths of 8 to 13 feet BG, 13 to 18 feet BG, 18 to 23 feet BG, 23 to 28 feet BG, 30 to 35 feet BG and 35 to 40 feet BG. In addition, the acenaphthene concentration at the 8 to 13 foot depth interval exceeded the Part 201 Commercial II Cleanup Criterion for GSI. The concentrations of remaining PNA constituents for these samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

6.3.2 MW201

BTEX

Benzene, ethylbenzene and/or xylene(s) concentrations exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI at depths of 8 to 10 feet BG, 18 to 20 feet BG and 28 to 30 feet BG. The toluene concentrations for each of the vertical groundwater samples analyzed from MW201 were less than the Part 201 Commercial II Cleanup Criteria.

PNAs

The naphthalene concentration at the 8 to 10 foot depth interval exceeded the Part 201 Commercial II Cleanup Criteria for GSI. The concentrations of remaining PNA constituents for the vertical groundwater samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

6.3.3 MW202D

BTEX

The concentrations of benzene, toluene, ethylbenzene and xylene(s) exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI at the 15 to 20 foot depth interval.

Toluene, ethylbenzene and/or xylene(s) concentrations exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI at depths of 40 to 45 feet BG, 45 to 50 feet BG, 50 to 55 feet BG and 55 to 60 feet BG. However, the benzene concentrations for these samples either less than the TDL or Part 201 Commercial II Cleanup Criteria.

PNAs

Naphthalene concentrations exceeded the Part 201 Commercial II Cleanup Criterion for Drinking Water and/or GSI at depths of 15 to 20 feet BG, 40 to 45 feet BG, 45 to 50 feet BG, 50 to 55 feet BG and 55 to 60 feet BG In addition, the acenaphthene concentration at the 15 to 20 foot depth interval exceeded the Part 201 Commercial II Cleanup Criterion for GSI. The concentrations of remaining PNA constituents for these samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

6.4 Groundwater – Monitoring Wells – February 2000

Laboratory testing results for 16 groundwater samples submitted for analysis in February, 2000 are summarized on Table 6 of Appendix C. Table 6 also lists the Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI. Laboratory analytical reports for the groundwater samples collected from monitoring wells in February, 2000 are presented in Appendix D.

It should be noted that a groundwater sample was not collected from P-1 due to the well being dry.

BTEX and PNA concentrations for groundwater samples were less than the Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air Inhalation, Groundwater Contact, Flammability/Explosivity, Water Solubility and Acute Inhalation.

6.4.1 BTEX

Benzene, toluene, ethylbenzene and/or xylene(s) concentrations at MW-1, P-2, P-3, MW101 and MW101D exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI.

BTEX concentrations for other groundwater samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

6.4.2 PNAs

Naphthalene, acenaphthene, fluorene and fluoranthene concentrations at P-2 exceeded the Part 201 Commercial II Cleanup Criteria for GSI. The concentrations of remaining PNA constituents for this sample were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Naphthalene, fluorene and/or phenanthrene concentrations at P-3, MW101 and MW101D exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI. The concentrations of remaining PNA constituents for these samples were either less than the TDL or Part 201 Commercial II Cleanup Criteria.

The naphthalene concentration at MW-1 exceeded the Part 201 Commercial II Cleanup Criterion for GSI. The concentrations of remaining PNA constituents for this sample were less than the TDL.

PNA concentrations for other groundwater samples were less than the TDL.

6.4.3 Michigan 10 Metals

The selenium concentration at MW102 exceeded the Part 201 Commercial II Cleanup Criterion for GSI. Other metals concentrations for this groundwater sample were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Metals concentrations for other groundwater samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

6.4.4 Cyanide

The amenable cyanide concentration at P-3 exceeded the Part 201 Commercial II Cleanup Criterion for GSI, however concentrations of free and available cyanide at P-3 were less than the TDL.

Amenable, free and available cyanide concentrations for other groundwater samples were less than the TDL.

6.5 Groundwater – Monitoring Wells – May 2000

Laboratory testing results for 20 groundwater samples submitted for analysis in May, 2000 are summarized on Table 6 of Appendix C. Table 6 also lists the Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI. Laboratory analytical reports for the groundwater samples collected in May, 2000 are presented in Appendix D.

BTEX and PNA concentrations for groundwater samples were less than the Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air Inhalation, Groundwater Contact, Flammability/Explosivity, Water Solubility and Acute Inhalation.

6.5.1 BTEX

Benzene, toluene, ethylbenzene and/or xylene(s) concentrations at MW-1, P-2, MW101, MW101D and MW201 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI.

The benzene concentration at P-3D exceeded the Part 201 Commercial II Cleanup Criterion for Drinking Water, however, toluene, ethylbenzene and xylene(s) concentrations were less than the Part 201 Commercial II Cleanup Criteria.

BTEX concentrations for other groundwater samples were either less than the TDL or Part 201 Commercial II Cleanup Criteria.

6.5.2 PNAs

Naphthalene, acenaphthylene and fluorene concentrations at MW101D exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI. The concentrations of remaining PNA constituents for this sample were either less than the TDL or Part 201 Commercial II Cleanup Criteria.

Naphthalene and acenaphthene concentrations at MW101 exceeded the Part 201 Commercial II Cleanup Criteria for GSI. The concentrations of remaining PNA constituents for these samples were either less than the TDL or Part 201 Commercial II Cleanup Criteria.

The naphthalene concentration at MW-1, P-3D, MW201 and MW202D exceeded the Part 201 Commercial II Cleanup Criterion for GSI. The concentrations of remaining PNA constituents for these samples were less than the TDL.

The fluoranthene concentration at P-2 exceeded the Part 201 Commercial II Cleanup Criterion for GSI. The concentrations of remaining PNA constituents for this sample was less than the TDL.

PNA concentrations for other groundwater samples were less than the TDL.

6.5.3 Michigan 10 Metals

The selenium concentrations at P-3, MW101 and MW103 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI. Other metals concentrations for these groundwater samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

The zinc concentration at MW104 exceeded the Part 201 Commercial II Cleanup Criterion for GSI. Other metals concentrations for this groundwater sample were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Metals concentrations for other groundwater samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

6.5.4 Cyanide

Free and available cyanide concentrations for the groundwater samples were less than the TDLs.

7. ANALYTICAL RESULTS FOR NATURAL ATTENUATION PARAMETERS

A discussion of the analytical results for the natural attenuation parameters dissolved oxygen, alkalinity, dissolved iron, nitrate and sulfate is presented below. Natural attenuation parameters have been evaluated at site monitoring wells for the February and May, 2000 monitoring events. Natural attenuation is evaluated by looking at data trends over time. The following discussion is a preliminary evaluation of natural attention based on the natural attenuation parameters analyzed for the last two groundwater monitoring events. Future monitoring events will be used to verify the following preliminary natural attenuation evaluation.

The evaluation of natural attenuation parameters considered the analytical results from MW-1, P-2, P-3, MW101 and MW201 to be representative of wells impacted by MGP parameters; while analytical results from MW-3, MW-4, P-4, MW102, MW103 and MW105 to be representative of non-impacted wells.

Shallow monitoring wells MW-2, P-1 and MW104, which appear to be representative of non-impacted wells based on analytical results to date, were not used for this evaluation. These wells are located adjacent to and/or downgradient of the plume of impacted groundwater, therefore the inorganic chemistry of these wells may not be reflective of non-impacted conditions. Additionally, deep monitoring wells with screens set below the water table (P-2D, P-3D, MW101D, MW104D, MW105D and MW202D) were also not considered for this discussion because of insufficient background data available for comparison.

7.1 Dissolved Oxygen

Dissolved oxygen (DO) concentrations for impacted wells for both the February, 2000 and May, 2000 groundwater sampling events ranged from 0.35 parts per million (ppm) to 0.95 ppm.

DO concentrations for non-impacted wells for both the February, 2000 and May, 2000 groundwater sampling events ranged from 0.15 ppm to 7.55 ppm. However, when further evaluated, the DO concentrations for non-impacted wells MW-3, MW-4 and P-4

ranged from 0.15 ppm to 0.7 ppm; while the DO concentrations for non-impacted wells MW102, MW103 and MW105 ranged from 1.38 ppm to 7.55 ppm. The apparent variation in DO concentrations for non-impacted wells may result from the well screens of MW-3, MW-4 and P-4 being partially set within the fibrous peat unit; while the well screens for MW102, MW103 and MW105 are not.

An indicator of natural attenuation is when DO concentrations for impacted wells are lower than DO concentrations for non-impacted wells. Discounting DO concentrations for non-impacted wells screened within the peat unit, this trend was observed.

7.2 Alkalinity

Alkalinity concentrations for impacted wells for both the February, 2000 and May, 2000 groundwater sampling events ranged from 360,000 ppb to 530,000 ppb. The minimum and maximum observed alkalinity concentrations were both at P-2 for the May, 2000 and February, 2000 groundwater sampling events, respectively.

Alkalinity concentrations for non-impacted wells for both the February, 2000 and May, 2000 groundwater sampling events ranged from 230,000 ppb to 430,000 ppb.

An indicator of natural attenuation is when alkalinity concentrations for impacted wells are higher than alkalinity concentrations for non-impacted wells. The data indicated a general tendency toward this trend.

7.3 Dissolved Iron

Dissolved iron concentrations for impacted wells for both the February, 2000 and May, 2000 groundwater sampling events ranged from 210 ppb to 12,000 ppb.

Dissolved iron concentrations for non-impacted wells for both the February, 2000 and May, 2000 groundwater sampling events ranged from less than the TDL, <100 ppb, to 8,700 ppb. However, as with DO, when further evaluated, the dissolved iron concentrations for non-impacted wells MW-4 and P-4 ranged from less than the TDL to 8,700 ppb; while the DO concentrations for non-impacted wells MW-3, MW102, MW103 and MW105 ranged from less than the TDL to 370 ppb. The apparent variation for non-impacted wells may also result from the well screens of MW-4 and P-4 being partially set within a peat unit.

An indicator of natural attenuation is when dissolved iron concentrations for impacted wells are higher than dissolved iron concentrations for non-impacted wells. Generally, with the exception of non-impacted wells MW-4 and P-4 screened within the peat unit, this trend was observed.

7.4 Nitrate

Nitrate concentrations for impacted wells for both the February, 2000 and May, 2000 groundwater sampling events ranged from less than the TDL, <100 ppb, to 4,500 ppb.

Nitrate concentrations for non-impacted wells for both the February, 2000 and May, 2000 groundwater sampling events ranged from less than the TDL to 5,300 ppb.

An indicator of natural attenuation is when nitrate concentrations for impacted wells are lower than nitrate concentrations for non-impacted wells. The data for the two quarters of groundwater monitoring for nitrate does not appear to indicate this trend at this time.

7.5 Sulfate

Sulfate concentrations for impacted wells for both the February, 2000 and May, 2000 groundwater sampling events ranged from 33,000 ppb to 110,000 ppb. The minimum and maximum observed sulfate concentrations were both at MW-1 for the February, 2000 and May, 2000 groundwater sampling events, respectively.

Sulfate concentrations for non-impacted wells for both the February, 2000 and May, 2000 groundwater sampling events ranged from 6,900 ppb to 90,000 ppb.

Depending on the degree to which oxygen reduction has occurred due to natural attenuation, sulfate concentrations for impacted wells may be lower than sulfate concentrations for non-impacted wells. This relationship assumes there is no other source of sulfate to groundwater other than naturally occurring sources. The data for the two quarters of groundwater monitoring for nitrate does not appear to indicate this trend at this time.

7.6 Conclusions for Natural Attenuation

Based on two quarters of groundwater monitoring, analytical results suggest natural attenuation may be occurring within the plume of impacted groundwater based on initial DO, dissolved iron and possibly alkalinity concentrations for impacted wells. However, analytical results for nitrate and sulfate do not appear to be indicative of natural attenuation at this time. Additional monitoring for natural attenuation is recommended.

8. PATHWAY EVALUATION

8.1 Area South of Lovell Street

1. Groundwater flow south of Lovell Street appears to be to the northeast-east. This interpretation is based on groundwater level gauging events conducted in February, 1999; June, 1999; February, 2000 and May, 2000.

2. BTEX, PNA, metals and cyanide concentrations for groundwater samples collected at monitoring wells south of Lovell Street (MW-3, MW-4 and P-4) have not exceeded Part 201 Commercial II Cleanup Criteria for four consecutive groundwater monitoring events, therefore the Drinking Water, GSI, Groundwater Contact and Indoor Inhalation exposure pathways are not believed to be an issue for the portion of the site south of Lovell Street. However, analytical results for groundwater samples collected south of Lovell Street during future remedial investigation activities will continue to be compared with Part 201 Commercial II Cleanup Criteria.

8.2 Area North of Lovell Street

8.2.1 Subsurface Soil

1. Coal tar was not encountered at SP401 through SP404.

2. BTEX, PNA, metal and cyanide concentrations for subsurface soil samples collected from SP401 through SP404 did not exceed Part 201 Commercial II Cleanup Criteria for Groundwater Contact Protection, Volatilization to Indoor Air, Direct Contact, Ambient Air Inhalation and Soil Saturation.

3. Benzene, naphthalene, arsenic, mercury and selenium concentrations for soil samples collected from SP401, SP403 and/or SP404 did exceed the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI.

   The Drinking Water and GSI exposure pathways for arsenic and mercury impact to soil may not be an issue since these metals have not been detected in groundwater samples collected from both soil probes and monitoring wells to date at concentrations exceeding either the TDLs or Part 201 Commercial II Cleanup Criteria.

   The Drinking Water and GSI exposure pathways for selenium may be potential exposure issues since concentrations of selenium have been periodically detected in groundwater samples collected from monitoring wells located north of Lovell Street (P-1, P-3, MW101, MW102 and MW103) at concentrations exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI.

   The Drinking Water and GSI exposure pathways for benzene and naphthalene appear to be potential exposure issues since concentrations of these MGP parameters have been detected in groundwater samples collected north of Lovell Street at concentrations exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI.

4. Amenable cyanide concentrations for subsurface soil samples collected from SP401 through SP404 did not exceed Part 201 Commercial II Cleanup Criteria. However, for sample SP401-S3, collected at a depth of approximately 5 to 6 feet BG, the amenable cyanide concentration was reported by the analytical laboratory to be indeterminate at the required TDL. Additionally at SP401, blue staining indicative of potential cyanide impact was identified at a depth of approximately 10.5 feet BG within the fibrous peat unit. The blue staining coincides with a depth of approximately 4.5 feet below the water table.

8.2.2 Groundwater

1. Groundwater flow for the northern portion of the site, where former MGP production components, storage structures and transfer lines were principally located, appears to be to the southeast. This interpretation is based on four groundwater level gauging events conducted in February, 1999; June, 1999; February, 2000 and May 2000. Groundwater flow appears to be consistent with site topography.

2. BTEX, PNA, metals and cyanide concentrations for groundwater samples collected at locations north of Lovell Street, both soil probes and monitoring wells, did not exceed Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, Groundwater Contact, Flammability/Explosivity, Acute Inhalation and Water Solubility. Therefore, the data suggests the indoor inhalation, groundwater contact and acute inhalation exposure pathways are not an issue. However, future remedial investigation activities conducted at the site will continue to evaluate data with respect to Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, Groundwater Contact and Acute Inhalation.

3. BTEX and/or PNA impact to groundwater was identified at the following monitoring wells north of Lovell Street for the groundwater monitoring events conducted in February and May, 2000: MW-1, P-2, P-3, P-3D, MW101, MW101D, MW201 and MW202D. The BTEX and/or PNA concentrations at these monitoring wells exceeded Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI.

   BTEX and PNA impact to groundwater for the portion of the site north of Lovell Street appears to be delineated to the north and south based on BTEX and PNA concentrations for groundwater samples collected from MW-3, MW102, MW103, MW105 and MW105D which were either less than the TDLs or Part 201 Commercial II Cleanup Criteria. However, the extent of BTEX and PNA impact to the southeast does not appear to be delineated based on detections of BTEX and/or PNAs at MW201. At MW201, benzene, ethylbenzene, xylene(s) and naphthalene were detected at concentrations which exceed the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI.

   Figure Nos.s 10, 11 and 12 present isoconcentration contours for benzene, xylene(s) and naphthalene in groundwater, respectively. These diagrams were developed using analytical results from monitoring wells screened at the water table and sampled in May, 2000. Each isoconcentration diagram indicates that groundwater impact appears to be migrating south-southeast, which is consistent with the interpreted direction of groundwater flow. At the north end of the site, the isoconcentration diagrams indicate that groundwater impact exceeding Part 201 Commercial II Cleanup Criteria is limited to the vicinity of P-2. However analytical results for groundwater samples collected from soil probes IA-6, IA-7 and IA-8 conducted in January, 1999 suggest the extent of groundwater impact at the north end of the site at concentrations exceeding Part 201 Commercial II Cleanup Criteria is inclusive of the power plant (Building No. 214). The isoconcentration diagrams also indicate that the storm sewer located beneath Lovell Street needs to be further evaluated as a potential migration pathway for groundwater impact at and near the water table. The storm sewer, which is located beneath Lovell Street on the north side, has a reported outside diameter (OD) of 36-inches and extends east beyond the intersection with Pitcher Street where the OD increases to 42-inch. Based on diagrams obtained from the Department of Public Works for the City of Kalamazoo, the elevation of the invert for the storm sewer at the intersection with Pitcher Street is 754.66. Groundwater elevations at P-3, MW-3 and MW201 which are located in the vicinity of the intersection of Lovell and Pitcher Streets have ranged from 756.24 to 758.19, therefore indicating that the storm sewer at the intersection of Lovell and Pitcher Streets is at least partially below the water table.

The vertical extent of BTEX and PNA impact at well pairs P-3/P-3D and MW101/MW202D does not appear to be delineated based on analytical results for the groundwater samples collected from MW202D and P-3D where benzene and naphthalene concentrations exceed the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI. It should be noted, however, that the exceedance identified at MW202D was only for naphthalene which slightly exceeded the Part 201 Commercial II Cleanup Criterion for GSI of 13 ppb. Analytical results for vertical groundwater samples collected from P-3D and MW202D at depths corresponding with their screened intervals were slightly lower than analytical results for groundwater samples collected from P-3D and MW202D. Analytical results for vertical groundwater samples collected at MW201 indicate benzene to be present at concentrations exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI at a depth of 28 to 30 feet BG. The vertical extent of benzene impact at MW201 is unknown. The vertical extent of BTEX and PNA impact at well pairs P-2/P-2D and MW104/MW104D was delineated where BTEX and PNA concentrations for the groundwater sample collected from P-2D and MW104D were less than the TDLs.

The Drinking Water pathway at the site does not appear to be an immediate exposure issue since the site is supplied by municipal water and water supply wells have not been identified downgradient of the site.

Based on the prevalence of dissolved naphthalene in groundwater, which is a constituent of MGP residues, the source of the groundwater impact identified in the northern portion of the site appears to be associated with releases from MGP production components, storage structures, or transfer lines.

4. Dissolved selenium and/or zinc impact to shallow groundwater was identified at the following sampling locations north of Lovell Street for the groundwater monitoring events conducted in February and May, 2000: MW101 through MW104 and P-3. For selenium the indicated concentrations exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI; while for zinc the indicated concentrations exceeded the Part 201 Commercial II Cleanup Criterion for GSI only. The occurrence of selenium and/or zinc in site monitoring wells at concentrations exceeding Part 201 Commercial II Cleanup Criteria has not been repeatable over the four groundwater sampling events conducted to date at the site, therefore the presence of selenium and zinc may not be a significant issue with respect to either the Drinking Water or GSI pathways. The occurrence of selenium and zinc in groundwater will be further evaluated during future remedial investigation activities.

5. Amenable, available and/or free cyanide impact to groundwater was identified at SP401 and P-3 north of Lovell Street for groundwater samples collected in February, April and May, 2000. The cyanide concentrations at both locations exceeded the Part 201 Commercial II Cleanup Criteria for GSI only. However, it is not known at this time whether the GSI pathway is an issue with respect to cyanide impact. This conclusion is based on the following:

    - Cyanide was not detected in groundwater samples collected from SP402, SP403 and SP404 which were conducted east, i.e downgradient, of SP401.

- Where data is available, analytical results for other site monitoring wells, including downgradient monitoring wells MW104 and MW201, indicated cyanide concentrations less than the TDLs for both the February and May, 2000 groundwater monitoring events.

- The occurrence of cyanide at P-3 for the February, 2000 groundwater monitoring event was not confirmed in May, 2000 where the cyanide concentration at P-3 was less than the TDL, therefore the presence of cyanide impact at identified at P-3 in February, 2000 has not been confirmed.

The occurrence of cyanide in groundwater will be further evaluated during future remedial investigation activities.

9. CONCLUSIONS

Generally, the results of remedial investigation activities conducted in February, April and June, 2000 at the site were consistent with the results of previous remedial investigation activities conducted at the site and documented in the December 28, 1999, "Interim Report of Remedial Investigation." The additional remedial investigation activities indicate groundwater impact at concentrations exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI is migrating off-site towards the southeast based on analytical results for vertical groundwater samples collected at MW201, as well as the groundwater sample collected from the permanent well MW201. The downgradient migration of identified groundwater impact in the vicinity of MW201 needs to be further evaluated for influence by the storm sewer located beneath Lovell Street.

A more detailed presentation of the investigation is presented below.

9.1 Soil

1. Coal tar was not encountered SP401 through SP404 which were advanced on the north side of Lovell Street.

2. BTEX, PNA, metal and cyanide concentrations for subsurface soil samples collected from SP401 through SP404 did not exceed Part 201 Commercial II Cleanup Criteria for Groundwater Contact Protection, Volatilization to Indoor Air, Direct Contact, Ambient Air Inhalation and Soil Saturation.

3. Benzene, naphthalene, arsenic, mercury and selenium concentrations for soil samples collected from SP401, SP403 and/or SP404 did exceed the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI. The Drinking Water and GSI exposure pathways for arsenic, mercury and selenium may not be relevant exposure issues based on analytical results for groundwater samples collected at the site. However, for benzene and naphthalene, the Drinking Water and GSI pathways appear to be an issue since these parameters have been detected in groundwater samples collected north of Lovell Street at concentrations exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI.

4. Amenable cyanide concentrations for subsurface soil samples collected from SP401 through SP404 did not exceed Part 201 Commercial II Cleanup Criteria. However, the amenable cyanide concentration for soil sample SP401-S3 was reported by the analytical laboratory to be indeterminate at the required TDL. Additionally at SP401, blue staining indicative of potential cyanide impact was identified at a depth of approximately 10.5 feet BG which corresponds to a depth of approximately 4.5 feet below the water table.

9.2 Groundwater

1. BTEX, PNA, metal and cyanide impact to groundwater at concentrations exceeding Part 201 Commercial II Cleanup Criteria has not been detected in monitoring wells located south of Lovell Street for groundwater monitoring events conducted in February, 1999; June, 1999; February, 2000 and May, 2000.

2. Groundwater flow for the northern portion of the site, where former MGP production components, storage structures and transfer lines were principally located appears to be to the southeast. This interpretation is based on four groundwater level gauging events conducted in February, 1999; June, 1999; February, 2000 and May, 2000. Groundwater flow appears to be consistent with site topography.

3. BTEX, PNA, metals and cyanide concentrations for groundwater samples collected at locations north of Lovell Street, both soil probes and monitoring wells, did not exceed Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, Groundwater Contact, Flammability/Explosivity, Acute Inhalation and Water Solubility.

4. BTEX and/or PNA impact to groundwater was identified at sampling locations north of Lovell Street at concentrations exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI. BTEX and PNA impact to groundwater in this area appears to be delineated to the north and south, however, the extent of impact does not appear to be delineated to the southeast. Additionally, the vertical extent of BTEX and/or PNA impact does not appear to have been delineated at well pair P-3/P-3D, as well at MW201 based on vertical sampling results. Groundwater impact appears to be migrating southeast, which is consistent with the interpreted direction of groundwater flow. The interpreted lateral extent of groundwater impact also suggests that the storm sewer located beneath Lovell Street needs to be further evaluated as a potential migration pathway for groundwater impact at the water table.

5. Detections of metals and cyanide in groundwater at concentrations exceeding Part 201 Commercial II Cleanup Criteria has not occurred in downgradient, off-site monitoring wells and the detections exceeding Part 201 Commercial II Cleanup Criteria have not been consistent in site monitoring wells.

6. Initial DO and dissolved iron, and possibly alkalinity, concentrations suggest that natural attenuation may be occurring within the plume of impacted groundwater.

10. RECOMMENDATIONS

Recommendations for additional remedial investigation activities are discussed below. Figure No. 13 of Appendix A shows the proposed soil boring locations.

1. Install one shallow monitoring well at a location coinciding with former soil probe IA-6. The purpose of the monitoring well is confirm and monitor previously identified impact in the vicinity of the power plant (Building No. 214).

2. Conduct a minimum of 3 soil borings at locations downgradient of MW201. The objective of the soil borings is to collect groundwater samples to further evaluate the lateral and vertical extent of BTEX and PNA impact to groundwater. It is anticipated that each soil boring will be drilled using hollow stem auger techniques to a minimum depth of 50 feet BG. The depth is based on analytical results for vertical groundwater samples collected from P-3D and MW201 at depths of 35 to 40 feet and 28 to 30 feet, respectively, which indicated concentrations of benzene, xylene(s) and/or naphthalene exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI.

   Soil samples will be collected at each soil boring continuously to the water table and at 5-foot intervals thereafter for visual classification.

   Groundwater samples will be collected at each soil boring at the water table and at 10-foot intervals thereafter. Groundwater samples will be collected using either a screened lead auger or other discreet sampling device, i.e. Simulprobe ®. Groundwater samples from each sampling interval will be submitted to an analytical laboratory for analysis of BTEX and naphthalene.

3. Install 3 to 4 additional shallow and/or deep monitoring wells at locations downgradient of MW201. The number of wells, locations and screen depths will be based on the laboratory analytical results of the vertical groundwater sampling event presented under Item 2.

4. Continue to evaluate groundwater samples collected from permanent site monitoring wells during groundwater monitoring events for the natural attenuation parameters discussed in Section 7. of this report.

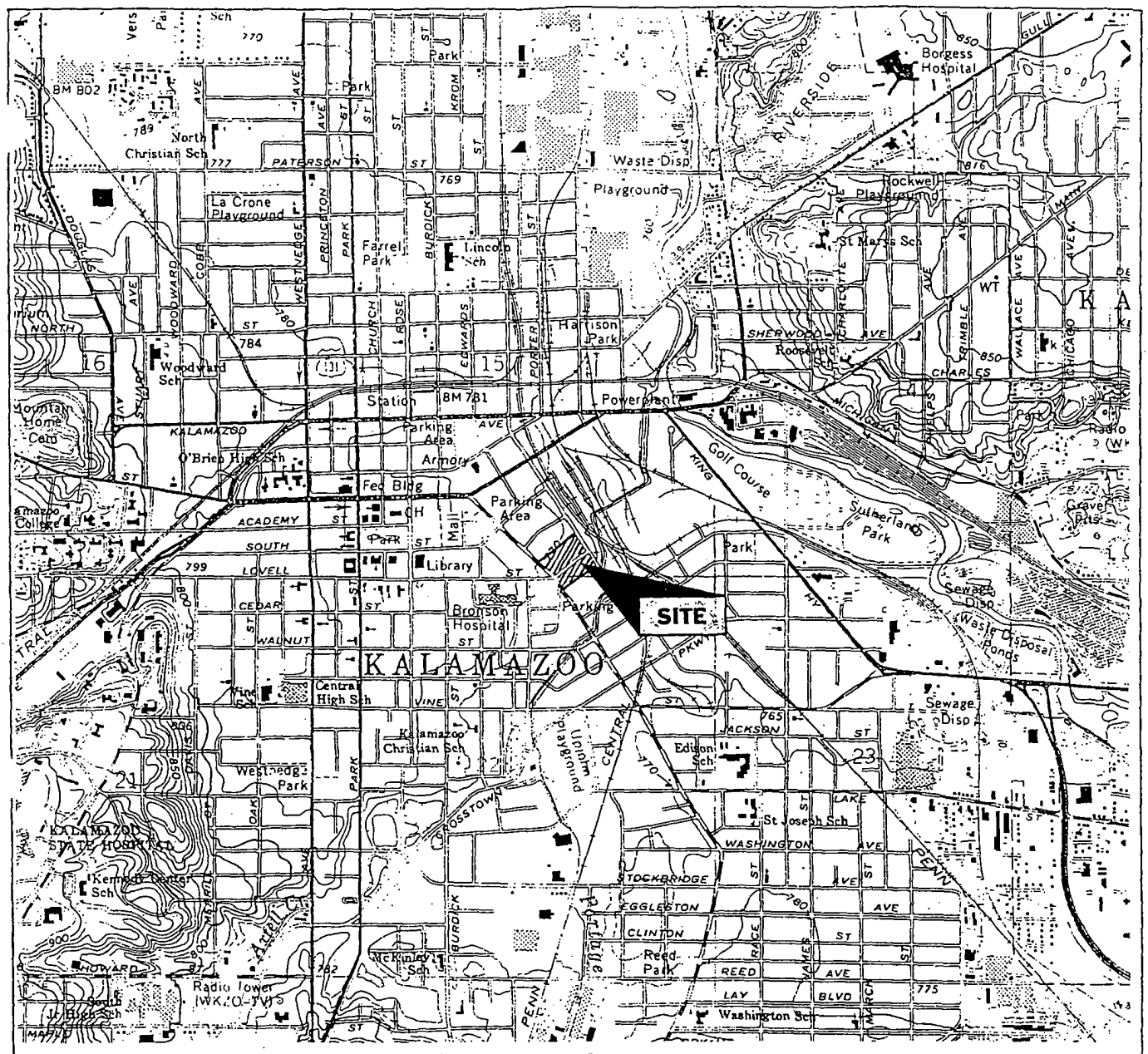
Field procedures for conducting soil borings, as well as the installation and construction of monitoring wells will be consistent with those presented in Section 4.2 of this report. Unless otherwise specified, soil and/or groundwater samples collected during the recommended additional remedial investigation activities will be submitted for laboratory analysis of MGP constituents. Analytical methods and detection limits for soil and groundwater samples will be consistent with those presented in Section 4.2 of this report.

The locations of the proposed soil borings may be subject to change based on access and utility clearance issues.

APPENDIX A

FIGURES

00237090



KALAMAZOO QUADRANGLE
MICHIGAN—KALAMAZOO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

1967
PHOTOREVISED 1973
AMS 3868 I SE—SERIES V862

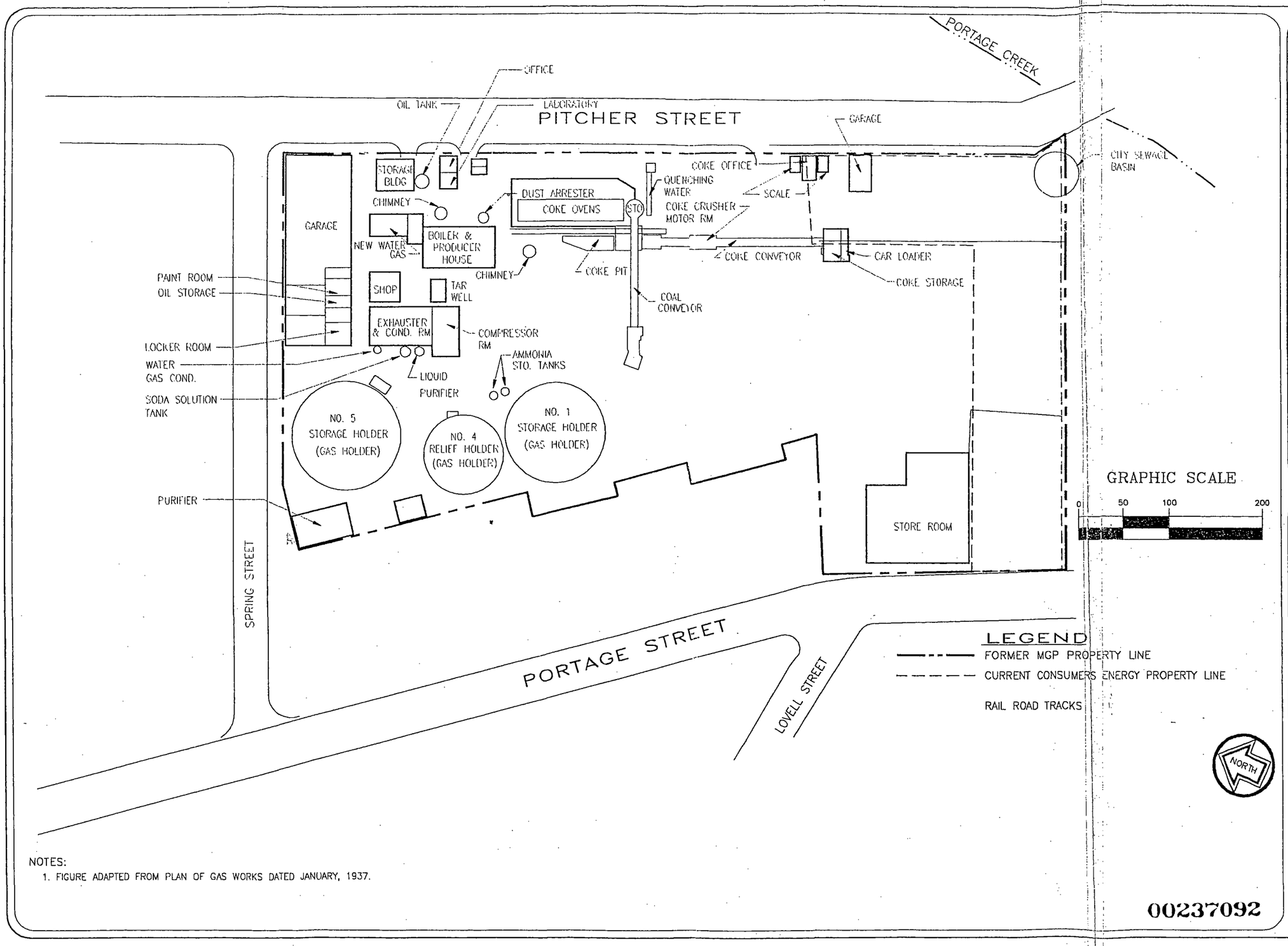
00237091

Date 10-22-98	BAY CITY	soil and materials engineers, inc	SITE LOCATION DIAGRAM
Drawn By ARR	KALAMAZOO		KALAMAZOO MGP
Scale AS SHOWN	LANSING		CONSUMERS ENERGY COMPANY
Job KE 31823	PLYMOUTH		KALAMAZOO, MICHIGAN
	TOLEDO		

DWG. NO. 31823-01

Figure No. 1

KR059B030087



NOTES:
1. FIGURE ADAPTED FROM PLAN OF GAS WORKS DATED JANUARY, 1937.

FORMER MGP SITE FEATURES DIAGRAM, JANUARY, 1937
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 08-09-00
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823

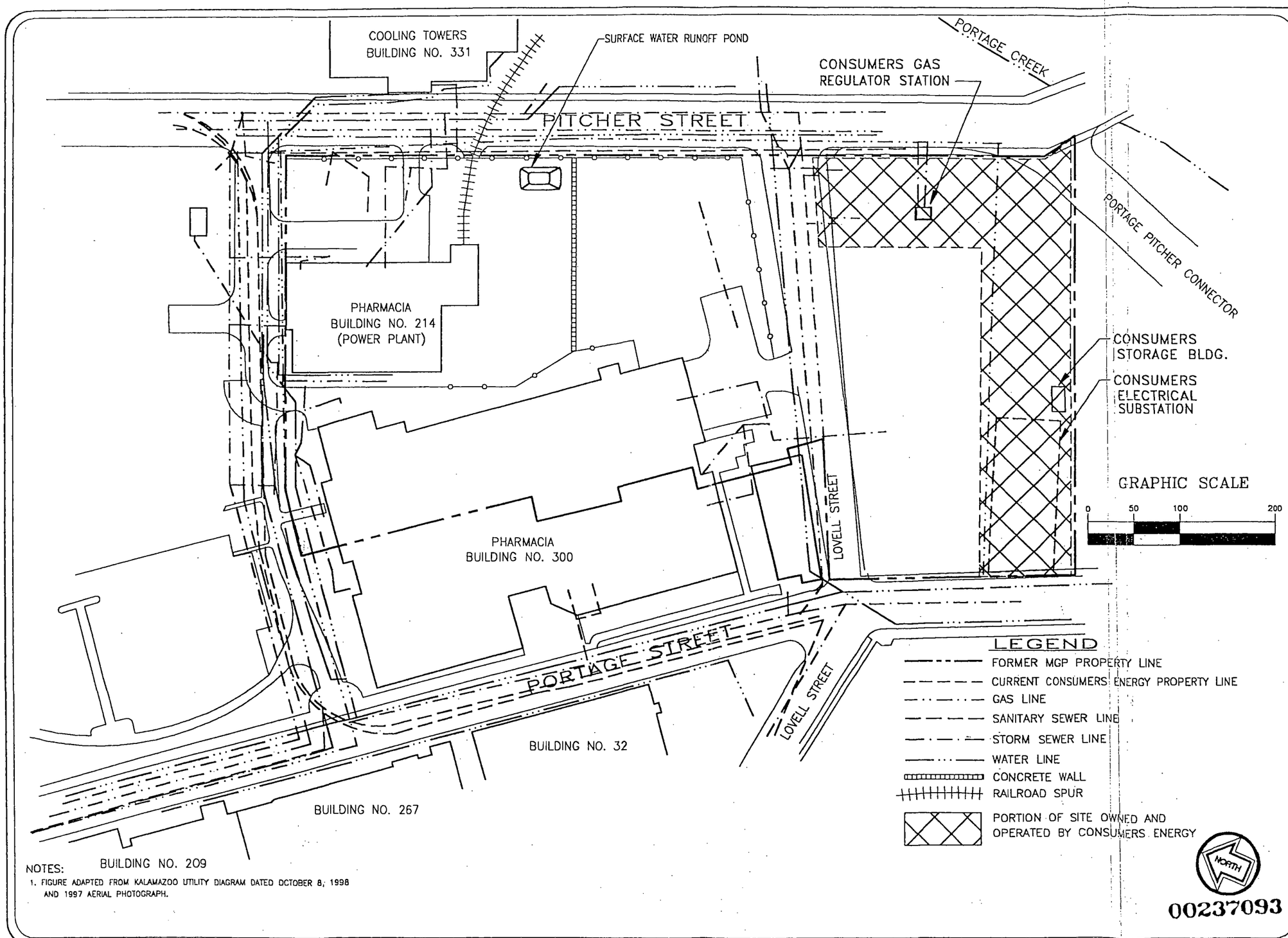
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-02.DWG

00237092

Figure No. 2

KR059B030088



NOTES:
1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.

CURRENT SITE FEATURES DIAGRAM
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

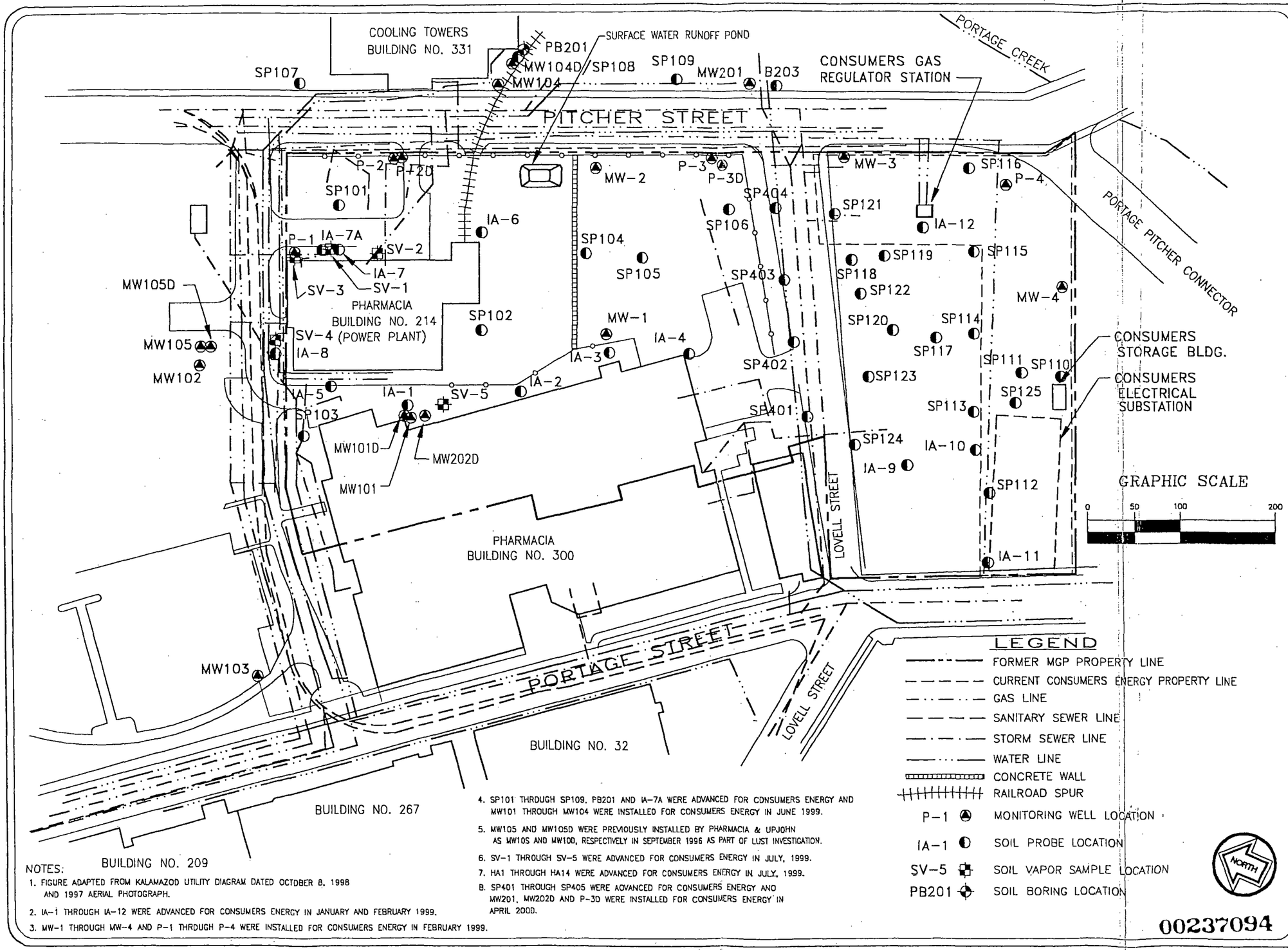
DATE: 08-09-00
SCALE: 1" = 100'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-03.DWG

Figure No. 3

KR059B030089



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THRDUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THRDUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CDNSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE AOVANCED FOR CONSUMERS ENERGY ANO MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.

SOIL PROBE, SOIL VAPOR AND MONITORING WELL
LOCATION DIAGRAM
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

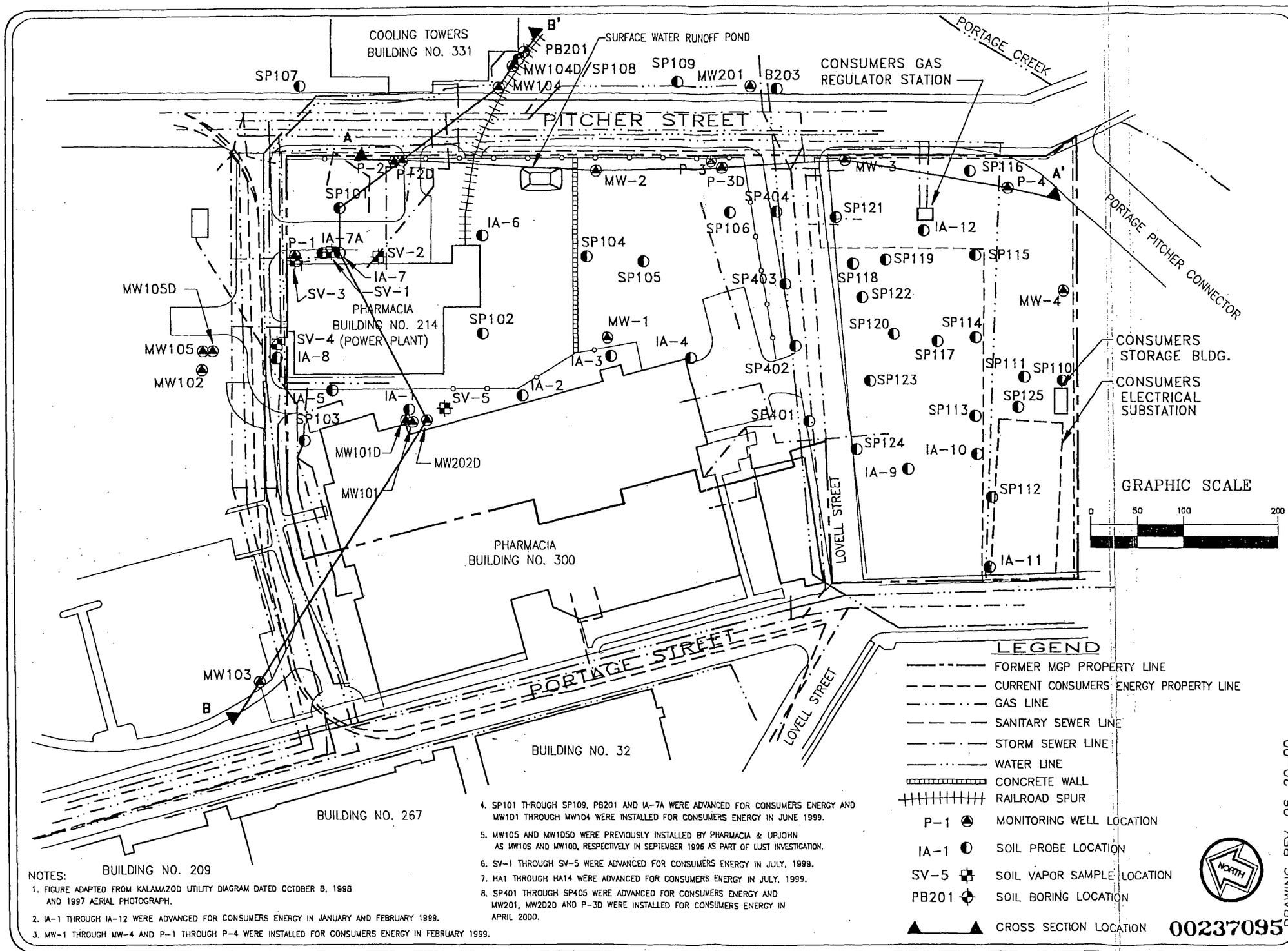
DATE: 05-08-00
SCALE: 1" = 100'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-03.DWG

KR059B030090

Figure No. 4



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.

DRAWING REV. 06-20-00

GEOLOGIC CROSS SECTION LOCATION DIAGRAM
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

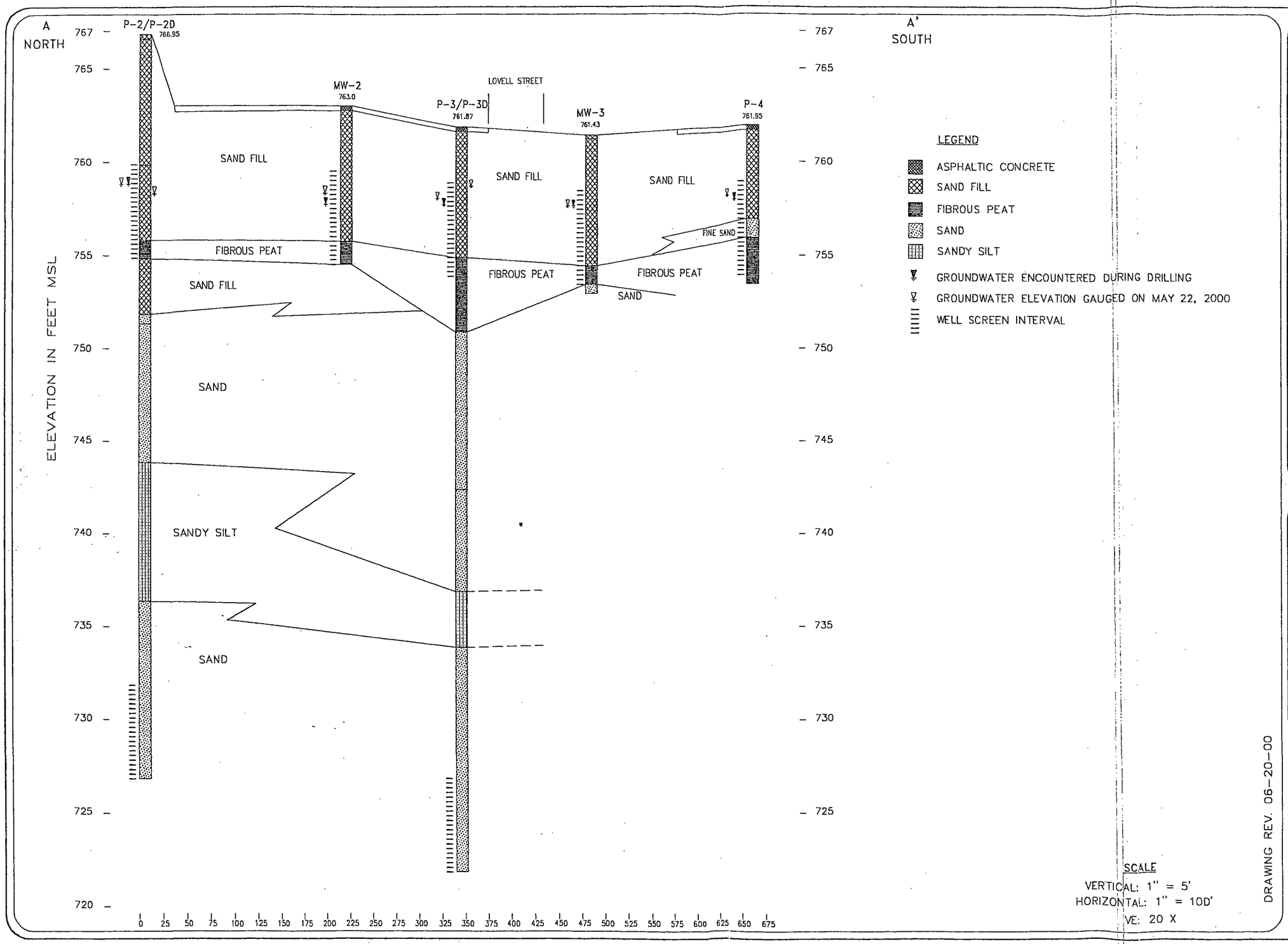
DATE: 08-09-00
SCALE: 1" = 100'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-03.DWG

KR059B030091

Figure No. 5



CROSS-SECTION ,A – A'
KALAMAZOO MGP SITE
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 10-28-99
SCALE: AS SHOWN
DRAFTER: ARR
JOB: PE 31823B

DRAWING REV. 06-20-00

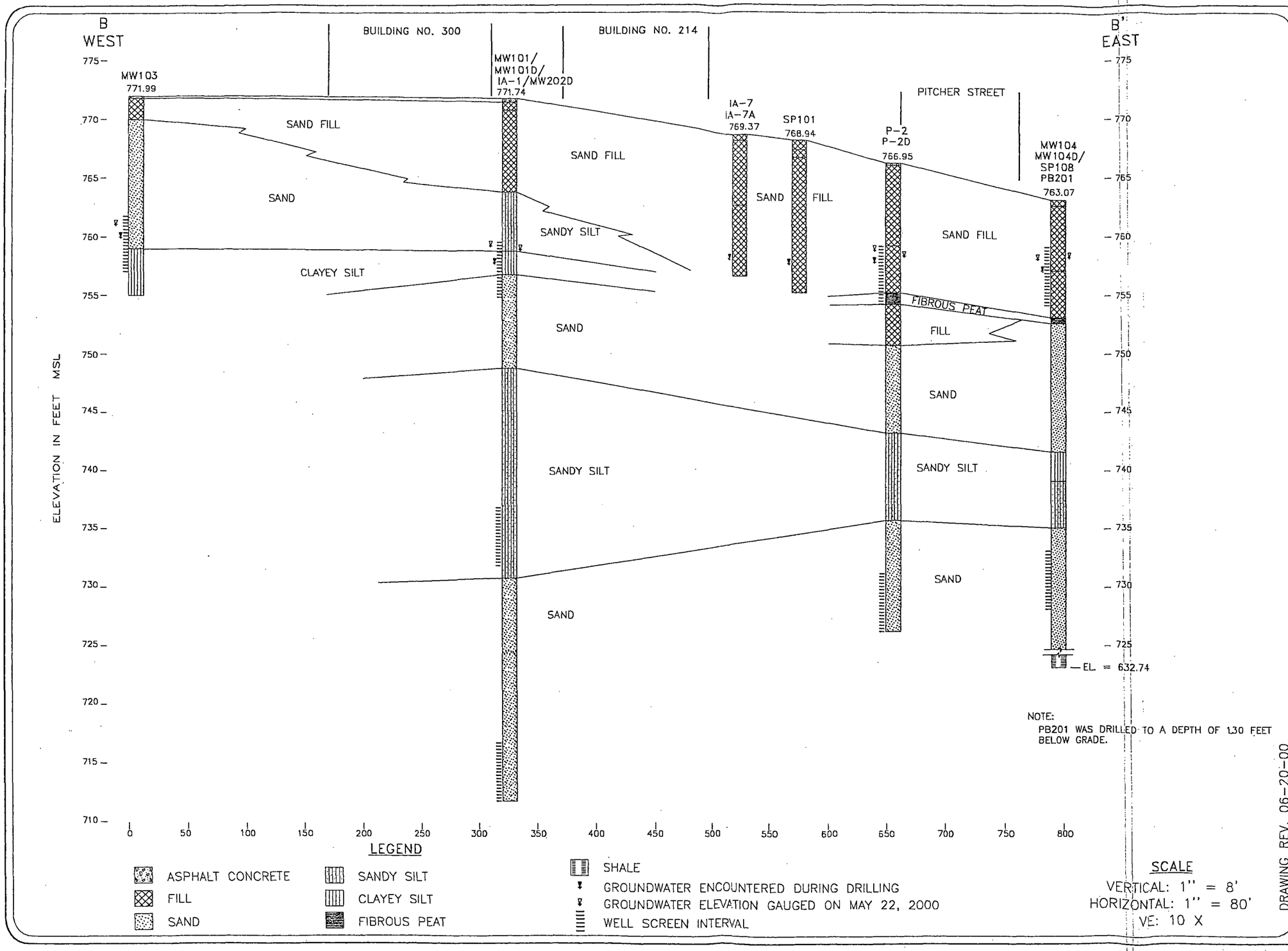
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823B-1.DWG

00237096

Figure No. 6

KR059B030092



CROSS-SECTION B – B'
KALAMAZOO MGP SITE
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 11-10-99
SCALE: AS SHOWN
DRAFTER: ARR
JOB: KE 31283B

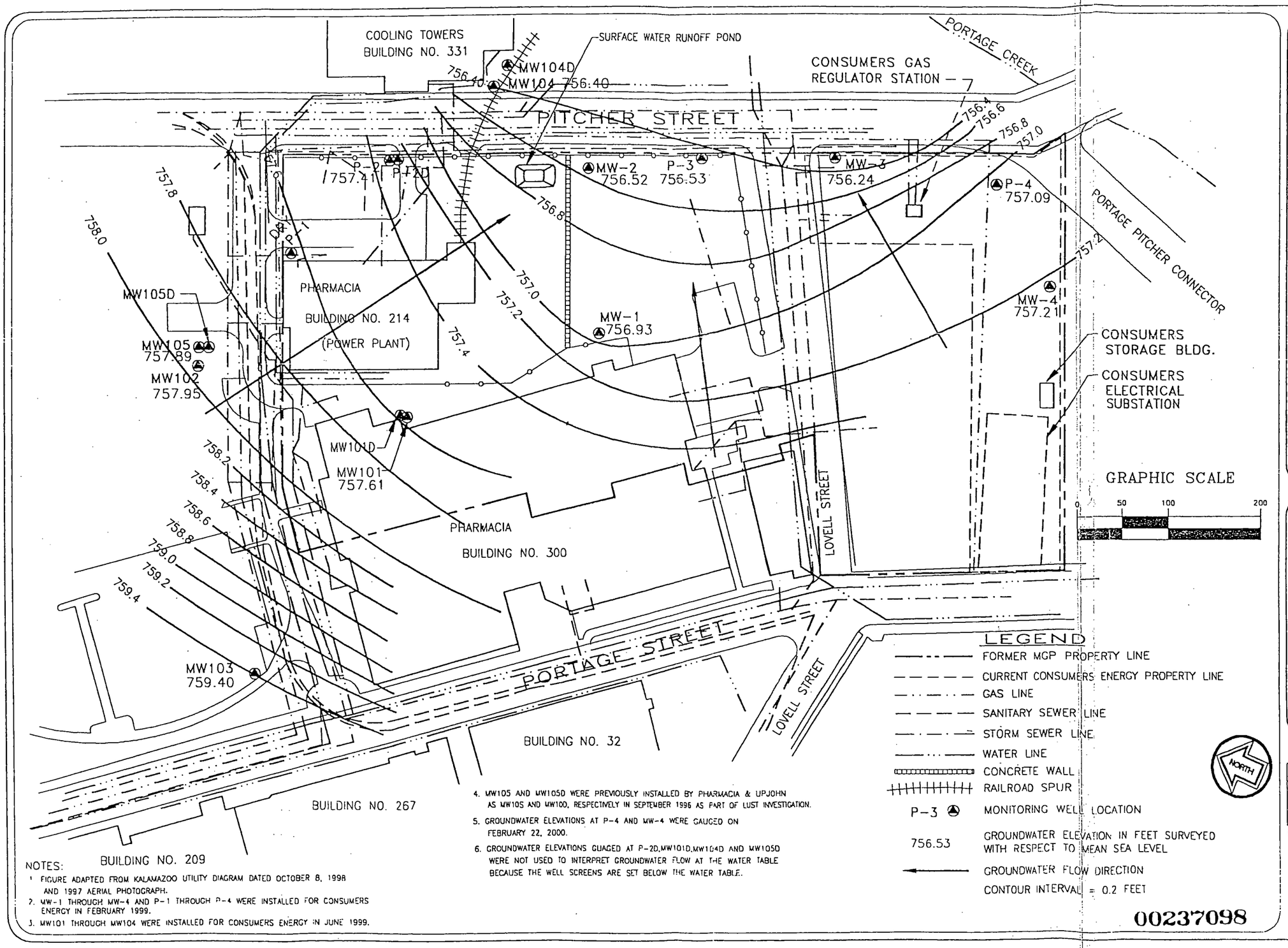
DRAWING REV. 06-20-00

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:\CECO\31823B-3.DWG

00237097 Figure No. 7

KR059B030093



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
5. GROUNDWATER ELEVATIONS AT P-4 AND MW-4 WERE GAUGED ON FEBRUARY 22, 2000.
6. GROUNDWATER ELEVATIONS GUAGED AT P-2D,MW101D,MW104D AND MW105D WERE NOT USED TO INTERPRET GROUNDWATER FLOW AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.

GROUNDWATER ELEVATION CONTOUR DIAGRAM
FEBRUARY 15, 2000
KALAMAZOO, MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

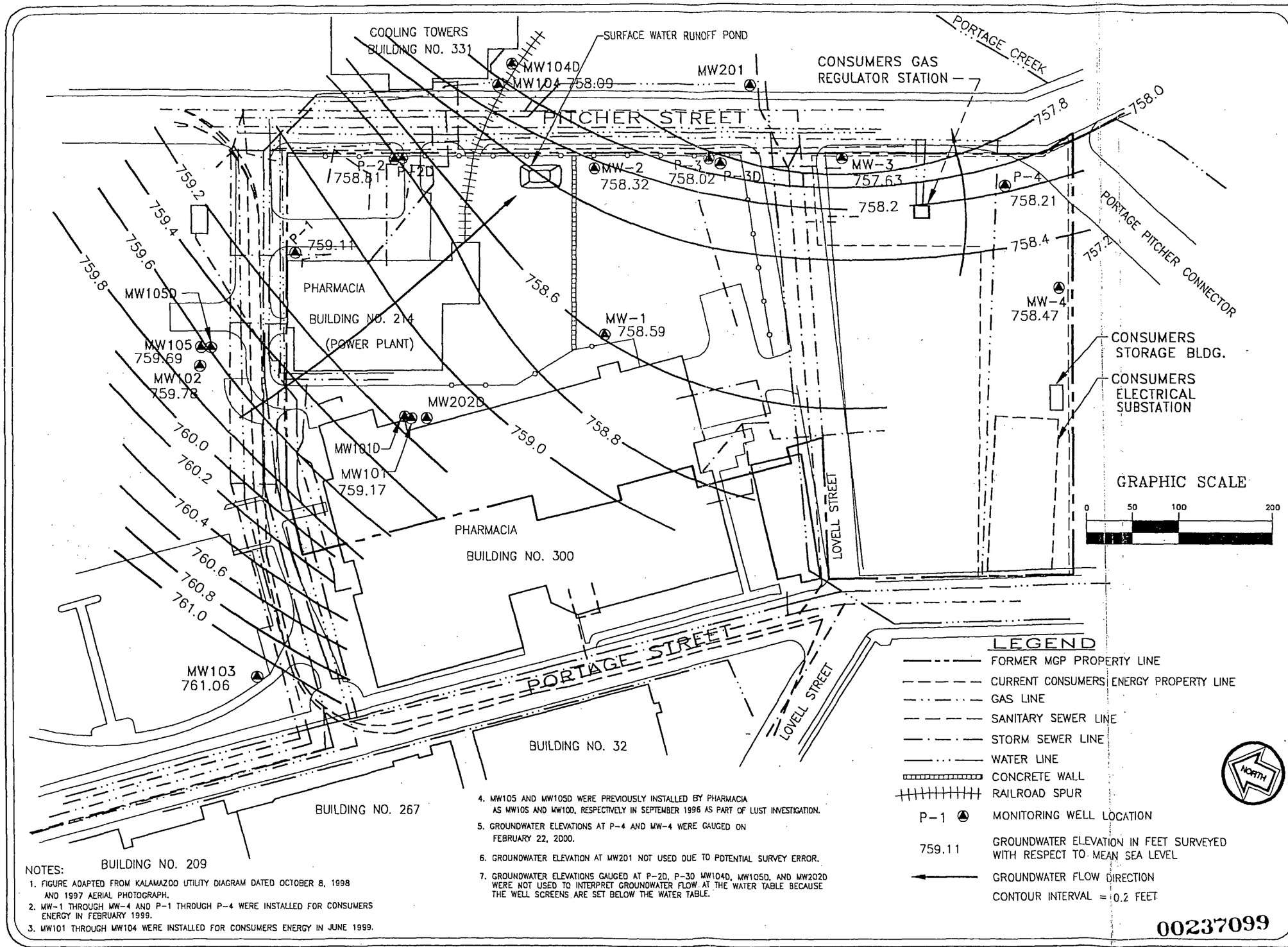
DATE: 05-23-00
SCALE: 1" = 100'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-09.DWG

KR059B030094

Figure No. 8



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
5. GROUNDWATER ELEVATIONS AT P-4 AND MW-4 WERE GAUGED ON FEBRUARY 22, 2000.
6. GROUNDWATER ELEVATION AT MW201 NOT USED DUE TO POTENTIAL SURVEY ERROR.
7. GROUNDWATER ELEVATIONS GAUGED AT P-2D, P-3D MW104D, MW105D, AND MW202D WERE NOT USED TO INTERPRET GROUNDWATER FLOW AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.

LEGEND

- FORMER MGP PROPERTY LINE
- CURRENT CONSUMERS ENERGY PROPERTY LINE
- GAS LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- WATER LINE
- CONCRETE WALL
- RAILROAD SPUR
- P-1 MONITORING WELL LOCATION
- 759.11 GROUNDWATER ELEVATION IN FEET SURVEYED WITH RESPECT TO MEAN SEA LEVEL
- GROUNDWATER FLOW DIRECTION
- CONTOUR INTERVAL = 0.2 FEET

00237099

GROUNDWATER ELEVATION CONTOUR DIAGRAM
MAY 22, 2000
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

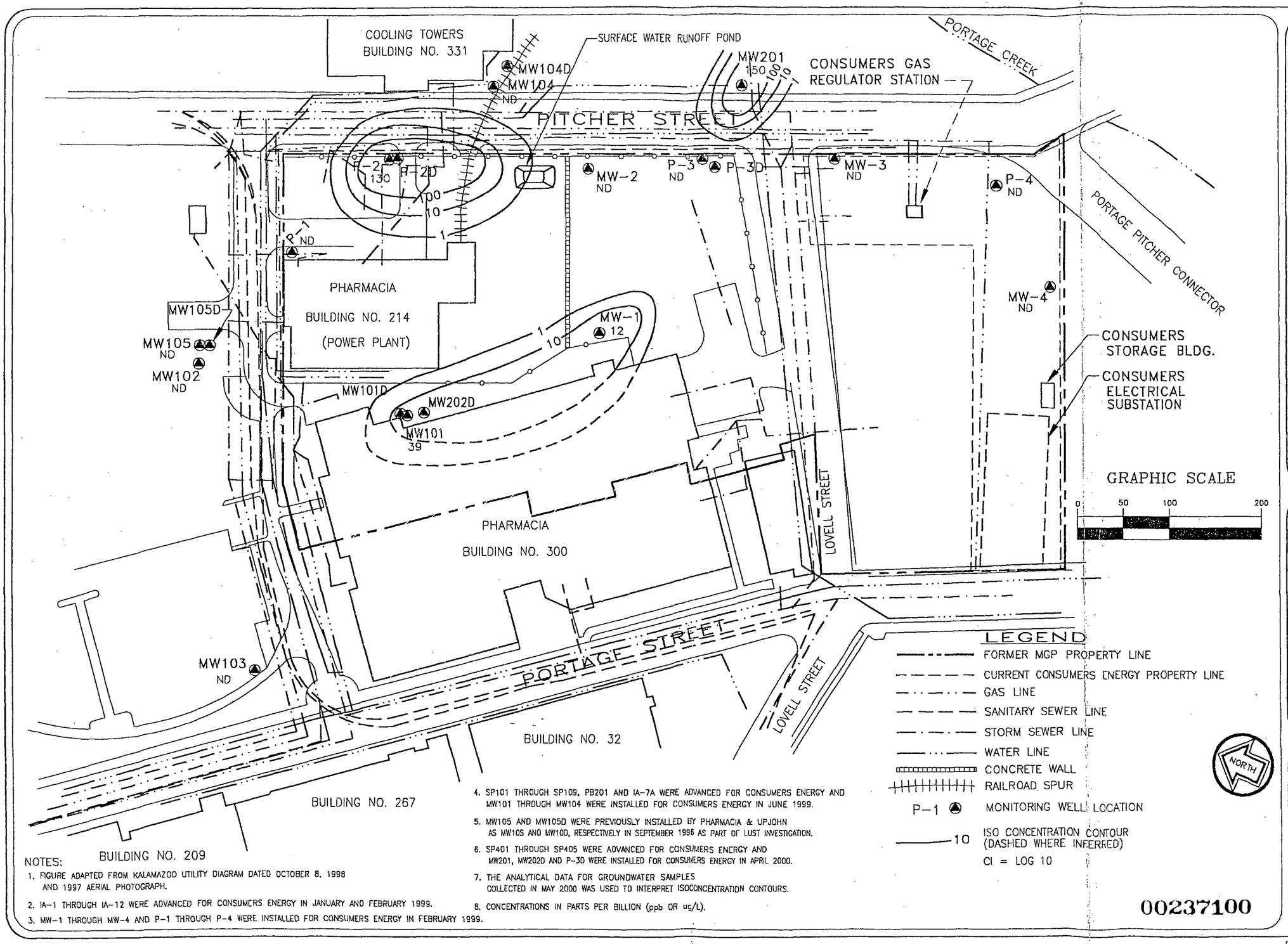
DATE: 08-09-00
SCALE: 1" = 100'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-09.DWG

KR059B030095

Figure No. 9



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
7. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN MAY 2000 WAS USED TO INTERPRET ISOCONCENTRATION CONTOURS.
8. CONCENTRATIONS IN PARTS PER BILLION (ppb OR ug/L).

ISOCONCENTRATION DIAGRAM FOR BENZENE IN GROUNDWATER KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN

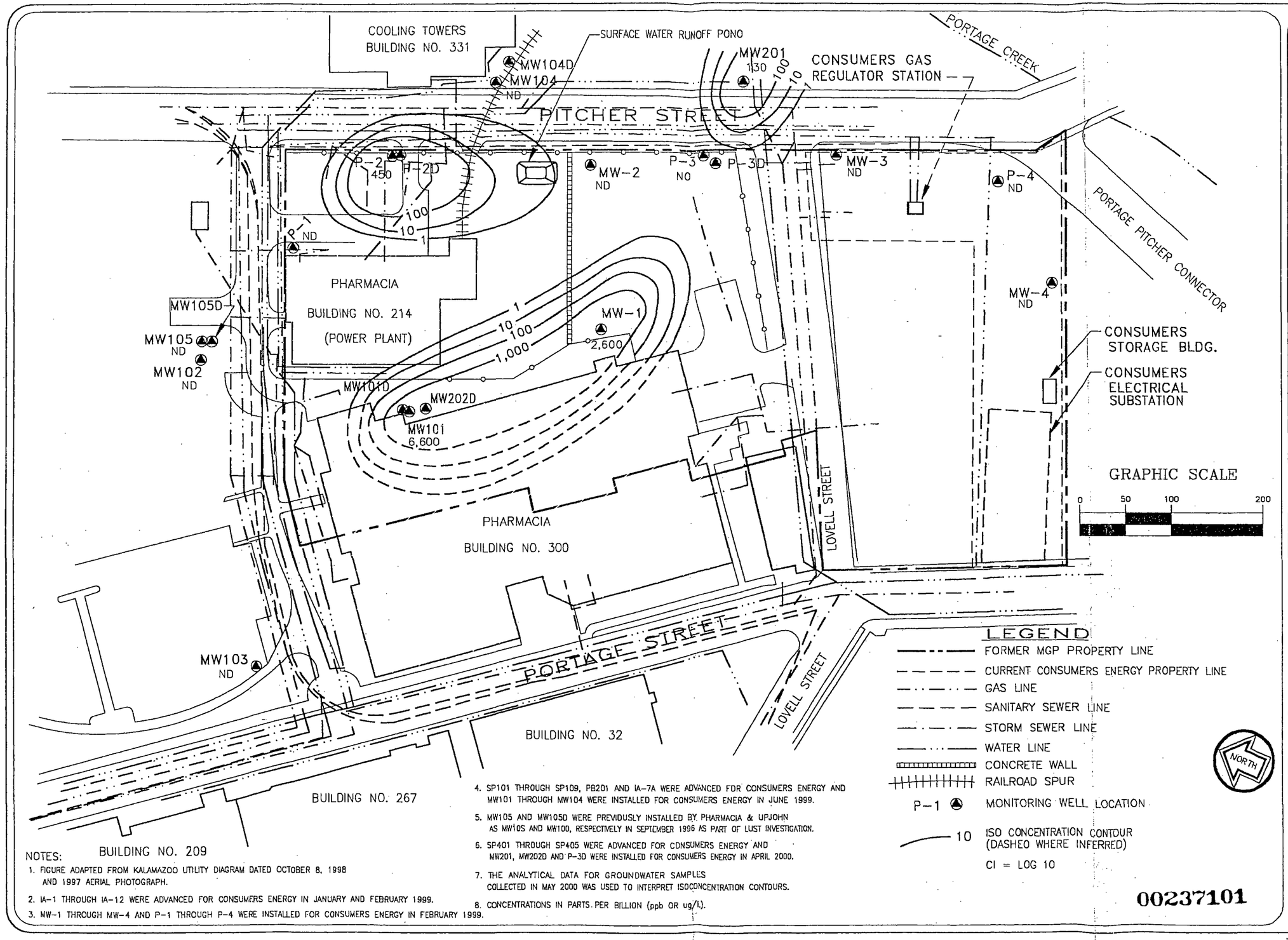
DATE: 08-09-00
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-10.DWG

KR059B030096

Figure No. 10



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIDUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
7. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN MAY 2000 WAS USED TO INTERPRET ISOCONCENTRATION CONTOURS.
8. CONCENTRATIONS IN PARTS PER BILLION (ppb OR ug/L).

ISOCONCENTRATION DIAGRAM
FOR XYLENES IN GROUNDWATER
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

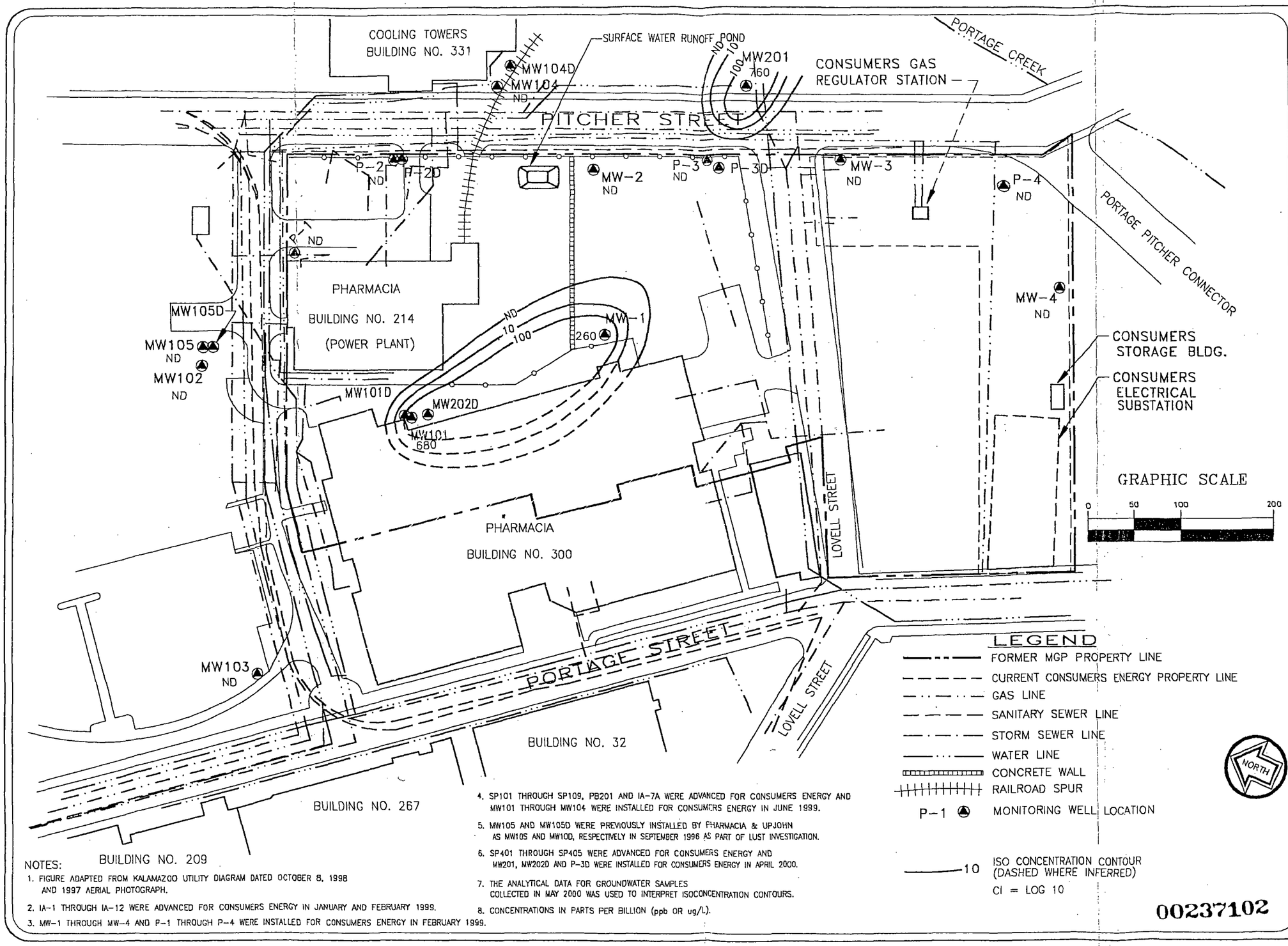
DATE: 08-09-00
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-10.DWG

KR059B030097

Figure No. 11



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
7. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN MAY 2000 WAS USED TO INTERPRET ISOCONCENTRATION CONTOURS.
8. CONCENTRATIONS IN PARTS PER BILLION (ppb OR ug/L).

ISOCONCENTRATION DIAGRAM
FOR NAPHTHALENE IN GROUNDWATER
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

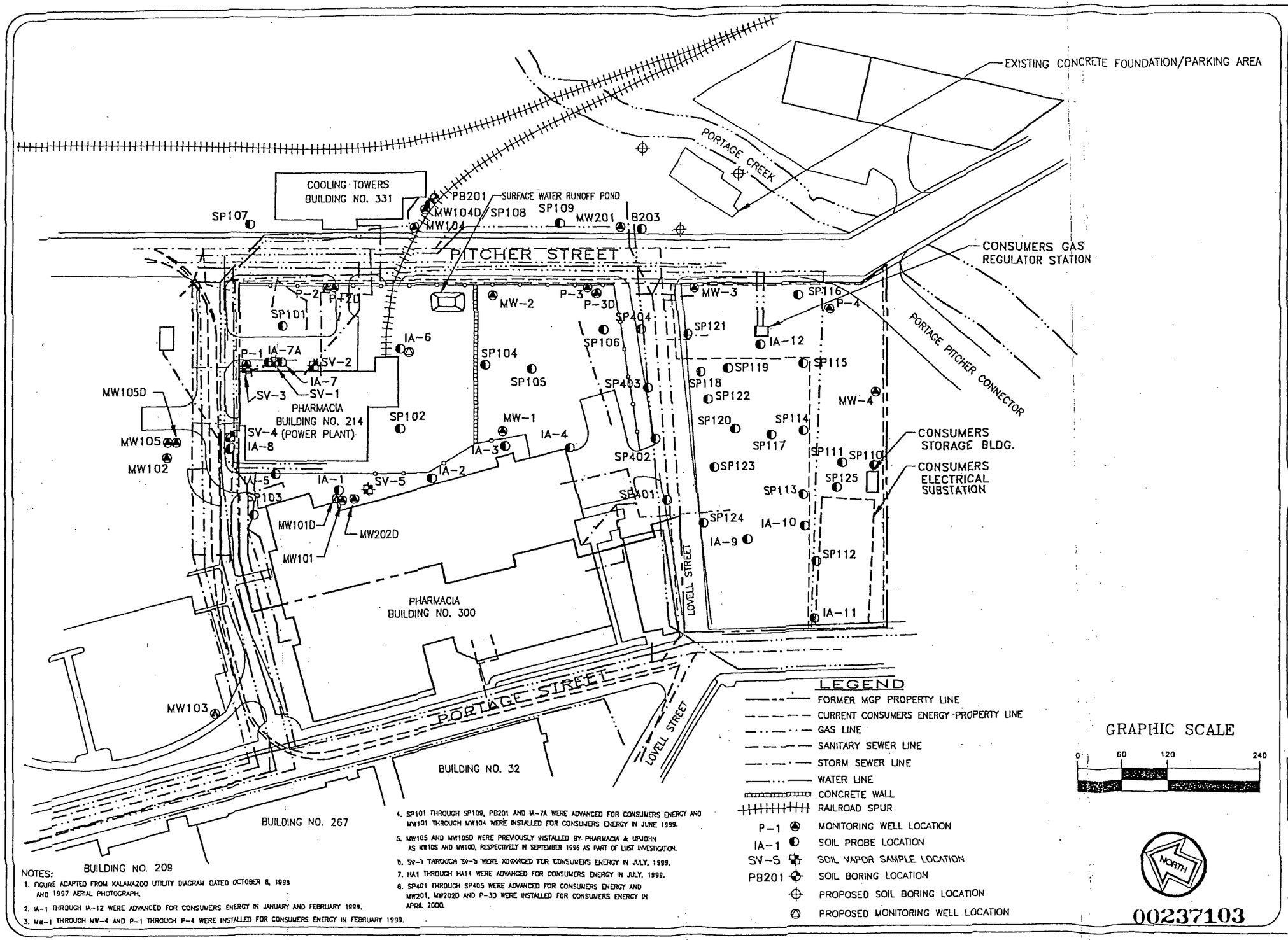
DATE: 08-09-00
SCALE: 1" = 100'
DRAFTER: ARR/MBA
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-10.DWG

KR059B030098

Figure No. 12



NOTES:
1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.

PROPOSED SOIL BORING LOCATION DIAGRAM
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 08-09-00
SCALE: 1" = 120'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11.DWG

KR059B030099

Figure No. 13

APPENDIX B

SOIL PROBE AND MONITORING WELL LOGS

00237105

SOIL AND MATERIALS ENGINEERS, IN(

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 4/24/00
JOB NUMBER: KE31823

PROBE SP401
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = 763.69	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		4 Inches of Asphaltic Concrete over 3 Inches of Cement Concrete over 4 Inches of Sand and Gravel Base Material	S1 S2	
5		Fine to Coarse Sand- Trace Silt and Gravel- Brown- Moist (SP/Fill)	S3	
		Fine to Medium Sand- Some Silt- Trace Gravel, Cinders, Slag, Brick and Concrete- Black- Moist to Wet (SM/Fill)	S4 S5	
10		Fibrous Peat- Occasional Root Pieces and Sand Partings- Black (PT)	S6	
15		END OF PROBE AT 12 FEET.		
20				
25				
30				
35				

NOTES:
1. Soil samples S1 and S3 were submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the probe.
3. Temporary well screen installed from 3 to 8 feet below grade.
4. Probe backfilled with bentonite.
5. Blue coloring noted at 10.5 feet below grade.

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00237106

KR059B030102

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 4/24/00
JOB NUMBER: KE31823

PROBE SP402
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL
		GROUND SURFACE ELEVATION = 763.12	
		4 Inches of Asphaltic Concrete over 4 Inches of Cement Concrete over 6 Inches of Sand and Gravel Base Material	S1, S2
5		Fine to Medium Sand- Trace Silt, Coal, Brick, Slag, Cinders and Gravel- Black- Moist to Wet (SP/Fill)	S3, S4, S5
10		Fine to Medium Sand- Trace Coarse Sand and Gravel- Occasional Peat Layers- Brown- Wet (SP)	S6
		END OF PROBE AT 12 FEET.	
15			
20			
25			
30			
35			

STANDARD PENETRATION - (BLOWS/FOOT)
0 10 20 30 40 50

NOTES:
1. Soil sample S1 was submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the probe.
3. Temporary well screen installed from 4.5 to 9.5 feet below grade.
4. Probe backfilled with bentonite.

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00237107

KR059B030103

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 4/24/00
JOB NUMBER: KE31823

PROBE SP403
SHEET: 1

WELL DIAGRAM

DRILLER: BEST RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = 762.54		
		2.5 Inches of Asphaltic Concrete over 4 Inches of Cement Concrete over 5.5 Inches of Sand and Gravel Base Material	S1	
			S2	
5		Fine to Medium Sand- Some Silt, Cinders, Slag and Coal- Trace Gravel, Brick, Clay and Peat- Black- Moist to Wet (SM/Fill)	S3	
			S4	
			S5	
10		Fibrous Peat- Occasional Root Pieces and Sand Partings- Black (PT)	S6	
		Fine to Coarse Sand- Trace Silt and Gravel- Gray- Wet (SP)		
15		END OF PROBE AT 12 FEET.		
20				
25				
30				
35				

NOTES:
1. Soil sample S1 was submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the probe.
3. Temporary well screen installed from 5 to 10 feet below grade.
4. Probe backfilled with bentonite.

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00237108

KR059B030104

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 4/24/00
JOB NUMBER: KE31823

PROBE SP404
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = 761.87		
		4 Inches of Asphaltic Concrete over 6 Inches of Sand and Gravel Base Material	S1	
		Fine to Medium Sand- Trace to Some Silt- Trace Clay, Brick, Coal, Cinders, Slag and Gravel- Black- Moist to Wet (SP-SM/Fill)	S2	
5			S3	
		Fibrous Peat- Occasional Root Pieces and Sand Partings- Black (Pt)	S4	
		END OF PROBE AT 7 FEET.		
10				
15				
20				

NOTES:
1. Soil sample S1 was submitted for laboratory analysis.
2. Soil samples were physically classified from grade to the termination depth of the probe.
3. Temporary well screen installed from 5 to 10 feet below grade.
4. Probe backfilled with bentonite.

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOIL UNLESS OTHERWISE NOTED.

00237109

KR059B030105

SOIL AND MATERIALS ENGINEERS, INC

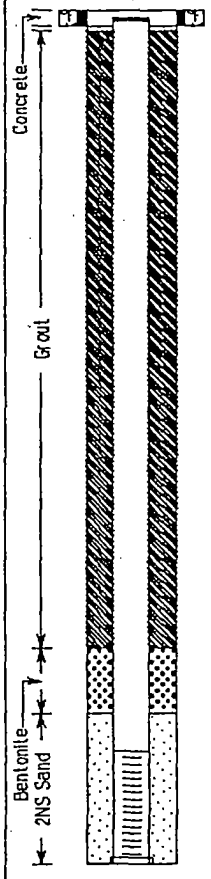
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 4/26/00
JOB NUMBER: KE31823

PROBE P3D
SHEET: 1

DRILLER: STEARNS | RIG: HSA

WELL DIAGRAM



DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT)

GROUND SURFACE
ELEVATION = 762.58

3 Inches of Asphaltic Concrete

Fine to Medium Sand- Trace Silt, Gravel, Coal Pieces, Cinders, Slag and Brick Pieces- Black and Gray- Moist to Wet- Very Loose to Loose (SP/Fill)

Fibrous Peat- Occasional Root Pieces and Sand Partings- Black (Pt)

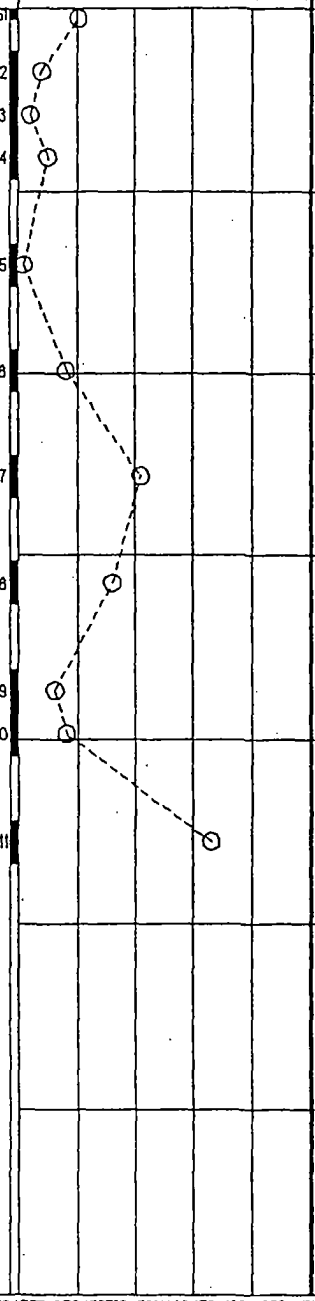
Fine to Medium Sand- Trace Silt, Gravel and Coarse Sand- Gray- Wet- Very Loose to Loose (SP)

Fine Sand- Trace Silt- Gray- Wet- Medium Dense (SP)

Sandy Silt- Trace Clay- Gray- Wet- Medium Dense (ML)

Fine to Coarse Sand- Trace Silt and Gravel- Gray- Wet- Loose to Dense (SP)

END OF PROBE AT 40 FEET.



NOTES:
1. Soil descriptions from surface to 11 feet obtained from P3. The remaining depth was physically classified during drilling (11 to 40 feet).
2. Screened auger used from surface to 60 feet below grade for collection of groundwater samples. Groundwater samples collected from 15 to 20 feet, 40 to 45 feet, 45 to 50 feet, 50 to 55 feet and 55 to 60 feet below grade.
3. TOC elevation = 762.16.

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00237110

KR059B030106

SOIL AND MATERIALS ENGINEERS, INC

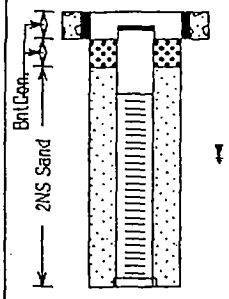
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 4/24/00
JOB NUMBER: KE31823

BORING MW201
SHEET: 1

DRILLER: STEARNS | RIG: HSA/DP

WELL DIAGRAM



DEPTH (FEET)	PROFILE DESCRIPTION (GROUND SURFACE ELEVATION = 761.78)	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION – (BLOWS/FOOT) 0 10 20 30 40 50
	Fine to Medium Sand– Trace to Some Gravel– Trace Silt– Brown– Moist to Wet (SP/Fill)	S1, S2, S3	
5	Fibrous Peat– Occasional Root Pieces and Sand Layers and Partings– Black (Pt)	S4, S5	
10	Fine to Coarse Sand– Trace Silt and Gravel– Gray– Wet (SP)	S6, S7, S8, S9, S10	
15			
20	Sandy Silt– Trace Clay– Gray– Wet (ML)	S11	
25			
30			

END OF BORING AT 22 FEET.

NOTES:
1. Soil descriptions logged using samples obtained from direct push sampling unit.
2. Soil samples were physically classified from grade to termination of the probe.
3. Permanent monitoring well installed in borehole using HSA.
4. Prior to installation of permanent monitoring well, temporary well screens were installed from 8 to 10 feet, 13 to 15 feet, 18 to 20 feet and 28 to 30 feet below grade.
5. TOC elevation = 761.31

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOIL UNLESS OTHERWISE NOTED.

00237111

KR059B030107

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 4/24/00
JOB NUMBER: KE31823

BORING B203
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION (GROUND SURFACE ELEVATION = N/S)	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION – (BLOWS/FOOT) 0 10 20 30 40 50
		Fine to Medium Sand- Trace Gravel, Silt and Clay- Brown- Moist to Wet (SP/Fill)	S1, S2, S3	
5		Fibrous Peat- Occasional Root Pieces and Sand Partings- Black (Pt)	S4	
		Fine to Medium Sand- Trace Coarse Sand, Gravel and Silt- Gray- Wet (SP)	S5	
		END OF BORING AT 8 FEET.		
10				
15				

NOTES:
1. Soil samples were physically classified from grade to the termination depth of the probe.
2. Temporary well screen installed from 4 to 6 feet and from 7 to 8 feet below grade.
3. NS = Not Surveyed.

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOIL UNLESS OTHERWISE NOTED.

00237112

KR059B030108

SOIL AND MATERIALS ENGINEERS, INC

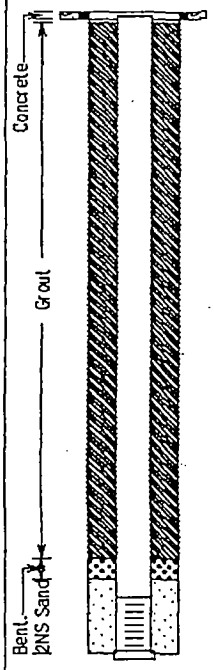
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E:
BY: NBL DATE: 4/25/00
JOB NUMBER: KE31823

BORING MW202D
SHEET: 1

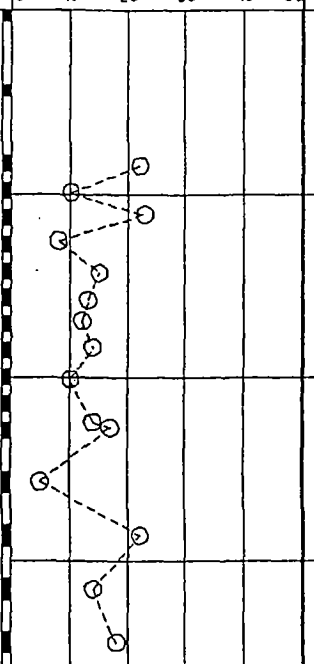
DRILLER: STEARNS | RIG: HSA

WELL DIAGRAM



DEPTH (FEET)	PROFILE DESCRIPTION (GROUND SURFACE ELEVATION = 771.8)	SAMPLE TYPE, NUMBER & INTERVAL
	3 Inches of Asphalt Concrete	S1
5	Sandy Gravel- Trace Silt- Brown- Moist (GP/Fill)	S2
10	Fine to Medium Sand- Trace Gravel and Silt- Occasional Silty Clay Clumps- Brown- Moist (SP/Fill)	S3, S4, S5
15, 20	Silty Fine Sand- Trace Medium Sand and Gravel- Brown- Moist (SM)	S6, S7, S8, S9
25, 30	Clayey Silt- Occasional Sandy Seams- Gray and Brown with Black Staining- Medium (ML)	S10, S11, S12
35, 40	Fine Sand- Trace to Some Silt- Trace Gravel and Clay- Brown and Gray- Wet- Medium Dense (SP)	S13, S14, S15
45, 50	Sandy Silt- Trace Clay and Gravel- Brown with Black Staining- Medium (ML)	S16, S17
55, 60	Fine to Medium Sand- Trace Silt and Gravel- Black to Brown- Wet- Loose to Medium Dense (SP)	
65, 70	END OF BORING AT 60 FEET.	

STANDARD PENETRATION - (BLOWS/FOOT)



NOTES:
1. Soil descriptions from surface to 43 feet obtained from IA-1 and MW10ID. The remaining depth was physically classified during drilling (43 to 60 feet).
2. Permanent monitoring well installed in borehole
3. Screened auger used from surface to 60 feet below grade for collection of groundwater samples. Groundwater samples collected from 15 to 20 feet, 40 to 45 feet, 45 to 50 feet, 50 to 55 feet and 55 to 60 feet below grade.
4. Odors noted from 13.5 to 40 feet below grade.
5. Black coloring at 41 to 45 feet believed to be organic.
6. TOC Elevation =

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOIL UNLESS OTHERWISE NOTED.

00237113

KR059B030109

APPENDIX C

TABULATED WATER LEVEL AND ANALYTICAL DATA

00237115

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	2/8/99 Depth to Water from TOC (ft.)	2/8/99 Static Groundwater Elevation (ft.)	2/25/99 Depth to Water from TOC (ft.)	2/25/99 Static Groundwater Elevation (ft.)	6/22/99 (See 6) Depth to Water from TOC (ft.)	6/22/99 (See 6) Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	8.47	758.04	8.77	757.74	9.13	757.38
MW-2	763.00	762.56	759.6 - 754.6	4.89	757.67	5.27	757.29	5.66	756.90
MW-3	761.43	760.86	758.2 - 753.2	3.63	757.23	3.82	757.04	4.32	756.54
MW-4	761.70	760.99	759.2 - 754.2	2.68	758.31	3.02	757.97	3.45	757.54
P-1	768.91	768.38	762.4 - 757.4	NI	NI	10.44	757.94	10.50	757.88
P-2	766.95	766.35	759.4 - 754.4	8.17	758.18	8.38	757.97	8.87	757.48
P-2D	766.84	766.61	731.7 - 726.7	NI	NI	NI	NI	9.61	757.00
P-3	761.87	761.35	758.6 - 753.6	3.82	757.53	4.16	757.19	4.61	756.74
P-3D	762.58	762.16	727.6 - 722.6	NI	NI	NI	NI	NI	NI
P-4	761.95	761.51	758.7 - 753.7	3.39	758.12	3.95	757.56	4.46	757.05
MW101	771.74	771.41	759.6 - 754.6	NI	NI	NI	NI	13.28	758.13
MW101D	771.59	770.91	736.5 - 731.5	NI	NI	NI	NI	13.19	757.72
MW102	770.02	769.88	760.1 - 755.1	NI	NI	NI	NI	11.32	758.56
MW103	771.99	771.52	761.3 - 756.3	NI	NI	NI	NI	11.42	760.10
MW104	763.07	762.74	758.4 - 753.4	NI	NI	NI	NI	6.04	756.70
MW104D	762.92	762.66	732.8 - 727.8	NI	NI	NI	NI	5.81	756.85
MW105	770.61	770.31	760.1 - 755.1	NG	NG	NG	NG	11.77	758.54
MW105D	770.61	770.20	731.9 - 726.9	NG	NG	NG	NG	12.85	757.35
MW201	761.78	761.31	759.8 - 754.8	NI	NI	NI	NI	NI	NI
MW202D	NS	NS	NS	NI	NI	NI	NI	NI	NI

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) NG = Groundwater elevation not gauged.
(5) NS = As of this date, ground surface and TOC have not been surveyed.
(6) Groundwater elevations for MW105 and MW105D were gauged on June 23, 1999.

00237116

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	2/15/00 (See 7) Depth to Water from TOC (ft.)	2/15/00 (See 7) Static Groundwater Elevation (ft.)	5/22/00 Depth to Water from TOC (ft.)	5/22/00 Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	9.58	756.93	7.92	758.59
MW-2	763.00	762.56	759.6 - 754.6	6.04	756.52	4.24	758.32
MW-3	761.43	760.86	758.2 - 753.2	4.62	756.24	3.23	757.63
MW-4	761.70	760.99	759.2 - 754.2	3.78	757.21	2.52	758.47
P-1	768.91	768.38	762.4 - 757.4	DRY	DRY	9.27	759.11
P-2	766.95	766.35	759.4 - 754.4	8.94	757.41	7.54	758.81
P-2D	766.84	766.61	731.7 - 726.7	10.00	756.61	8.29	758.32
P-3	761.87	761.35	758.6 - 753.6	4.82	756.53	3.33	758.02
P-3D	762.58	762.16	727.6 - 722.6	NI	NI	3.49	758.67
P-4	761.95	761.51	758.7 - 753.7	4.42	757.09	3.30	758.21
MW101	771.74	771.41	759.6 - 754.6	13.80	757.61	12.24	759.17
MW101D	771.59	770.91	736.5 - 731.5	13.63	757.28	12.01	758.90
MW102	770.02	769.88	760.1 - 755.1	11.93	757.95	10.10	759.78
MW103	771.99	771.52	761.3 - 756.3	12.12	759.40	10.46	761.06
MW104	763.07	762.74	758.4 - 753.4	6.34	756.40	4.65	758.09
MW104D	762.92	762.66	732.8 - 727.8	6.18	756.48	4.46	758.20
MW105	770.61	770.31	760.1 - 755.1	12.42	757.89	10.62	759.69
MW105D	770.61	770.20	731.9 - 726.9	13.28	756.92	11.58	758.62
MW201	761.78	761.31	759.8 - 754.8	NI	NI	3.12	758.19
MW202D	NS	NS	NS	NI	NI	13.07	NS

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) NG = Groundwater elevation not gauged.
(5) NS = As of this date, ground surface and TOC have not been surveyed.
(6) Groundwater elevations for MW105 and MW105D were gauged on June 23, 1999.
(7) Groundwater elevations for MW-4 and P-4 were gauged on February 22, 2000.

00237117

KR059B030113

TABLE 2
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	Groundwater Contact Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	SP401	SP401	SP402	SP403	SP404
Sample Number						SP401	SP401	SP402	SP403	SP404
Sample ID						S1	S3	S1	S1	S1
Depth (feet)						1-2	5-6	1-2	1-2	1-2
Date Collected						4/24/00	4/24/00	4/24/00	4/24/00	4/24/00
BTEX										
Benzene	100	220,000	4,000	8,400	400,000	ND	ND	ND	370	58
Toluene	16,000	250,000	2,800	250,000	250,000	ND	ND	ND	270	370
Ethylbenzene	1,500	140,000	360	140,000	140,000	ND	ND	ND	50	50
Xylenes	5,600	150,000	700	150,000	150,000	ND	ND	ND	660	690
PNAs										
Naphthalene	100,000	2,100,000	870	470,000	80,000,000	ND	5,100	460	620	950
2-Methylnaphthalene	170,000	5,500,000	ID	ID	40,000,000	ND	950	ND	ND	ND
Acenaphthylene	17,000	440,000	ID	3,000,000	8,000,000	ND	2,500	ND	ND	ND
Acenaphthene	880,000	970,000	4,400	350,000,000	200,000,000	ND	ND	ND	ND	ND
Fluorene	890,000	890,000	5,300	1,000,000,000	130,000,000	ND	ND	ND	ND	ND
Phenanthrene	160,000	1,100,000	2,300	3,300,000	8,000,000	ND	900	ND	1,400	1,300
Anthracene	41,000	41,000	ID	1,000,000,000	1,000,000,000	ND	840	ND	1,300	1,200
Fluoranthene	730,000	730,000	5,500	1,000,000,000	180,000,000	ND	3,000	880	4,400	4,900
Pyrene	480,000	480,000	ID	1,000,000,000	110,000,000	ND	7,500	1,000	5,100	5,200
Benzo(a)anthracene	NLL	NLL	NLL	NLV	100,000	ND	5,100	ND	3,800	4,000
Chrysene	NLL	NLL	NLL	ID	10,000,000	ND	4,500	ND	1,100	990
Benzo(b)fluoranthene	NLL	NLL	NLL	NLV	100,000	ND	2,900	ND	3,100	2,200
Benzo(k)fluoranthene	NLL	NLL	NLL	NLV	1,000,000	ND	1,900	ND	1,400	1,100
Benzo(a)pyrene	NLL	NLL	NLL	NLV	10,000	ND	790	ND	1,200	1,200
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLL	NLV	100,000	ND	550	ND	1,100	980
Dibenzo(a,h)anthracene	NLL	NLL	NLL	ID	10,000	ND	ND	ND	590	560
Benzo(g,h,i)perylene	NLL	NLL	NLL	NLV	9,100,000	ND	350	ND	1,200	990

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NA = Criterion or value is not available.
(4) IP = A literature search has not been completed for the given parameter.
(5) NLL = Chemical is not likely to leach under most soil conditions.
(6) NLV= Chemical is not likely to volatilize under most conditions.
(7) ID = Inadequate data to develop criterion.
(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) The above data was compared to criteria for ambient air inhalation and the data did not exceed these criteria.

TABLE 3
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
METALS AND CYANIDE
SME Project No. KE31823

					Sample Number	SP401	SP401	SP402	SP403	SP404
					Sample ID	S1	S3	S1	S1	S1
					Depth (feet)	1-2	5-6	1-2	1-2	1-2
					Date Collected	4/24/00	4/24/00	4/24/00	4/24/00	4/24/00
Constituent	Commercial II Drinking Water Protection Criteria	Groundwater Contact Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria					
Arsenic	23,000	2,000,000	70,000	NLV	61,000	6,300	26,000	3,900	6,500	7,400
Barium	1,300,000	1,000,000,000	100,000	NLV	250,000,000	11,000	26,000	22,000	29,000	56,000
Cadmium	6,000	230,000,000	3,000	NLV	4,100,000	72	58	330	130	460
Chromium (total)	30,000 (7)	140,000,000 (7)	18,000 (6) (7)	NLV	17,000,000	6,600	3,800	9,700	6,900	7,200
Copper	5,800,000	1,000,000,000	120,000	NLV	140,000,000	7,200	3,800	9,700	16,000	23,000
Lead	700,000	ID	2,500,000	NLV	900,000	14,000	49,000	90,000	30,000	86,000
Mercury	1,700	47,000	130	NLV	1,000,000	ND	13,000	ND	110	330
Selenium	4,000	78,000,000	410 (6)	NLV	18,000,000	ND	11,000	ND	280	580
Silver	13,000	200,000,000	1,000 (6)	NLV	17,000,000	ND	ND	ND	ND	ND
Zinc	5,000,000	1,000,000,000	270,000	NLV	1,000,000,000	21,000	16,000	37,000	36,000	68,000
Cyanide (amenable)	4,000	250,000	400	NLV	250,000	ND	INDT	ND	ND	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) ND = Analytical result was less than the method detection limit.
(3) NLV = Chemical is not likely to volatilize under most conditions.
(4) ID = Inadequate data to develop criterion.
(5) INDT = Laboratory reported result as indeterminant at the required TDL.
(6) Cleanup criteria defaults to Statewide Default Background Concentration.
(7) Hexavalent chromium used for comparison.
(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) The above data was compared to criteria for ambient air inhalation and the data did not exceed these criteria.

00237119

TABLE 4
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS - SOIL PROBES
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823
Page 1 of 1

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria	SP401 GW 6-8 4/24/00	SP402 GW 7-9.5 4/24/00	SP403 GW 6-10 4/24/00	SP404 GW 5-10 4/24/00	B203 GW 4-6 4/24/00	B203 GW 7-9 4/24/00
Sample Location / Sample ID / Screen Depth (feet) / Date Collected										
BTEX										
Benzene	5	200	36,000	11,000	ND	ND	ND	ND	ND	230
Toluene	790	140	530,000	530,000	ND	ND	ND	ND	ND	14
Ethylbenzene	74	18	170,000	170,000	ND	ND	ND	ND	ND	440
Xylenes	280	35	190,000	190,000	ND	ND	ND	ND	ND	408
PNAs										
Naphthalene	1,500	13	31,000	31,000	ND	ND	ND	ND	ND	1,100
2-Methylnaphthalene	750	ID	ID	25,000	ND	ND	ND	ND	ND	41
Acenaphthylene	150	ID	3,900	3,900	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	4,200	4,200	ND	ND	ND	ND	ND	20
Fluorene	2,000	12	2,000	2,000	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	1,000	1,000	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	43	43	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	210	210	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	140	140	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	8.5	NA	NLV	9.4	ND	ND	ND	ND	ND	ND
INORGANICS										
Arsenic	50	150	NLV	4,300	16	ND	ND	ND	ND	ND
Barium	2,000	1,200	NLV	14,000,000	210	130	ND	110	ND	ND
Lead	4	29	NLV	ID	4	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NLV	57,000	140	ND	ND	ND	ND	ND
Cyanide (free)	200	20	NLV	57,000	63	10	ND	ND	ND	ND

NOTES:
(1) Concentrations reported in ppb,(parts per billion or ug/kg).
(2) ND= Analytical result was less than method detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) NLV = Chemical is not likely to volatilize under most conditions.
(6) Concentrations of other PNAs and metals not listed above were less than the method detection limit.
(7) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) The above data was compared to criteria for flammability/explosivity and acute inhalation and the data did not exceed these criteria.

00237120

KR059B030116

TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS - VERTICAL GROUNDWATER SAMPLING
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria	P-3D GW 8-13 4/26/00	P-3D GW 13-18 4/26/00	P-3D GW 18-23 4/26/00	P-3D GW 23-28 4/26/00	P-3D GW 30-35 4/26/00
Sample Location / Sample ID / Screen Depth (feet) / Date Collected									
BTEX									
Benzene	5	200	36,000	11,000	300	160	270	77	53
Toluene	790	140	530,000	530,000	22	2,100	79	280	15
Ethylbenzene	74	18	170,000	170,000	380	4,700	320	580	64
Xylenes	280	35	190,000	190,000	632	4,400	440	720	106
PNAs									
Naphthalene	1,500	13	31,000	31,000	300	1,200	290	240	48
2-Methylnaphthalene	750	ID	ID	25,000	17	11	ND	ND	ND
Acenaphthylene	150	ID	3,900	3,900	8	38	ND	5	ND
Acenaphthene	3,800	19	4,200	4,200	28	10	ND	ND	ND
Fluorene	2,000	12	2,000	2,000	12	ND	ND	ND	ND
Phenanthrene	150	5	1,000	1,000	5	ND	ND	ND	ND
Anthracene	43	ID	43	43	5	ND	ND	ND	ND

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) ND= Analytical result was less than method detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) NLV = Chemical is not likely to volatilize under most conditions.
(6) Constituents listed are limited to those constituents that indicated detectable concentrations for at least one sample.
(7) Metals and cyanide were not evaluated for vertical groundwater samples.
(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) The above data was compared to criteria for flammability/explosivity and acute inhalation and the data did not exceed these criteria.

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS - VERTICAL GROUNDWATER SAMPLING
BTEX AND PNAs
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria	P-3D GW 35-40 4/26/00	MW201 GW 8-10 4/24/00	MW201 GW 18-20 4/24/00	MW201 GW 28-30 4/24/00	MW202D GW 15-20 4/25/00
Sample Location / Sample ID / Screen Depth (feet) / Date Collected									
BTEX									
Benzene	5	200	36,000	11,000	90	300	350	2,100	28
Toluene	790	140	530,000	530,000	8	11	5	3	3,700
Ethylbenzene	74	18	170,000	170,000	35	420	26	4	2,600
Xylenes	280	35	190,000	190,000	65	400	40	12	31,600
PNAs									
Naphthalene	1,500	13	31,000	31,000	48	510	10	ND	4,100
2-Methylnaphthalene	750	ID	ID	25,000	ND	7	ND	ND	150
Acenaphthylene	150	ID	3,900	3,900	ND	5	ND	ND	ND
Acenaphthene	3,800	19	4,200	4,200	ND	14	ND	ND	90
Fluorene	2,000	12	2,000	2,000	ND	5	ND	ND	ND
Phenanthrene	150	5	1,000	1,000	ND	ND	ND	ND	ND
Anthracene	43	ID	43	43	ND	ND	ND	ND	ND

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) ND= Analytical result was less than method detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) NLV = Chemical is not likely to volatilize under most conditions.
(6) Constituents listed are limited to those constituents that indicated detectable concentrations for at least one sample.
(7) Metals and cyanide were not evaluated for vertical groundwater samples.
(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) The above data was compared to criteria for flammability/explosivity and acute inhalation and the data did not exceed these criteria.

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS - VERTICAL GROUNDWATER SAMPLING
BTEX AND PNAs
SME Project No. KE31823

				Sample Location Sample ID Screen Depth (feet) Date Collected	MW202D GW 40-45 4/25/00	MW202D GW 45-50 4/25/00	MW202D GW 50-55 4/25/00	MW202D GW 55-60 4/25/00
Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria				
BTEX								
Benzene	5	200	36,000	11,000	ND	ND	3	ND
Toluene	790	140	530,000	530,000	160	33	27	17
Ethylbenzene	74	18	170,000	170,000	150	41	16	24
Xylenes	280	35	190,000	190,000	1,180	335	330	197
PNAs								
Naphthalene	1,500	13	31,000	31,000	180	100	2,800	67
2-Methylnaphthalene	750	ID	ID	25,000	17	7	150	5
Acenaphthylene	150	ID	3,900	3,900	5	14	110	9
Acenaphthene	3,800	19	4,200	4,200	5	ND	12	ND
Fluorene	2,000	12	2,000	2,000	ND	ND	ND	ND
Phenanthrene	150	5	1,000	1,000	ND	ND	ND	ND
Anthracene	43	ID	43	43	ND	ND	ND	ND

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) ND= Analytical result was less than method detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) NLV = Chemical is not likely to volatilize under most conditions.
(6) Constituents listed are limited to those constituents that indicated detectable concentrations for at least one sample.
(7) Metals and cyanide were not evaluated for vertical groundwater samples.
(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) The above data was compared to criteria for flammability/explosivity and acute inhalation and the data did not exceed these criteria.

TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-1 7-12 2/8/99	MW-1 7-12 6/22/99	MW-1 7-12 2/15/00	MW-1 7-12 5/22/00
		Sample Location Screen Depth (feet) Date Collected				
BTEX						
Benzene	5	200	13	10	16	12
Toluene	790	140	540	520	950	1,700
Ethylbenzene	74	18	910	280	900	1,400
Xylenes	280	35	1,730	920	1,540	2,600
PNAs						
Naphthalene	1,500	13	120	50	27	260
2-Methylnaphthalene	750	ID	21	7	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS						
Arsenic	50	150	ND	8	13	ND
Barium	2,000	1,200	ND	190	130	160
Selenium	50	5	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE
Cyanide (free)	200	20	NE	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (ph Units)	NL	NL	NE	NE	7.26	7.1
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,920	1,960
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.65	0.35
Iron	300	NA	NE	NE	8,900	4,700
Nitrate	10,000	NA	NE	NE	ND	160
Sulfate	250,000	NA	NE	NE	33,000	110,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	470,000

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TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-2 3-8 2/8/99	MW-2 3-8 6/22/99	MW-2 3-8 2/15/00	MW-2 3-8 5/22/00
Sample Location / Screen Depth (feet) / Date Collected						
BTEX						
Benzene	5	200	1	ND	ND	ND
Toluene	790	140	4	ND	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND
Xylenes	280	35	7	ND	ND	ND
PNAs						
Naphthalene	1,500	13	6	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS						
Arsenic	50	150	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	100	30
Cyanide (available)	200	20	NE	NE	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE
Cyanide (free)	200	20	NE	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	NE	5.5	6.59
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	3,050	860
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.84	0.51
Iron	300	NA	NE	NE	21,000	350
Nitrate	10,000	NA	NE	NE	140	1,100
Sulfate	250,000	NA	NE	NE	1,500,000	410,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	26,000	130,000

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TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-3 3-8 2/8/99	MW-3 3-8 6/22/99	MW-3 3-8 2/15/00	MW-3 3-8 5/24/00
		Sample Location Screen Depth (feet) Date Collected				
BTEX						
Benzene	5	200	3	ND	ND	ND
Toluene	790	140	1	ND	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND
Xylenes	280	35	3	ND	ND	ND
PNAs						
Naphthalene	1,500	13	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS						
Arsenic	50	150	13	8	8	ND
Barium	2,000	1,200	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE
Cyanide (free)	200	20	NE	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	NE	7.27	7.7
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,290	1,380
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.53	0.7
Iron	300	NA	NE	NE	110	ND
Nitrate	10,000	NA	NE	NE	ND	ND
Sulfate	250,000	NA	NE	NE	33,000	26,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	260,000	230,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-4 3-8 2/8/99	MW-4 3-8 6/22/99	MW-4 3-8 2/22/00	MW-4 3-8 5/24/00
		Sample Location Screen Depth (feet) Date Collected				
BTEX						
Benzene	5	200	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND
Xylenes	280	35	2	ND	ND	ND
PNAs						
Naphthalene	1,500	13	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS						
Arsenic	50	150	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE
Cyanide (free)	200	20	NE	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	NE	NE	7.09
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	850
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.39
Iron	300	NA	NE	NE	8,700	5,900
Nitrate	10,000	NA	NE	NE	ND	230
Sulfate	250,000	NA	NE	NE	6,900	22,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	360,000	410,000

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TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-1 7-12 See (11)	P-1 7-12 6/22/99	P-1 7-12 2/16/00	P-1 7-12 5/22/00
Sample Location / Screen Depth (feet) / Date Collected						
BTEX						
Benzene	5	200	ND	ND	NS	ND
Toluene	790	140	ND	ND	NS	ND
Ethylbenzene	74	18	ND	ND	NS	ND
Xylenes	280	35	ND	ND	NS	ND
PNAs						
Naphthalene	1,500	13	ND	NE	NS	ND
2-Methylnaphthalene	750	ID	ND	NE	NS	ND
Acenaphthylene	150	ID	ND	NE	NS	ND
Acenaphthene	3,800	19	ND	NE	NS	ND
Fluorene	2,000	12	ND	NE	NS	ND
Phenanthrene	150	5	ND	NE	NS	ND
Anthracene	43	ID	ND	NE	NS	ND
Fluoranthene	210	1.6	ND	NE	NS	ND
Pyrene	140	ID	ND	NE	NS	ND
INORGANICS						
Arsenic	50	150	ND	NE	NS	ND
Barium	2,000	1,200	ND	NE	NS	100
Chromium (Total)	100	11	ND	NE	NS	8
Selenium	50	5	6	NE	NS	ND
Zinc	5,000	270	ND	NE	NS	ND
Cyanide (available)	200	20	NE	NE	NS	ND
Cyanide (amenable)	200	20	ND	NE	NS	NE
Cyanide (free)	200	20	NE	NE	NS	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	NE	NS	NE
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NS	NE
Dissolved Oxygen (ppm)	NA	7	NE	NE	NS	NE
Iron	300	NA	NE	NE	NS	380
Nitrate	10,000	NA	NE	NE	NS	7,200
Sulfate	250,000	NA	NE	NE	NS	84,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	NS	320,000

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TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-2 8-13 2/8/99	P-2 8-13 6/23/99	P-2 8-13 2/16/00	P-2 8-13 5/23/00
Sample Location / Screen Depth (feet) / Date Collected						
BTEX						
Benzene	5	200	480	140	410	130
Toluene	790	140	280	160	86	40
Ethylbenzene	74	18	320	130	220	30
Xylenes	280	15	1,590	610	690	450
PNAs						
Naphthalene	1,500	13	2,900	200	410	ND
2-Methylnaphthalene	750	ID	59	15	21	ND
Acenaphthylene	150	ID	ND	8	5	ND
Acenaphthene	3,800	19	65	38	30	13
Fluorene	2,000	12	32	23	16	6
Phenanthrene	150	5	46	24	5	ND
Anthracene	43	ID	ND	8	5	ND
Fluoranthene	210	16	ND	10	7	11
Pyrene	140	ID	ND	5	ND	10
INORGANICS						
Arsenic	50	150	8	8	9	8
Barium	2,000	1,200	ND	ND	ND	ND
Chromium (Total)	100	11	ND	ND	ND	5
Selenium	50	5	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND
Cyanide (amenable)	200	20	ND	31	ND	NE
Cyanide (free)	200	20	NE	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	NE	7.09	7.61
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	920	1,570
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.82	0.43
Iron	300	NA	NE	NE	440	12,000
Nitrate	10,000	NA	NE	NE	ND	ND
Sulfate	250,000	NA	NE	NE	32,000	47,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	530,000	360,000

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TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-2D 35-40 6/23/99	P-2D 35-40 2/16/00	P-2D 35-40 5/23/00
Sample Location / Screen Depth (feet) / Date Collected					
BTEX					
Benzene	5	200	ND	ND	ND
Toluene	790	140	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND
Xylenes	280	35	ND	ND	ND
PNAs					
Naphthalene	1,500	13	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	5	ND	ND
Anthracene	43	ID	6	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	ND	8	5
Barium	2,000	1,200	ND	ND	ND
Selenium	50	5	ND	ND	ND
Zinc	5,000	270	ND	21	ND
Cyanide (available)	200	20	NE	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	NE	7.34	7.02
Specific Conductivity (umhos/cm)	NL	NL	NE	990	1,170
Dissolved Oxygen (ppm)	NA	7	NE	3.04	2.64
Iron	300	NA	NE	3,400	3,100
Nitrate	10,000	NA	NE	ND	ND
Sulfate	250,000	NA	NE	86,000	93,000
Alkalinity (as CaCO3)	NL	NL	NE	300,000	300,000

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TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-3	P-3	P-3	P-3
Sample Location			P-3	P-3	P-3	P-3
Screen Depth (feet)			3-8	3-8	3-8	3-8
Date Collected			2/8/99	6/22/99	2/15/00	5/22/00
BTEX						
Benzene	5	200	3	90	59	ND
Toluene	790	140	5	21	5	ND
Ethylbenzene	74	18	13	330	260	ND
Xylenes	280	35	31	298	129	ND
PNAs						
Naphthalene	1,500	10	24	24	180	ND
2-Methylnaphthalene	750	ID	ND	5	10	ND
Acenaphthylene	150	ID	ND	ND	5	ND
Acenaphthene	3,800	19	ND	9	14	ND
Fluorene	2,000	12	ND	10	12	ND
Phenanthrene	150	5	ND	16	6	ND
Anthracene	43	ID	ND	5	6	ND
Fluoranthene	210	1.6	ND	ND	5	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS						
Arsenic	50	150	ND	ND	6	ND
Barium	2,000	1,200	ND	150	290	ND
Cadmium	5	4	ND	ND	ND	0.5
Selenium	50	5	29	ND	ND	77
Zinc	5,000	270	ND	ND	ND	190
Cyanide (available)	200	20	NE	NE	ND	ND
Cyanide (amenable)	200	20	ND	ND	29	NE
Cyanide (free)	200	20	NE	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	NE	7.26	7.18
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	4,320	1,790
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.95	0.61
Iron	300	NA	NE	NE	9,400	210
Nitrate	10,000	NA	NE	NE	ND	3,200
Sulfate	250,000	NA	NE	NE	35,000	76,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	400,000

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TAB.
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	P-3D 35-40 5/22/00
Constituent	Commercial II Drinking Water Criteria	GSI Criteria	
BTEX			
Benzene	5	200	110
Toluene	790	140	2
Ethylbenzene	74	18	1
Xylenes	280	35	10
PNAs			
Naphthalene	1,500	13	22
2-Methylnaphthalene	750	ID	ND
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	ND
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS			
Arsenic	50	150	27
Barium	2,000	1,200	190
Selenium	50	5	ND
Zinc	5,000	270	30
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	8.26
Specific Conductivity (umhos/cm)	NL	NL	1,630
Dissolved Oxygen (ppm)	NA	7	1.5
Iron	300	NA	6,000
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	ND
Alkalinity (as CaCO3)	NL	NL	320,000

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SEE NOTES ON PAGE 21

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TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-4 3-8 2/8/99	P-4 3-8 6/22/99	P-4 3-8 2/22/00	P-4 3-8 5/24/00
		Sample Location Screen Depth (feet) Date Collected				
BTEX						
Benzene	5	200	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	1	ND
Xylenes	280	35	ND	ND	7	ND
PNAs						
Naphthalene	1,500	13	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS						
Arsenic	50	150	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE
Cyanide (free)	200	20	NE	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	NE	NE	7.59
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	1,770
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.15
Iron	300	NA	NE	NE	4,800	ND
Nitrate	10,000	NA	NE	NE	240	430
Sulfate	250,000	NA	NE	NE	21,000	37,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	340,000	390,000

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SEE NOTES ON PAGE 21

TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW101 12-17 6/23/99	MW101 12-17 2/16/00	MW101 12-17 5/23/00
Sample Location / Screen Depth (feet) / Date Collected					
BTEX					
Benzene	5	200	62	80	39
Toluene	790	140	4,100	6,400	4,300
Ethylbenzene	74	18	760	1,400	590
Xylenes	280	35	5,600	8,000	6,600
PNAs					
Naphthalene	1,500	13	2,800	1,100	680
2-Methylnaphthalene	750	ID	55	31	35
Acenaphthylene	150	ID	75	33	ND
Acenaphthene	3,800	19	ND	6	21
Fluorene	2,000	12	25	11	ND
Phenanthrene	150	5	24	7	ND
Anthracene	43	ID	ND	7	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	7	9	6
Barium	2,000	1,200	760	230	230
Cadmium	5	4	ND	ND	0.5
Selenium	50	5	ND	ND	15
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	NE	7.34	7.44
Specific Conductivity (umhos/cm)	NL	NL	NE	1,420	3,040
Dissolved Oxygen (ppm)	NCA	7	NE	0.58	0.62
Iron	300	NA	NE	5,500	1,700
Nitrate	10,000	NA	NE	310	4,500
Sulfate	250,000	NA	NE	63,000	70,000
Alkalinity (as CaCO3)	NL	NL	NE	470,000	490,000

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SEE NOTES ON PAGE 21

TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW101D 35-40 6/23/99	MW101D 35-40 2/16/00	MW101D 35-40 5/23/00
Constituent	Commercial II Drinking Water Criteria	GSI Criteria			
BTEX					
Benzene	5	200	2	ND	ND
Toluene	790	140	12	5	ND
Ethylbenzene	74	18	170	1,450	390
Xylenes	280	35	872	4,480	5,200
PNAs					
Naphthalene	1,500	13	3,100	4,600	4,600
2-Methylnaphthalene	750	ID	210	120	400
Acenaphthylene	150	ID	190	150	250
Acenaphthene	3,800	19	65	5	ND
Fluorene	2,000	12	25	25	29
Phenanthrene	150	5	ND	5	ND
Anthracene	43	ID	ND	5	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	16	23	23
Barium	2,000	1,200	420	450	430
Selenium	50	5	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	NE	7.34	8.04
Specific Conductivity (umhos/cm)	NL	NL	NE	1,970	2,510
Dissolved Oxygen (ppm)	NA	7	NE	2.59	1.27
Iron	300	NA	NE	3,300	3,000
Nitrate	10,000	NA	NE	ND	ND
Sulfate	250,000	NA	NE	15,000	15,000
Alkalinity (as CaCO3)	NL	NL	NE	330,000	410,000

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SEE NOTES ON PAGE 21

TA. . 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW102 10-15 6/22/99	MW102 10-15 2/16/00	MW102 10-15 5/22/00
		Sample Location Screen Depth (feet) Date Collected			
BTEX					
Benzene	5	200	ND	ND	ND
Toluene	790	140	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND
Xylenes	280	35	ND	ND	ND
PNAs					
Naphthalene	1,500	13	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	9
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND
Selenium	50	5	ND	6	ND
Zinc	5,000	270	ND	250	ND
Cyanide (available)	200	20	NE	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	NE	7.46	7.76
Specific Conductivity (umhos/cm)	NL	NL	NE	590	1,590
Dissolved Oxygen (ppm)	NA	7	NE	3.67	7.55
Iron	300	NA	NE	ND	ND
Nitrate	10,000	NA	NE	3,100	1,300
Sulfate	250,000	NA	NE	54,000	38,000
Alkalinity (as CaCO3)	NL	NL	NE	240,000	280,000

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SEE NOTES ON PAGE 21

TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW103 11-16 6/22/99	MW103 11-16 2/16/00	MW103 11-16 5/22/00
		Sample Location Screen Depth (feet) Date Collected			
BTEX					
Benzene	5	200	ND	ND	ND
Toluene	790	140	ND	ND	ND
Ethylbenzene	74	18	2	ND	ND
Xylenes	280	35	2	ND	ND
PNAs					
Naphthalene	1,500	13	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	ND	5	11
Barium	2,000	1,200	ND	ND	160
Selenium	50	5	ND	ND	36
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	NE	7.84	8.65
Specific Conductivity (umhos/cm)	NL	NL	NE	2,370	6,370
Dissolved Oxygen (ppm)	NA	7	NE	1.38	1.5
Iron	300	NA	NE	ND	370
Nitrate	10,000	NA	NE	410	2,500
Sulfate	250,000	NA	NE	19,000	58,000
Alkalinity (as CaCO3)	NL	NL	NE	430,000	410,000

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SEE NOTES ON PAGE 21

TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW104 5-10 6/23/99	MW104 5-10 2/15/00	MW104 5-10 5/24/00
Constituent	Commercial II Drinking Water Criteria	GSI Criteria			
BTEX					
Benzene	5	200	ND	ND	ND
Toluene	790	140	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND
Xylenes	280	35	ND	ND	ND
PNAs					
Naphthalene	1,500	13	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	5	ND	ND
Barium	2,000	1,200	340	190	420
Cadmium	5	4	ND	ND	0.8
Selenium	50	5	ND	ND	ND
Zinc	5,000	270	ND	240	400
Cyanide (available)	200	20	NE	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	NE	7.37	6.88
Specific Conductivity (umhos/cm)	NL	NL	NE	3,570	4,600
Dissolved Oxygen (ppm)	NA	7	NE	0.49	0.54
Iron	300	NA	NE	5,700	4,700
Nitrate	10,000	NA	NE	340	220
Sulfate	250,000	NA	NE	18,000	43,000
Alkalinity (as CaCO3)	NL	NL	NE	490,000	440,000

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SEE NOTES ON PAGE 21

TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW104D 30-35 6/23/99	MW104D 30-35 2/15/00	MW104D 30-35 5/24/00
		Sample Location Screen Depth (feet) Date Collected			
BTEX					
Benzene	5	200	ND	ND	ND
Toluene	790	140	1	ND	ND
Ethylbenzene	74	18	1	ND	ND
Xylenes	280	35	ND	ND	ND
PNAs					
Naphthalene	1,500	13	16	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	16	28	27
Barium	2,000	1,200	230	260	250
Selenium	50	5	ND	ND	ND
Zinc	5,000	270	ND	28	ND
Cyanide (available)	200	20	NE	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	NE	7.34	7.44
Specific Conductivity (umhos/cm)	NL	NL	NE	1,540	1,090
Dissolved Oxygen (ppm)	NA	7	NE	3.5	2.42
Iron	300	NA	NE	5,800	5,700
Nitrate	10,000	NA	NE	ND	ND
Sulfate	250,000	NA	NE	77,000	71,000
Alkalinity (as CaCO3)	NL	NL	NE	280,000	320,000

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SEE NOTES ON PAGE 21

TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW105 11-16 6/24/99	MW105 11-16 2/16/00	MW105 11-16 5/22/00
Constituent	Commercial II Drinking Water Criteria	GSI Criteria			
BTEX					
Benzene	5	200	ND	ND	ND
Toluene	790	140	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND
Xylenes	280	35	ND	ND	ND
PNAs					
Naphthalene	1,500	13	6	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND
Selenium	50	5	ND	ND	ND
Zinc	5,000	270	ND	ND	160
Cyanide (available)	200	20	NE	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	NE	7.5	8.43
Specific Conductivity (umhos/cm)	NL	NL	NE	730	1,690
Dissolved Oxygen (ppm)	NA	7	NE	2.76	5.84
Iron	300	NA	NE	ND	150
Nitrate	10,000	NA	NE	5,300	1,400
Sulfate	250,000	NA	NE	90,000	51,000
Alkalinity (as CaCO3)	NL	NL	NE	270,000	370,000

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SEE NOTES ON PAGE 21

TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW105D 39-44 6/24/99	MW105D 39-44 2/16/00	MW105D 39-44 5/22/00
		Sample Location Screen Depth (feet) Date Collected			
BTEX					
Benzene	5	200	ND	ND	ND
Toluene	790	140	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND
Xylenes	280	35	2	ND	ND
PNAs					
Naphthalene	1,500	13	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	ND	ND	ND
Barium	2,000	1,200	150	150	150
Selenium	50	5	ND	ND	ND
Zinc	5,000	270	ND	ND	210
Cyanide (available)	200	20	NE	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	NE	7.37	8.15
Specific Conductivity (umhos/cm)	NL	NL	NE	1,030	1,920
Dissolved Oxygen (ppm)	NA	7	NE	2.21	2.46
Iron	300	NA	NE	ND	540
Nitrate	10,000	NA	NE	540	640
Sulfate	250,000	NA	NE	73,000	76,000
Alkalinity (as CaCO3)	NL	NL	NE	300,000	380,000

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SEE NOTES ON PAGE 21

TA 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	CSI Criteria	MW201 3-8 5/23/00
		Sample Location Screen Depth (feet) Date Collected	
BTEX			
Benzene	5	200	150
Toluene	790	140	5
Ethylbenzene	74	18	180
Xylenes	280	35	130
PNAs			
Naphthalene	1,500	13	760
2-Methylnaphthalene	750	ID	10
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	11
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS			
Arsenic	50	150	ND
Barium	2,000	1,200	200
Selenium	50	5	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	6.59
Specific Conductivity (umhos/cm)	NL	NL	1,970
Dissolved Oxygen (ppm)	NA	7	0.35
Iron	3300	NA	4,600
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	34,000
Alkalinity (as CaCO3)	NL	NL	490,000

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SEE NOTES ON PAGE 21

TA 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW202D 55-60 5/23/00
Constituent	Commercial II Drinking Water Criteria	GSI Criteria	
BTEX			
Benzene	5	200	ND
Toluene	790	140	ND
Ethylbenzene	74	18	ND
Xylenes	280	35	5
PNAs			
Naphthalene	1,500	13	35
2-Methylnaphthalene	750	ID	ND
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	ND
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS			
Arsenic	50	150	ND
Barium	2,000	1,200	170
Selenium	50	5	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	7.53
Specific Conductivity (umhos/cm)	NL	NL	1,720
Dissolved Oxygen (ppm)	NA	7	1.48
Iron	300	NA	310
Nitrate	10,000	NA	560
Sulfate	250,000	NA	66,000
Alkalinity (as CaCO3)	NL	NL	310,000

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SEE NOTES ON PAGE 21

TABLE 6
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
BTEX, PNAs, METALS AND CYANIDE
SME Project No. KE31823

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb) unless otherwise noted.
(2) ND= Analytical result was less than method detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) NL = Not listed under Part 201 Generic Commercial II Cleanup Criteria dated June, 2000.
(6) NE = Chemical not evaluated by analytical laboratory.
(7) Constituents listed for PNAs and metals are limited to those constituents that indicated detectable concentrations for at least one sample.
(8) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) The above data was compared to criteria for volatilization to indoor air, groundwater contact, water solubility, flammability/explosivity and acute inhalation and the data did not exceed these criteria.

00237144

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APPENDIX D

LABORATORY ANALYTICAL REPORTS FOR SOIL AND GROUNDWATER SAMPLES COLLECTED IN FEBRUARY, APRIL AND MAY, 2000

00237146

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-251, Jackson

Date: March 10, 2000

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823
- Sampling Dates of February 15 - 22, 2000

File Index: 510017-450-259
510017-450-262
510017-450-287

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On February 16 - 22, 2000 the Chemistry Section (CHEM) of Laboratory Services received groundwater samples collected at the KALAMAZOO former MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Michigan 10 Metals
Amenable, Available (OIA) and Free Cyanide
Dissolved Iron
Nitrate
Sulfate
Alkalinity (Bicarbonate)

Analytical Note: Determinations for nitrate and sulfate were performed by Brighton Analytical. All other determinations were performed by CHEM.

Analytical results are attached for your review.

00237147

KR059B030143

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Aromatic Volatile Organics (BTEX) - Method 8021, Halogenated And Aromatic Volatiles By Gas Chromatography Using Electrolytic Conductivity And Photoionization Detectors In Series: Capillary Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Amenable - Method 9010, Total and Amenable Cyanide. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Free - Method ASTM-D4282-95, Determination Of Free Cyanide In Water And Wastewater By Micro-diffusion, ASTM.

Cyanide, Available - Method OIA-1677, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry. EPA-821-R-99-013.

Dissolved Metals Preparation – Waters (Mercury) – Method 7470, Mercury in Liquid Waste. SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	SW-846 Method
Arsenic	7060
Barium	6010
Cadmium	7131
Chromium	7191
Copper	7210
Iron	6010
Lead	7421
Mercury	7470
Selenium	7740
Silver	7761
Zinc	7950

ANALYTICAL METHODS

Inorganic Analytes

Analyte	Test Method
Nitrate	353.2
Sulfate	375.2
Alkalinity	310.1

Methods For Chemical Analysis of Water and Wastes, USEPA, EMSL.

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW1
Sample Depth, ft	9.6-11.6
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	02-22-00
Control Number	000259-01

BTEX, Method 8021	ug/L	TDL
Benzene	16	1
Toluene	950	1
Ethylbenzene	900	1
m/p-Xylene	910	1
o-Xylene	630	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	MW1
Sample Depth, ft	9.6-11.6
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	02-21-00
Analysis Date	03-01-00
Control Number	000259-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	27	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	92	43-116
p-Terphenyl-d14	95	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW1	9.6-11.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW2
Sample Depth, ft	6-8
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	02-22-00
Control Number	000259-02

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	99	80-120

Sample Identification	MW2
Sample Depth, ft	6-8
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	02-21-00
Analysis Date	03-01-00
Control Number	000259-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	89	35-114
2-Fluorobiphenyl	93	43-116
p-Terphenyl-d14	97	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237151

Reviewed By AH Date 3/10/00

Data File	Kalamazoo
MW2	6-8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW3
Sample Depth, ft	4.6-7.8
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	02-22-00
Control Number	000259-03

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	99	80-120

Sample Identification	MW3
Sample Depth, ft	4.6-7.8
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	02-21-00
Analysis Date	03-01-00
Control Number	000259-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	85	35-114
2-Fluorobiphenyl	91	43-116
p-Terphenyl-d14	96	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By MU Date 3/10/00

Data File	Kalamazoo
MW3	4.6-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	P3
Sample Depth, ft	4.8-7.8
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	02-22-00
Control Number	000259-04

BTEX, Method 8021	ug/L	TDL
Benzene	59	1
Toluene	5	1
Ethylbenzene	260	1
m/p-Xylene	40	1
o-Xylene	89	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	98	80-120

Sample Identification	P3
Sample Depth, ft	4.8-7.8
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	02-21-00
Analysis Date	03-01-00
Control Number	000259-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	180	5
2-Methylnaphthalene	10	5
Acenaphthylene	5	5
Acenaphthene	14	5
Fluorene	12	5
Phenanthrene	6	5
Anthracene	6	5
Fluoranthene	5	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	82	35-114
2-Fluorobiphenyl	90	43-116
p-Terphenyl-d14	94	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
P3	4.8-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW104
Sample Depth, ft	6.3-9.4
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	02-22-00
Control Number	000259-05

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	101	80-120

Sample Identification	MW104
Sample Depth, ft	6.3-9.4
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	02-21-00
Analysis Date	03-01-00
Control Number	000259-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	84	35-114
2-Fluorobiphenyl	88	43-116
p-Terphenyl-d14	92	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [illegible] Date 3/10/00

Data File	Kalamazoo
MW104	6.3-9.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW104D
Sample Depth, ft	6.2-35
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	02-22-00
Control Number	000259-06

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	100	80-120

Sample Identification	MW104D
Sample Depth, ft	6.2-35
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	02-21-00
Analysis Date	03-01-00
Control Number	000259-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	85	35-114
2-Fluorobiphenyl	88	43-116
p-Terphenyl-d14	94	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW104D	6.2-35

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	Equipment Blank	Sample Identification	Equipment Blank
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	02-15-00	Sample Date	02-15-00
Received Date	02-16-00	Received Date	02-16-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	no sample
Preservation Type	HCl	Analysis Date	no sample
Analysis Date	02-22-00		
Control Number	000259-07	Control Number	000259-07

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
urrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	102	80-120

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	5
Chrysene	-	5
Benzo(b)fluoranthene	-	5
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	5
Indeno(1,2,3-cd)pyrene	-	5
Dibenzo(a,h)anthracene	-	5
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
Equipment B	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW105	Sample Identification	MW105
Sample Depth, ft	12.4-15.4	Sample Depth, ft	12.4-15.4
Sample Type	water	Sample Type	water
Sample Date	02-16-00	Sample Date	02-16-00
Received Date	02-17-00	Received Date	02-17-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	02-21-00
Preservation Type	HCl	Analysis Date	03-01-00
Analysis Date	02-22-00		
Control Number	000262-01	Control Number	000262-01

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
irrogate Recovery	%Recovery	Criteria
.-Bromofluorobenzene	99	80-120

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	83	35-114
2-Fluorobiphenyl	92	43-116
p-Terphenyl-d14	102	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW105	12.4-15.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW105D
Sample Depth, ft	13.3-43.5
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	02-22-00
Control Number	000262-02

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	100	80-120

Sample Identification	MW105D
Sample Depth, ft	13.3-43.5
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	02-21-00
Analysis Date	03-01-00
Control Number	000262-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	84	35-114
2-Fluorobiphenyl	90	43-116
p-Terphenyl-d14	98	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW105D	13.3-43.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW102
Sample Depth, ft	11.9-14.9
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	*at collection*
Preservation Type	HCl
Analysis Date	02-22-00
Control Number	000262-03

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	101	80-120

Sample Identification	MW102
Sample Depth, ft	11.9-14.9
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	*02-21-00*
Analysis Date	03-01-00
Control Number	000262-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	80	35-114
2-Fluorobiphenyl	87	43-116
p-Terphenyl-d14	86	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237159

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW102	11.9-14.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW101
Sample Depth, ft	13.8-16.9
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	02-22-00
Control Number	000262-04

BTEX, Method 8021	ug/L	TDL
Benzene	80	1
Toluene	6,400	1
Ethylbenzene	1,400	1
m/p-Xylene	6,200	1
o-Xylene	1,800	1
Surrogate Recovery	%Recovery	Criteria
a-Bromofluorobenzene	91	80-120

Sample Identification	MW101
Sample Depth, ft	13.8-16.9
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	02-21-00
Analysis Date	03-01-00
Control Number	000262-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	1,100	5
2-Methylnaphthalene	31	5
Acenaphthylene	33	5
Acenaphthene	6	5
Fluorene	11	5
Phenanthrene	7	5
Anthracene	7	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	diluted out	35-114
2-Fluorobiphenyl	diluted out	43-116
p-Terphenyl-d14	diluted out	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237160

Reviewed By [signature] Date 3/6-/00

Data File	Kalamazoo
MW101	13.8-16.9

ORG

KR059B030156

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW101D
Sample Depth, ft	13.6-39.5
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	02-22-00
Control Number	000262-05

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	5	1
Ethylbenzene	1,450	1
m/p-Xylene	3,500	1
o-Xylene	980	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	93	80-120

Sample Identification	MW101D
Sample Depth, ft	13.6-39.5
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	02-21-00
Analysis Date	03-01-00
Control Number	000262-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	4,500	5
2-Methylnaphthalene	120	5
Acenaphthylene	150	5
Acenaphthene	5	5
Fluorene	25	5
Phenanthrene	5	5
Anthracene	5	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	diluted out	35-114
2-Fluorobiphenyl	diluted out	43-116
p-Terphenyl-d14	diluted out	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237161

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW101D	13.6-39.5

ORG

KR059B030157

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW103
Sample Depth, ft	12.1-15.4
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	02-22-00
Control Number	000262-06

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	98	80-120

Sample Identification	MW103
Sample Depth, ft	12.1-15.4
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	02-21-00
Analysis Date	03-01-00
Control Number	000262-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	79	35-114
2-Fluorobiphenyl	82	43-116
p-Terphenyl-d14	95	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237162

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW103	12.1-15.4

ORG

KR059B030158

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	P2
Sample Depth, ft	8.9-12.1
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	02-22-00
Control Number	000262-07

BTEX, Method 8021	ug/L	TDL
Benzene	410	1
Toluene	86	1
Ethylbenzene	220	1
m/p-Xylene	430	1
o-Xylene	260	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	95	80-120

Sample Identification	P2
Sample Depth, ft	8.9-12.1
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	02-21-00
Analysis Date	03-01-00
Control Number	000262-07

PAHs, Method 8270	ug/L	TDL
Naphthalene	410	5
2-Methylnaphthalene	21	5
Acenaphthylene	5	5
Acenaphthene	30	5
Fluorene	16	5
Phenanthrene	5	5
Anthracene	5	5
Fluoranthene	7	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	80	35-114
2-Fluorobiphenyl	84	43-116
p-Terphenyl-d14	91	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237163

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
P2	8.9-12.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	P2D
Sample Depth, ft	10-40
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	02-22-00
Control Number	000262-08

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	101	80-120

Sample Identification	P2D
Sample Depth, ft	10-40
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	02-21-00
Analysis Date	03-01-00
Control Number	000262-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	84	35-114
2-Fluorobiphenyl	88	43-116
p-Terphenyl-d14	98	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237164

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
P2D	10-40

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	Duplicate
Sample Depth, ft	-
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	02-22-00
Control Number	000262-09

BTEX, Method 8021	ug/L	TDL
Benzene	80	1
Toluene	6,200	1
Ethylbenzene	1,300	1
m/p-Xylene	6,500	1
o-Xylene	1,700	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	89	80-120

Sample Identification	Duplicate
Sample Depth, ft	-
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date	no sample
Control Number	000262-09

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	5
Chrysene	-	5
Benzo(b)fluoranthene	-	5
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	5
Indeno(1,2,3-cd)pyrene	-	5
Dibenzo(a,h)anthracene	-	5
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237165

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
Duplicate	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	02-22-00
Control Number	000262-10

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	99	80-120

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date	no sample
Control Number	000262-10

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	5
Chrysene	-	5
Benzo(b)fluoranthene	-	5
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	5
Indeno(1,2,3-cd)pyrene	-	5
Dibenzo(a,h)anthracene	-	5
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237166

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
Trip Blank	-

ORG

KR059B030162

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	P4
Sample Depth, ft	4.4-7.9
Sample Type	water
Sample Date	02-22-00
Received Date	02-22-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-03-00
Control Number	000287-01

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	1	1
m/p-Xylene	4	1
o-Xylene	3	1
Surrogate Recovery	%Recovery	Criteria
r-Bromofluorobenzene	98	80-120

Sample Identification	P4
Sample Depth, ft	4.4-7.9
Sample Type	water
Sample Date	02-22-00
Received Date	02-22-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	02-25-00
Analysis Date	03-01-00
Control Number	000287-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	83	35-114
2-Fluorobiphenyl	90	43-116
p-Terphenyl-d14	97	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237167

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
P4	4.4-7.9

ORG

KR059B030163

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW4	Sample Identification	MW4
Sample Depth, ft	3.8-6.8	Sample Depth, ft	3.8-6.8
Sample Type	water	Sample Type	water
Sample Date	02-22-00	Sample Date	02-22-00
Received Date	02-22-00	Received Date	02-22-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	02-25-00
Preservation Type	HCl	Analysis Date	03-01-00
Analysis Date	03-03-00		
Control Number	000287-02	Control Number	000287-02

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	98	80-120

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	86	35-114
2-Fluorobiphenyl	91	43-116
p-Terphenyl-d14	97	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237168

Reviewed By [illegible] Date 3/10/00

Data File	Kalamazoo
MW4	3.8-6.8

ORG

KR059B030164

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW1
Sample Depth, ft	9.6-11.6
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date (Hg)	02-22-00
Analysis Date, Start	02-21-00
Analysis Date, End	02-28-00
Control Number	000259-01

METALS	ug/L	TDL
Arsenic - 7060	13	5.0
Barium - 6010	130	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7210	nd	25.0
' ead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW1
Sample Depth, ft	9.6-11.6
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date	02-22-00
Control Number	000259-01

METALS	ug/L	TDL
Iron (dissolved) - 6010	8,900	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237169

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW1	9.6-11.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW2	Sample Identification	MW2
Sample Depth, ft	6-8	Sample Depth, ft	6-8
Sample Type	water	Sample Type	water
Sample Date	02-15-00	Sample Date	02-15-00
Received Date	02-16-00	Received Date	02-16-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	02-22-00	*Preparation Date*	-
Analysis Date, Start	02-21-00	Analysis Date	02-22-00
Analysis Date, End	02-28-00		
Control Number	000259-02	Control Number	000259-02

METALS	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	100	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6010	21,000	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237170

Reviewed By [signature] Date 3/20/00

Data File	Kalamazoo
MW2	6-8

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW3	Sample Identification	MW3
Sample Depth, ft	4.6-7.8	Sample Depth, ft	4.6-7.8
Sample Type	water	Sample Type	water
Sample Date	02-15-00	Sample Date	02-15-00
Received Date	02-16-00	Received Date	02-16-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	02-22-00	Preparation Date	-
Analysis Date, Start	02-21-00	Analysis Date	02-28-00
Analysis Date, End	02-28-00		
Control Number	000259-03	Control Number	000259-03

METALS	ug/L	TDL
Arsenic - 7060	8.0	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6010	110	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237171

Reviewed By [illegible] Date 3/10/00

Data File	Kalamazoo
MW3	4.6-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	P3	Sample Identification	P3
Sample Depth, ft	4.8-7.8	Sample Depth, ft	4.8-7.8
Sample Type	water	Sample Type	water
Sample Date	02-15-00	Sample Date	02-15-00
Received Date	02-16-00	Received Date	02-16-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	02-22-00	Preparation Date	-
Analysis Date, Start	02-21-00	Analysis Date	02-22-00
Analysis Date, End	02-28-00		
Control Number	000259-04	Control Number	000259-04

METALS	ug/L	TDL
Arsenic - 7060	6.0	5.0
Barium - 6010	290	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6010	9,400	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237172

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Data File	Kalamazoo
P3	4.8-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW104	Sample Identification	MW104
Sample Depth, ft	6.3-9.4	Sample Depth, ft	6.3-9.4
Sample Type	water	Sample Type	water
Sample Date	02-15-00	Sample Date	02-15-00
Received Date	02-16-00	Received Date	02-16-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	02-22-00	Preparation Date	-
Analysis Date, Start	02-21-00	Analysis Date	02-22-00
Analysis Date, End	02-28-00		
Control Number	000259-05	Control Number	000259-05

METALS	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium - 6010	190	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	240	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6010	5,700	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237173

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Data File	Kalamazoo
MW104	6.3-9.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW104D
Sample Depth, ft	6.2-35
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date (Hg)	02-22-00
Analysis Date, Start	02-21-00
Analysis Date, End	02-28-00
Control Number	000259-06

METALS	ug/L	TDL
Arsenic - 7060	28	5.0
Barium - 6010	260	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	28	20.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW104D
Sample Depth, ft	6.2-35
Sample Type	water
Sample Date	02-15-00
Received Date	02-16-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date	02-22-00
Control Number	000259-06

METALS	ug/L	TDL
Iron (dissolved) - 6010	5,800	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW104D	6.2-35

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	Equipment Blank	Sample Identification	Equipment Blank
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	02-15-00	Sample Date	02-15-00
Received Date	02-16-00	Received Date	02-16-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	no sample	Preparation Date	no sample
Analysis Date, Start	no sample	Analysis Date	no sample
Analysis Date, End	no sample		
Control Number	000259-07	Control Number	000259-07

METALS	ug/L	TDL
Arsenic - 7060	-	5.0
Barium - 6010	-	100.0
Cadmium - 7131	-	0.5
Chromium (total) - 7191	-	5.0
Copper - 7210	-	25.0
Lead - 7421	-	3.0
Mercury - 7470	-	0.2
Selenium - 7740	-	5.0
Silver - 7761	-	0.5
Zinc - 7950	-	20.0
Metal Results Are Reported As	-	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6010	-	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
Equipment B	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW105
Sample Depth, ft	12.4-15.4
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date (Hg)	02-22-00
Analysis Date, Start	02-21-00
Analysis Date, End	02-28-00
Control Number	000262-01

METALS	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW105
Sample Depth, ft	12.4-15.4
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date	02-22-00
Control Number	000262-01

METALS	ug/L	TDL
Iron (dissolved) - 6010	nd	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW105	12.4-15.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW105D
Sample Depth, ft	13.3-43.5
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date (Hg)	02-22-00
Analysis Date, Start	02-21-00
Analysis Date, End	02-28-00
Control Number	000262-02

METALS	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium - 6010	150	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW105D
Sample Depth, ft	13.3-43.5
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date	02-22-00
Control Number	000262-02

METALS	ug/L	TDL
Iron (dissolved) - 6010	nd	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW105D	13.3-43.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW102	Sample Identification	MW102
Sample Depth, ft	11.9-14.9	Sample Depth, ft	11.9-14.9
Sample Type	water	Sample Type	water
Sample Date	02-16-00	Sample Date	02-16-00
Received Date	02-17-00	Received Date	02-17-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	02-22-00	Preparation Date	-
Analysis Date, Start	02-21-00	Analysis Date	02-22-00
Analysis Date, End	02-28-00		
Control Number	000262-03	Control Number	000262-03

METALS	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	6.0	5.0
Silver - 7761	nd	0.5
Zinc - 7950	250	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6010	nd	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW102	11.9-14.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW101
Sample Depth, ft	13.8-16.9
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date (Hg)	02-22-00
Analysis Date, Start	02-21-00
Analysis Date, End	02-28-00
Control Number	000262-04

METALS	ug/L	TDL
Arsenic - 7060	9.0	5.0
Barium - 6010	230	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW101
Sample Depth, ft	13.8-16.9
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date	02-22-00
Control Number	000262-04

METALS	ug/L	TDL
Iron (dissolved) - 6010	5,500	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW101	13.8-16.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW101D
Sample Depth, ft	13.6-39.5
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date (Hg)	02-22-00
Analysis Date, Start	02-21-00
Analysis Date, End	02-28-00
Control Number	000262-05

METALS	ug/L	TDL
Arsenic - 7060	23	5.0
Barium - 6010	450	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7210	nd	25.0
ead - 7421	nd	3.0
lercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW101D
Sample Depth, ft	13.6-39.5
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date	02-22-00
Control Number	000262-05

METALS	ug/L	TDL
Iron (dissolved) - 6010	3,300	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237180

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Data File	Kalamazoo
MW101D	13.6-39.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW103	Sample Identification	MW103
Sample Depth, ft	12.1-15.4	Sample Depth, ft	12.1-15.4
Sample Type	water	Sample Type	water
Sample Date	02-16-00	Sample Date	02-16-00
Received Date	02-17-00	Received Date	02-17-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	02-22-00	Preparation Date	-
Analysis Date, Start	02-21-00	Analysis Date	02-22-00
Analysis Date, End	02-28-00		
Control Number	000262-06	Control Number	000262-06

METALS	ug/L	TDL
Arsenic - 7060	5.0	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7210	nd	25.0
ead - 7421	nd	3.0
ercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6010	nd	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW103	12.1-15.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	P2
Sample Depth, ft	8.9-12.1
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date (Hg)	02-22-00
Analysis Date, Start	02-21-00
Analysis Date, End	02-28-00
Control Number	000262-07

METALS	**ug/L**	**TDL**
Arsenic - 7060	9.0	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7210	nd	25.0
ead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	P2
Sample Depth, ft	8.9-12.1
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date	02-22-00
Control Number	000262-07

METALS	**ug/L**	**TDL**
Iron (dissolved) - 6010	440	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237182

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Data File	Kalamazoo
P2	8.9-12.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	P2D	Sample Identification	P2D
Sample Depth, ft	10-40	Sample Depth, ft	10-40
Sample Type	water	Sample Type	water
Sample Date	02-16-00	Sample Date	02-16-00
Received Date	02-17-00	Received Date	02-17-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	02-22-00	Preparation Date	-
Analysis Date, Start	02-21-00	Analysis Date	02-22-00
Analysis Date, End	02-28-00		
Control Number	000262-08	Control Number	000262-08

METALS	ug/L	TDL
Arsenic - 7060	8.0	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7210	nd	25.0
' ead - 7421	nd	3.0
,lercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	21	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6010	3,400	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237183

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Data File	Kalamazoo
P2D	10-40

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	Duplicate
Sample Depth, ft	-
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date (Hg)	no sample
Analysis Date, Start	no sample
Analysis Date, End	no sample
Control Number	000262-09

METALS	ug/L	TDL
Arsenic - 7060	-	5.0
Barium - 6010	-	100.0
Cadmium - 7131	-	0.5
Chromium (total) - 7191	-	5.0
Copper - 7210	-	25.0
Lead - 7421	-	3.0
Mercury - 7470	-	0.2
Selenium - 7740	-	5.0
Silver - 7761	-	0.5
Zinc - 7950	-	20.0
Metal Results Are Reported As	-	Dissolved

Sample Identification	Duplicate
Sample Depth, ft	-
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date	no sample
Analysis Date	no sample
Control Number	000262-09

METALS	ug/L	TDL
Iron (dissolved) - 6010	-	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
Duplicate	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date (Hg)	no sample
Analysis Date, Start	no sample
Analysis Date, End	no sample
Control Number	000262-10

METALS	ug/L	TDL
Arsenic - 7060	-	5.0
Barium - 6010	-	100.0
Cadmium - 7131	-	0.5
Chromium (total) - 7191	-	5.0
Copper - 7210	-	25.0
Lead - 7421	-	3.0
Mercury - 7470	-	0.2
Selenium - 7740	-	5.0
Silver - 7761	-	0.5
Zinc - 7950	-	20.0
Metal Results Are Reported As	-	Dissolved

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preparation Date	no sample
Analysis Date	no sample
Control Number	000262-10

METALS	ug/L	TDL
Iron (dissolved) - 6010	-	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237185

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Data File	Kalamazoo
Trip Blank	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	P4	Sample Identification	P4
Sample Depth, ft	4.4-7.9	Sample Depth, ft	4.4-7.9
Sample Type	water	Sample Type	water
Sample Date	02-22-00	Sample Date	02-22-00
Received Date	02-22-00	Received Date	02-22-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	03-07-00	Preparation Date	-
Analysis Date, Start	02-29-00	Analysis Date	03-01-00
Analysis Date, End	03-08-00		
Control Number	000287-01	Control Number	000287-01

METALS	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 7191	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 7950	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6010	4,800	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237186

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Data File	Kalamazoo
P4	4.4-7.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW4	Sample Identification	MW4
Sample Depth, ft	3.8-6.8	Sample Depth, ft	3.8-6.8
Sample Type	water	Sample Type	water
Sample Date	02-22-00	Sample Date	02-22-00
Received Date	02-22-00	Received Date	02-22-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	03-07-00	Preparation Date	-
Analysis Date, Start	02-29-00	Analysis Date	03-01-00
Analysis Date, End	03-08-00		
Control Number	000287-02	Control Number	000287-02

METALS	ug/L	TDL	METALS	ug/L	TDL
Arsenic - 7060	nd	5.0	Iron (dissolved) - 6010	8,700	100
Barium - 6010	nd	100.0			
Cadmium - 7131	nd	0.5			
Chromium (total) - 7191	nd	5.0			
Copper - 7210	nd	25.0			
ead - 7421	nd	3.0			
Mercury - 7470	nd	0.2			
Selenium - 7740	nd	5.0			
Silver - 7761	nd	0.5			
Zinc - 7950	nd	20.0			
Metal Results Are Reported As	Dissolved	Dissolved			

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237187

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW4	3.8-6.8

INORG

KR059B030183

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW1	Sample Identification	MW1
Sample Depth, ft	9.6-11.6	Sample Depth, ft	9.6-11.6
Sample Type	water	Sample Type	water
Sample Date	02-15-00	Sample Date	02-15-00
Received Date	02-16-00	Received Date	02-16-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	02-17-00	Analysis Date, Available (OIA)	02-25-00
Analysis Date, Sulfate	02-17-00	Analysis Date, Amenable	02-28-00
Analysis Date, Alkalinity	02-18-00	Analysis Date, Free	02-23-00
Control Number	000259-01	Control Number	000259-01

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2	33,000	1,000	Cyanide, Amenable - 9010	nd	20
Alkalinity, as CaCO3 - 310.1	410,000	-	Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237188

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW1	9.6-11.6

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW2	Sample Identification	MW2
Sample Depth, ft	6-8	Sample Depth, ft	6-8
Sample Type	water	Sample Type	water
Sample Date	02-15-00	Sample Date	02-15-00
Received Date	02-16-00	Received Date	02-16-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	02-17-00	Analysis Date, Available (OIA)	02-25-00
Analysis Date, Sulfate	02-17-00	Analysis Date, Amenable	02-28-00
Analysis Date, Alkalinity	02-18-00	Analysis Date, Free	02-23-00
Control Number	000259-02	Control Number	000259-02

INORGANICS	ug/L	TDL
Nitrate - 353.2	140	100
Sulfate - 375.2	1,500,000	1,000
Alkalinity, as CaCO3 - 310.1	26,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW2	6-8

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW3	Sample Identification	MW3
Sample Depth, ft	4.6-7.8	Sample Depth, ft	4.6-7.8
Sample Type	water	Sample Type	water
Sample Date	02-15-00	Sample Date	02-15-00
Received Date	02-16-00	Received Date	02-16-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	02-17-00	Analysis Date, Available (OIA)	02-25-00
Analysis Date, Sulfate	02-17-00	Analysis Date, Amenable	02-28-00
Analysis Date, Alkalinity	02-18-00	Analysis Date, Free	02-23-00
Control Number	000259-03	Control Number	000259-03

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2	33,000	1,000
Alkalinity, as CaCO3 - 310.1	260,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237190

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW3	4.6-7.8

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	P3	Sample Identification	P3
Sample Depth, ft	4.8-7.8	Sample Depth, ft	4.8-7.8
Sample Type	water	Sample Type	water
Sample Date	02-15-00	Sample Date	02-15-00
Received Date	02-16-00	Received Date	02-16-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	02-17-00	Analysis Date, Available (OIA)	02-25-00
Analysis Date, Sulfate	02-17-00	Analysis Date, Amenable	02-28-00
Analysis Date, Alkalinity	02-18-00	Analysis Date, Free	02-23-00
Control Number	000259-04	Control Number	000259-04

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2	35,000	1,000	Cyanide, Amenable - 9010	29	20
Alkalinity, as CaCO3 - 310.1	410,000	-	Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237191

Reviewed By [illegible] Date 3/10/00

Data File	Kalamazoo
P3	4.8-7.8

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW104		Sample Identification	MW104	
Sample Depth, ft	6.3-9.4		Sample Depth, ft	6.3-9.4	
Sample Type	water		Sample Type	water	
Sample Date	02-15-00		Sample Date	02-15-00	
Received Date	02-16-00		Received Date	02-16-00	
Report Date	03-10-00		Report Date	03-10-00	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
Preservation Date	-		Extraction Date	-	
Analysis Date, Nitrate	02-17-00		Analysis Date, Available (OIA)	02-25-00	
Analysis Date, Sulfate	02-17-00		Analysis Date, Amenable	02-28-00	
Analysis Date, Alkalinity	02-18-00		Analysis Date, Free	02-23-00	
Control Number	000259-05		Control Number	000259-05	
INORGANICS	**ug/L**	**TDL**	**INORGANICS**	**ug/L**	**TDL**
Nitrate - 353.2	340	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2	18,000	1,000	Cyanide, Amenable - 9010	nd	20
Alkalinity, as CaCO3 - 310.1	490,000	-	Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW104	6.3-9.4

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW104D	Sample Identification	MW104D
Sample Depth, ft	6.2-35	Sample Depth, ft	6.2-35
Sample Type	water	Sample Type	water
Sample Date	02-15-00	Sample Date	02-15-00
Received Date	02-16-00	Received Date	02-16-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	02-17-00	Analysis Date, Available (OIA)	02-25-00
Analysis Date, Sulfate	02-17-00	Analysis Date, Amenable	02-28-00
Analysis Date, Alkalinity	02-18-00	Analysis Date, Free	02-23-00
Control Number	000259-06	Control Number	000259-06

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2	77,000	1,000	Cyanide, Amenable - 9010	nd	20
Alkalinity, as CaCO3 - 310.1	280,000	-	Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW104D	6.2-35

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	Equipment Blank	Sample Identification	Equipment Blank
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	02-15-00	Sample Date	02-15-00
Received Date	02-16-00	Received Date	02-16-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	no sample	Extraction Date	no sample
Analysis Date, Nitrate	no sample	Analysis Date, Available (OIA)	no sample
Analysis Date, Sulfate	no sample	Analysis Date, Amenable	no sample
Analysis Date, Alkalinity	no sample	Analysis Date, Free	no sample
Control Number	000259-07	Control Number	000259-07

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100	Cyanide, Available - OIA1677	-	20
Sulfate - 375.2	-	1,000	Cyanide, Amenable - 9010	-	20
Alkalinity, as CaCO3 - 310.1	-	-	Cyanide, Free - D4282	-	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237194

Reviewed By MC Date 3/10/00

Data File Kalamazoo
Equipment B -

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW105	Sample Identification	MW105
Sample Depth, ft	12.4-15.4	Sample Depth, ft	12.4-15.4
Sample Type	water	Sample Type	water
Sample Date	02-16-00	Sample Date	02-16-00
Received Date	02-17-00	Received Date	02-17-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	02-17-00	Analysis Date, Available (OIA)	02-25-00
Analysis Date, Sulfate	02-17-00	Analysis Date, Amenable	02-28-00
Analysis Date, Alkalinity	02-18-00	Analysis Date, Free	02-23-00
Control Number	000262-01	Control Number	000262-01

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	5,300	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2	90,000	1,000	Cyanide, Amenable - 9010	nd	20
Alkalinity, as CaCO3 - 310.1	270,000	-	Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW105	12.4-15.4

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW105D	Sample Identification	MW105D
Sample Depth, ft	13.3-43.5	Sample Depth, ft	13.3-43.5
Sample Type	water	Sample Type	water
Sample Date	02-16-00	Sample Date	02-16-00
Received Date	02-17-00	Received Date	02-17-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	02-17-00	Analysis Date, Available (OIA)	02-25-00
Analysis Date, Sulfate	02-17-00	Analysis Date, Amenable	02-28-00
Analysis Date, Alkalinity	02-18-00	Analysis Date, Free	02-23-00
Control Number	000262-02	Control Number	000262-02

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	540	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2	73,000	1,000	Cyanide, Amenable - 9010	nd	20
Alkalinity, as CaCO3 - 310.1	300,000	-	Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [illegible] Date 3/10/00

Data File	Kalamazoo
MW105D	13.3-43.5

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW102
Sample Depth, ft	11.9-14.9
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	02-17-00
Analysis Date, Sulfate	02-17-00
Analysis Date, Alkalinity	02-18-00
Control Number	000262-03

INORGANICS	ug/L	TDL
Nitrate - 353.2	3,100	100
Sulfate - 375.2	54,000	1,000
Alkalinity, as CaCO3 - 310.1	240,000	-

Sample Identification	MW102
Sample Depth, ft	11.9-14.9
Sample Type	water
Sample Date	02-16-00
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Available (OIA)	02-25-00
Analysis Date, Amenable	02-28-00
Analysis Date, Free	02-23-00
Control Number	000262-03

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW102	11.9-14.9

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW101	Sample Identification	MW101
Sample Depth, ft	13.8-16.9	Sample Depth, ft	13.8-16.9
Sample Type	water	Sample Type	water
Sample Date	02-16-00	Sample Date	02-16-00
Received Date	02-17-00	Received Date	02-17-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	02-17-00	Analysis Date, Available (OIA)	02-25-00
Analysis Date, Sulfate	02-17-00	Analysis Date, Amenable	02-28-00
Analysis Date, Alkalinity	02-18-00	Analysis Date, Free	02-23-00
Control Number	000262-04	Control Number	000262-04

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	310	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2	63,000	1,000	Cyanide, Amenable - 9010	nd	20
Alkalinity, as CaCO3 - 310.1	470,000	-	Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237198

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW101	13.8-16.9

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW101D	Sample Identification	MW101D
Sample Depth, ft	13.6-39.5	Sample Depth, ft	13.6-39.5
Sample Type	water	Sample Type	water
Sample Date	02-16-00	Sample Date	02-16-00
Received Date	02-17-00	Received Date	02-17-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	02-17-00	Analysis Date, Available (OIA)	02-25-00
Analysis Date, Sulfate	02-17-00	Analysis Date, Amenable	02-28-00
Analysis Date, Alkalinity	02-18-00	Analysis Date, Free	02-23-00
Control Number	000262-05	Control Number	000262-05

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2	15,000	1,000	Cyanide, Amenable - 9010	nd	20
Alkalinity, as CaCO3 - 310.1	330,000	-	Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237199

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW101D	13.6-39.5

INORG

KR059B030195

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW103		Sample Identification	MW103	
Sample Depth, ft	12.1-15.4		Sample Depth, ft	12.1-15.4	
Sample Type	water		Sample Type	water	
Sample Date	02-16-00		Sample Date	02-16-00	
Received Date	02-17-00		Received Date	02-17-00	
Report Date	03-10-00		Report Date	03-10-00	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
Preservation Date	-		Extraction Date	-	
Analysis Date, Nitrate	02-17-00		Analysis Date, Available (OIA)	02-25-00	
Analysis Date, Sulfate	02-17-00		Analysis Date, Amenable	02-28-00	
Analysis Date, Alkalinity	02-18-00		Analysis Date, Free	02-23-00	
Control Number	000262-06		Control Number	000262-06	
INORGANICS	**ug/L**	**TDL**	**INORGANICS**	**ug/L**	**TDL**
Nitrate - 353.2	410	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2	19,000	1,000	Cyanide, Amenable - 9010	nd	20
Alkalinity, as CaCO3 - 310.1	430,000	-	Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237200

Reviewed By *pu* Date 3/10/00

Data File	Kalamazoo
MW103	12.1-15.4

INORG

KR059B030196

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	P2	Sample Identification	P2
Sample Depth, ft	8.9-12.1	Sample Depth, ft	8.9-12.1
Sample Type	water	Sample Type	water
Sample Date	02-16-00	Sample Date	02-16-00
Received Date	02-17-00	Received Date	02-17-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	02-17-00	Analysis Date, Available (OIA)	02-25-00
Analysis Date, Sulfate	02-17-00	Analysis Date, Amenable	02-28-00
Analysis Date, Alkalinity	02-18-00	Analysis Date, Free	02-23-00
Control Number	000262-07	Control Number	000262-07

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2	32,000	1,000	Cyanide, Amenable - 9010	nd	20
Alkalinity, as CaCO3 - 310.1	530,000	-	Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237201

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
P2	8.9-12.1

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	P2D	Sample Identification	P2D
Sample Depth, ft	10-40	Sample Depth, ft	10-40
Sample Type	water	Sample Type	water
Sample Date	02-16-00	Sample Date	02-16-00
Received Date	02-17-00	Received Date	02-17-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	02-17-00	Analysis Date, Available (OIA)	02-25-00
Analysis Date, Sulfate	02-17-00	Analysis Date, Amenable	02-28-00
Analysis Date, Alkalinity	02-18-00	Analysis Date, Free	02-29-00
Control Number	000262-08	Control Number	000262-08

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2	86,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Amenable - 9010	nd	20
Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237202

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
P2D	10-40

INORG

KR059B030198

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	Duplicate	Sample Identification	Duplicate
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	02-16-00	Sample Date	02-16-00
Received Date	02-17-00	Received Date	02-17-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	no sample	Extraction Date	no sample
Analysis Date, Nitrate	no sample	Analysis Date, Available (OIA)	no sample
Analysis Date, Sulfate	no sample	Analysis Date, Amenable	no sample
Analysis Date, Alkalinity	no sample	Analysis Date, Free	no sample
Control Number	000262-09	Control Number	000262-09

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100	Cyanide, Available - OIA1677	-	20
Sulfate - 375.2	-	1,000	Cyanide, Amenable - 9010	-	20
Alkalinity, as CaCO3 - 310.1	-	-	Cyanide, Free - D4282	-	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237203

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
Duplicate	-

INORG

KR059B030199

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Preservation Date	no sample
Analysis Date, Nitrate	no sample
Analysis Date, Sulfate	no sample
Analysis Date, Alkalinity	no sample
Control Number	000262-10

INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100
Sulfate - 375.2	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	02-17-00
Report Date	03-10-00
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date, Available (OIA)	no sample
Analysis Date, Amenable	no sample
Analysis Date, Free	no sample
Control Number	000262-10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Amenable - 9010	-	20
Cyanide, Free - D4282	-	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237204

Reviewed By JU Date 3/10/00

Data File	Kalamazoo
Trip Blank	-

INORG

KR059B030200

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	P4	Sample Identification	P4
Sample Depth, ft	4.4-7.9	Sample Depth, ft	4.4-7.9
Sample Type	water	Sample Type	water
Sample Date	02-22-00	Sample Date	02-22-00
Received Date	02-22-00	Received Date	02-22-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	02-24-00	Analysis Date, Available (OIA)	02-25-00
Analysis Date, Sulfate	02-24-00	Analysis Date, Amenable	02-28-00
Analysis Date, Alkalinity	02-23-00	Analysis Date, Free	02-29-00
Control Number	000287-01	Control Number	000287-01

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	240	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2	21,000	1,000	Cyanide, Amenable - 9010	nd	20
Alkalinity, as CaCO3 - 310.1	340,000	-	Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237205

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
P4	4.4-7.9

INORG

KR059B030201

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of February 15-22, 2000	Project Number CHEM-00-0259 CHEM-00-0262 CHEM-00-0287

Sample Identification	MW4	Sample Identification	MW4
Sample Depth, ft	3.8-6.8	Sample Depth, ft	3.8-6.8
Sample Type	water	Sample Type	water
Sample Date	02-22-00	Sample Date	02-22-00
Received Date	02-22-00	Received Date	02-22-00
Report Date	03-10-00	Report Date	03-10-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	02-24-00	Analysis Date, Available (OIA)	02-25-00
Analysis Date, Sulfate	02-24-00	Analysis Date, Amenable	02-28-00
Analysis Date, Alkalinity	02-23-00	Analysis Date, Free	02-29-00
Control Number	000287-02	Control Number	000287-02

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2	6,900	1,000	Cyanide, Amenable - 9010	nd	20
Alkalinity, as CaCO3 - 310.1	360,000	-	Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237206

Reviewed By [signature] Date 3/10/00

Data File	Kalamazoo
MW4	3.8-6.8

INORG

KR059B030202

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. LaBarge

DATE SHIPPED: 2/16/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Barnase, SME - Plymouth

PHONE: 734-454-9900

ANALYSIS REQUESTED

	CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 MT Metals	Diss. Fe	Cyanide (Free)	Bicarbonate		REMARKS
1	00-0259-1	2/15/00	1240	W	MW1	9.6-11.6	8	X	X	X	X	X	X		
1	-2		1250		MW2	6-8		X	X	X	X	X	X		
1	-3		1430		MW3	4.6-7.8		X	X	X	X	X	X		
1	-4		1050		P-3	4.8-7.8		X	X	X	X	X	X		
1	-5		1545		MW104	6.3-9.4		X	X	X	X	X	X		
1	-6		1740		MW104D	6.2-35		X	X	X	X	X	X		
	-7		—	W	EQUIPMENT BLANK	—	2	X							

00237207

KR059B030203

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	2/15/00 1900	SMO Sample Room
RELINQUISHED BY: (SIGNATURE) SMO Sample Room	DATE / TIME 2-16-00, 1:35 p.m.	RECEIVED BY: (SIGNATURE) Aaron R. Young
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MDLs & methods
- Contact Pat Barnase with Questions

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KF31823

SAMPLING TEAM: N. LARABEL

DATE SHIPPED: 2/16/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASE, SMG - PLYMOUTH, PHONE: 734-454-9500

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE	REMARKS
	2/15/00	1240	W	MW1	9.6-11.6	1	X	X	04771
		1250		MW2	6-8		X	X	72
		1430		MW3	4.6-7.8		X	X	73
		1050		P-3	4.8-7.8		X	X	74
		1545		MW104	6.3-9.4		X	X	75
		1740		MW104D	6.2-35		X	X	76
				Dup MW2					4821
				MS					22
				MSD					23
									4°C

00237208

KR059B030204

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	2/15/00 1900	SMG Sample Room
SMG Sample Room	2/16/00 1:15	[signature]
[signature]	2/16/00 3:40	[signature]

COMMENTS
- MDEQ MDLs & methods
- Contact Pat Barrase for questions
- Or Gordon Cattell @ Consumers Energy
- S.O.P. Attachment form 517-788-23

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CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE31823

SAMPLING TEAM: N. LaRasel

DATE SHIPPED: 2/17/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

ANALYSIS REQUESTED: Amoniak, CIA

PAGE 1 OF 1

SEND REPORT TO: PAT BARESE, SMB - PLYMOUTH

PHONE: 734-454-9900

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 MS metals	DRC. FR	CYANIDE (Free)	BICARBONATE	REMARKS
00-0262-1	2/16/00	0915	W	MW105	12.4-15.4	8	X	X	X	X	X	X	
-2		1200		MW105D	13.3-43.5								
-3		1040		MW102	11.9-14.9								
-4		1315		MW 101	13.8-16.9								
-5		1430		MW 101D	13.6-39.5								
-6		1710		MW 103	12.1-15.4								
-7		1545		PZ	8.9-12.1								
-8		1720		PZD	10-40								
-9	2/16/00	—	W	DUPLICATE	—	2							
-10			W	Trip Blank		1	✓						

KR059B030205

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	2/16/00 2100	Sno Sample Rec N
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	2-17-00, 10:30 a.m.	Aaron R. Young
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

00237209

COMMENTS
- MDEQ MDLs & methods
- CONTACT PAT BARESE w/ questions

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7171

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. LaCasse

DATE SHIPPED: 2/17/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

ANALYSIS REQUESTED

PAGE 1 OF 1

SEND REPORT TO: Pat Barrisse, SMG - Plymouth, PHONE: 734-454-9900

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE	REMARKS
04858	2/16/00	0915	W	MW105	12.4-15.4	1	X	X	04858 (W)
59		1200		MW105D	13.3-43.5				59
60		1040		MW102	11.9-14.9				
61		1315		MW101	13.6-16.5				
62		1430		MW101D	13.6-39.5				
63		1710		MW103	12.1-15.4				
64		1545		PZ	8.9-12.1				
65		1720		PZD	10-40				
66				DUP PZD					
67				MS PZD					
68				MSD PZD					4°C

00237210

KR059B030206

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	2/16/00 2100	SMG Sample Rec
	2/17/00 11:00	
	2/17/00 1:00	2/17

COMMENTS
- MDEQ MDNR methods
- Contact Pat Barrisse for questions
- or Brian Cattell @ Consumers 517-788-2334

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE31823

SAMPLING TEAM: N. LaRabel

DATE SHIPPED: 2/22/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Barnesse, SMG Plymouth

PHONE: 734-454-1990

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNA	Dissolved methane	Diss. Fe	CYANIDE (free)	Alkalinity		REMARKS
00-0287-1	2/22/00	0930	W	P-4	4.4-7.9	8	X	X	X	X	X	X		
↓ -2	↓	1100	↓	MW4	3.6-6.6	8	X	X	X	X	X	X		

00237211

KR059B030207

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	2/22/00, 2:40 p.m.	Aaron R. Young
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ mous & methods
- contact Pat B. w/ results

ORIGINAL TO LAB COPY TO CUSTOMER

4c, 4b

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASSO SMG PLYMOUTH

PHONE: 734-454-9900

SAMPLING TEAM: N. LABABEL

DATE SHIPPED: 2/22/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	ANALYSIS REQUESTED: NITRATE	SULFATE					REMARKS
5346	2/22/00	0930	W	P-4	4.4-7.9	1	+	+					
5347	↓	1100	↓	MW4	3.6-6.8	1	+	+					

00237212

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4°C

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	2/22/00 3:00	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	2/22/00	[signature] 2/23/00 3:00PM
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ NOLS & methods
- Contact PAT B. with Questions

ORIGINAL TO LAB COPY TO CUSTOMER

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-251, Jackson

Date: June 15, 2000

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823
- Sampling Dates of April 24 - 26, 2000

File Index: 510017-450-678
510017-450-685
510017-450-692
510017-450-704

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On April 24-27, 2000 the Chemistry Section (CHEM) of Laboratory Services received soil and groundwater samples collected at the KALAMAZOO former MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Michigan 10 Metals
Amenable, Available (OIA) and Free Cyanide

Analytical Notes: (1) All determinations were performed by CHEM. (2) The amenable cyanide determination for SP401 at 5-6 feet is reported as "indeterminate" due to the concentration of total cyanide.

Analytical results are attached for your review.

00237213

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 or parameter specific recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Aromatic Volatile Organics (BTEX) - Method 8021, Halogenated And Aromatic Volatiles By Gas Chromatography Using Electrolytic Conductivity And Photoionization Detectors In Series: Capillary Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide Soil Extraction - Method 9013, Cyanide Extraction Procedure For Solids and Oils. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Amenable - Method 9010, Total and Amenable Cyanide. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Free - Method ASTM-D4282-95, Determination Of Free Cyanide In Water And Wastewater By Micro-diffusion, ASTM.

Cyanide, Available - Method OIA-1677, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry. EPA-821-R-99-013.

ANALYTICAL METHODS

Total Metals Preparation - Soils - Method 3051, Microwave Assisted Acid Digestion Of Sediments, Sludges, Soils and Oils. SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

Total Metals Preparation – Soils (Mercury) – Method 7471, Mercury in Solid or Semisolid Waste. SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

Dissolved Metals Preparation – Waters (Mercury) – Method 7470, Mercury in Liquid Waste. SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	SW-846 Method
Arsenic	7060
Barium	6010
Cadmium	7131
Chromium	6010
Copper	6010
Iron	6010
Lead	6010
Mercury	7470/7471
Selenium	7740
Silver	6010
Zinc	6010

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP404
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	84
Preservation Date	04-24-00
Preservation Type	MeOH
Analysis Date	05-03-00
Control Number	000678-01

BTEX, Method 8021	ug/kg	TDL
Benzene	58	50
Toluene	370	50
Ethylbenzene	50	50
m/p-Xylene	410	100
o-Xylene	280	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	87	80-120

Sample Identification	SP404
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	84
Extraction Date	04-26-00
Analysis Date	05-19-00
Control Number	000678-01

PAHs, Method 8270	ug/kg	TDL
Naphthalene	950	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	1,300	330
Anthracene	1,200	330
Fluoranthene	4,900	330
Pyrene	5,200	330
Benzo(a)anthracene	4,000	330
Chrysene	990	330
Benzo(b)fluoranthene	2,200	330
Benzo(k)fluoranthene	1,100	330
Benzo(a)pyrene	1,200	330
Indeno(1,2,3-cd)pyrene	980	330
Dibenzo(a,h)anthracene	560	330
Benzo(g,h,i)perylene	990	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	82	23-120
2-Fluorobiphenyl	87	30-115
p-Terphenyl-d14	92	18-137

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00237216

Reviewed By [illegible] Date 6/15/00

Data File	Kalamazoo
SP404	1-2

ORG

KR059B030212

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP404 GW
Sample Depth, ft	4-8
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000678-02

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	102	80-120

Sample Identification	SP404 GW
Sample Depth, ft	4-8
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-25-00
Analysis Date	05-12-00
Control Number	000678-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	97	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	102	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237217

Reviewed By [illegible] Date 6/15/00

Data File	Kalamazoo
SP404 GW	4-8

ORG

KR059B030213

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP403
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	89
Preservation Date	04-24-00
Preservation Type	MeOH
Analysis Date	05-03-00
Control Number	000678-03

BTEX, Method 8021	ug/kg	TDL
Benzene	370	50
Toluene	270	50
Ethylbenzene	50	50
m/p-Xylene	410	100
o-Xylene	250	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	90	80-120

Sample Identification	SP403
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	89
Extraction Date	04-26-00
Analysis Date	05-19-00
Control Number	000678-03

PAHs, Method 8270	ug/kg	TDL
Naphthalene	620	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	1,400	330
Anthracene	1,300	330
Fluoranthene	4,400	330
Pyrene	5,100	330
Benzo(a)anthracene	3,800	330
Chrysene	1,100	330
Benzo(b)fluoranthene	3,100	330
Benzo(k)fluoranthene	1,400	330
Benzo(a)pyrene	1,200	330
Indeno(1,2,3-cd)pyrene	1,100	330
Dibenzo(a,h)anthracene	590	330
Benzo(g,h,i)perylene	1,200	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	81	23-120
2-Fluorobiphenyl	85	30-115
p-Terphenyl-d14	87	18-137

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00237218

Reviewed By [illegible] Date 6/15/00

Data File	Kalamazoo
SP403	1-2

ORG

KR059B030214

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP403 GW
Sample Depth, ft	6-10
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000678-04

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	99	80-120

Sample Identification	SP403 GW
Sample Depth, ft	6-10
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-25-00
Analysis Date	05-12-00
Control Number	000678-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	101	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237219

Reviewed By Acl Date 6/15/00

Data File	Kalamazoo
SP403 GW	6-10

ORG

KR059B030215

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP402
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	89
Preservation Date	04-24-00
Preservation Type	MeOH
Analysis Date	05-03-00
Control Number	000678-05

BTEX, Method 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	91	80-120

Sample Identification	SP402
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	89
Extraction Date	04-26-00
Analysis Date	05-19-00
Control Number	000678-05

PAHs, Method 8270	ug/kg	TDL
Naphthalene	460	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	880	330
Pyrene	1,000	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	23-120
2-Fluorobiphenyl	93	30-115
p-Terphenyl-d14	95	18-137

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00237220

Reviewed By [illegible] Date 6/15/00

Data File	Kalamazoo
SP402	1-2

ORG

KR059B030216

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP402 GW
Sample Depth, ft	7-9.5
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000678-06

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	102	80-120

Sample Identification	SP402 GW
Sample Depth, ft	7-9.5
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-25-00
Analysis Date	05-12-00
Control Number	000678-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	92	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	104	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237221

Reviewed By AL Date 6/15/00

Data File	Kalamazoo
SP402 GW	7-9.5

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KR059B030217

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP401
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	94
Preservation Date	04-24-00
Preservation Type	MeOH
Analysis Date	05-03-00
Control Number	000678-07

BTEX, Method 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	89	80-120

Sample Identification	SP401
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	94
Extraction Date	04-26-00
Analysis Date	05-19-00
Control Number	000678-07

PAHs, Method 8270	ug/kg	TDL
Naphthalene	nd	330
2-Methylnaphthalene	nd	330
Acenaphthylene	nd	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	nd	330
Anthracene	nd	330
Fluoranthene	nd	330
Pyrene	nd	330
Benzo(a)anthracene	nd	330
Chrysene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(k)fluoranthene	nd	330
Benzo(a)pyrene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	nd	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	89	23-120
2-Fluorobiphenyl	90	30-115
p-Terphenyl-d14	96	18-137

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00237222

Reviewed By [illegible] Date 6/15/00

Data File	Kalamazoo
SP401	1-2

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KR059B030218

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP401
Sample Depth, ft	5-6
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	65
Preservation Date	04-24-00
Preservation Type	MeOH
Analysis Date	05-03-00
Control Number	000678-08

BTEX, Method 8021	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	88	80-120

Sample Identification	SP401
Sample Depth, ft	5-6
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	65
Extraction Date	04-26-00
Analysis Date	05-19-00
Control Number	000678-08

PAHs, Method 8270	ug/kg	TDL
Naphthalene	5,100	330
2-Methylnaphthalene	950	330
Acenaphthylene	2,500	330
Acenaphthene	nd	330
Fluorene	nd	330
Phenanthrene	900	330
Anthracene	840	330
Fluoranthene	3,000	330
Pyrene	7,500	330
Benzo(a)anthracene	5,100	330
Chrysene	4,500	330
Benzo(b)fluoranthene	2,900	330
Benzo(k)fluoranthene	1,900	330
Benzo(a)pyrene	790	330
Indeno(1,2,3-cd)pyrene	550	330
Dibenzo(a,h)anthracene	nd	330
Benzo(g,h,i)perylene	350	330
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	23-120
2-Fluorobiphenyl	91	30-115
p-Terphenyl-d14	94	18-137

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00237223

Reviewed By [signature] Date 6/15/00

Data File	Kalamazoo
SP401	5-6

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KR059B030219

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP401 GW
Sample Depth, ft	6-8
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000678-09

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	103	80-120

Sample Identification	SP401 GW
Sample Depth, ft	6-8
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-25-00
Analysis Date	05-12-00
Control Number	000678-09

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	99	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237224

Reviewed By [illegible] Date 6/15/00

Data File	Kalamazoo
SP401 GW	6-8

ORG

KR059B030220

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	TMW201
Sample Depth, ft	8-10
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000678-10

BTEX, Method 8021	ug/L	TDL
Benzene	300	1
Toluene	11	1
Ethylbenzene	420	1
m/p-Xylene	250	1
o-Xylene	150	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	104	80-120

Sample Identification	TMW201
Sample Depth, ft	8-10
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-25-00
Analysis Date	05-12-00
Control Number	000678-10

PAHs, Method 8270	ug/L	TDL
Naphthalene	510	5
2-Methylnaphthalene	7	5
Acenaphthylene	5	5
Acenaphthene	14	5
Fluorene	5	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	94	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	98	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237225

Reviewed By [illegible] Date 6/15/00

Data File	Kalamazoo
TMW201	8-10

ORG

KR059B030221

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	TMW201
Sample Depth, ft	18-20
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000678-11

BTEX, Method 8021	ug/L	TDL
Benzene	350	1
Toluene	5	1
Ethylbenzene	26	1
m/p-Xylene	27	1
o-Xylene	13	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	104	80-120

Sample Identification	TMW201
Sample Depth, ft	18-20
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-25-00
Analysis Date	05-12-00
Control Number	000678-11

PAHs, Method 8270	ug/L	TDL
Naphthalene	10	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	93	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	97	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237226

Reviewed By [illegible] Date 6/15/00

Data File	Kalamazoo
TMW201	18-20

ORG

KR059B030222

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	TMW201
Sample Depth, ft	28-30
Sample Type	water
Sample Date	04-24-00
Received Date	04-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000685-01

BTEX, Method 8021	ug/L	TDL
Benzene	2,100	1
Toluene	3	1
Ethylbenzene	4	1
m/p-Xylene	6	1
o-Xylene	6	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	96	80-120

Sample Identification	TMW201
Sample Depth, ft	28-30
Sample Type	water
Sample Date	04-24-00
Received Date	04-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-28-00
Analysis Date	05-12-00
Control Number	000685-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	97	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	102	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237227

Reviewed By [illegible] Date 6/15/00

Data File	Kalamazoo
TMW201	28-30

ORG

KR059B030223

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	B203
Sample Depth, ft	4-6
Sample Type	water
Sample Date	04-24-00
Received Date	04-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000685-02

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
4-Bromofluorobenzene	102	80-120

Sample Identification	B203
Sample Depth, ft	4-6
Sample Type	water
Sample Date	04-24-00
Received Date	04-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-28-00
Analysis Date	05-12-00
Control Number	000685-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	97	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	98	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237228

Reviewed By [illegible] Date 6/15/00

Data File	Kalamazoo
B203	4-6

ORG

KR059B030224

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	B203
Sample Depth, ft	7-9
Sample Type	water
Sample Date	04-24-00
Received Date	04-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000685-03

BTEX, Method 8021	ug/L	TDL
Benzene	230	1
Toluene	14	1
Ethylbenzene	440	1
m/p-Xylene	360	1
o-Xylene	48	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	101	80-120

Sample Identification	B203
Sample Depth, ft	7-9
Sample Type	water
Sample Date	04-24-00
Received Date	04-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-28-00
Analysis Date	05-16-00
Control Number	000685-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	1,100	5
2-Methylnaphthalene	41	5
Acenaphthylene	<10	5
Acenaphthene	20	5
Fluorene	<10	5
Phenanthrene	<10	5
Anthracene	<10	5
Fluoranthene	<10	5
Pyrene	<10	5
Benzo(a)anthracene	<10	5
Chrysene	<10	5
Benzo(b)fluoranthene	<10	5
Benzo(k)fluoranthene	<10	5
Benzo(a)pyrene	<10	5
Indeno(1,2,3-cd)pyrene	<10	5
Dibenzo(a,h)anthracene	<10	5
Benzo(g,h,i)perylene	<10	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	dilutedout	35-114
2-Fluorobiphenyl	dilutedout	43-116
p-Terphenyl-d14	dilutedout	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237229

Reviewed By *AcP* Date 6/15/00

Data File	Kalamazoo
B203	7-9

ORG

KR059B030225

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	MW202D
Sample Depth, ft	15-20
Sample Type	water
Sample Date	04-25-00
Received Date	04-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000685-04

BTEX, Method 8021	ug/L	TDL
Benzene	28	1
Toluene	3,700	1
Ethylbenzene	2,600	1
m/p-Xylene	22,000	1
o-Xylene	9,600	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	93	80-120

Sample Identification	MW202D
Sample Depth, ft	15-20
Sample Type	water
Sample Date	04-25-00
Received Date	04-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-28-00
Analysis Date	05-16-00
Control Number	000685-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	4,100	5
2-Methylnaphthalene	150	5
Acenaphthylene	<20	5
Acenaphthene	90	5
Fluorene	<20	5
Phenanthrene	<20	5
Anthracene	<20	5
Fluoranthene	<20	5
Pyrene	<20	5
Benzo(a)anthracene	<20	5
Chrysene	<20	5
Benzo(b)fluoranthene	<20	5
Benzo(k)fluoranthene	<20	5
Benzo(a)pyrene	<20	5
Indeno(1,2,3-cd)pyrene	<20	5
Dibenzo(a,h)anthracene	<20	5
Benzo(g,h,i)perylene	<20	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	dilutedout	35-114
2-Fluorobiphenyl	dilutedout	43-116
p-Terphenyl-d14	dilutedout	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237230

Reviewed By [signature] Date 6/15/00

Data File	Kalamazoo
MW202D	15-20

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KR059B030226

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	MW202D
Sample Depth, ft	40-45
Sample Type	water
Sample Date	04-25-00
Received Date	04-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000685-05

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	160	1
Ethylbenzene	150	1
m/p-Xylene	940	1
o-Xylene	240	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	99	80-120

Sample Identification	MW202D
Sample Depth, ft	40-45
Sample Type	water
Sample Date	04-25-00
Received Date	04-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-28-00
Analysis Date	05-12-00
Control Number	000685-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	180	5
2-Methylnaphthalene	17	5
Acenaphthylene	5	5
Acenaphthene	5	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	88	35-114
2-Fluorobiphenyl	91	43-116
p-Terphenyl-d14	93	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237231

Reviewed By [signature] Date 6/15/00

Data File	Kalamazoo
MW202D	40-45

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KR059B030227

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	MW202D
Sample Depth, ft	45-50
Sample Type	water
Sample Date	04-25-00
Received Date	04-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000685-06

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	33	1
Ethylbenzene	41	1
m/p-Xylene	270	1
o-Xylene	65	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	102	80-120

Sample Identification	MW202D
Sample Depth, ft	45-50
Sample Type	water
Sample Date	04-25-00
Received Date	04-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-28-00
Analysis Date	05-12-00
Control Number	000685-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	100	5
2-Methylnaphthalene	7	5
Acenaphthylene	14	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	91	35-114
2-Fluorobiphenyl	94	43-116
p-Terphenyl-d14	97	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237232

Reviewed By [illegible] Date 6/15/00

Data File	Kalamazoo
MW202D	45-50

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KR059B030228

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	MW202D
Sample Depth, ft	50-55
Sample Type	water
Sample Date	04-25-00
Received Date	04-26-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000692-01

BTEX, Method 8021	ug/L	TDL
Benzene	3	1
Toluene	27	1
Ethylbenzene	16	1
m/p-Xylene	260	1
o-Xylene	70	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	102	80-120

Sample Identification	MW202D
Sample Depth, ft	50-55
Sample Type	water
Sample Date	04-25-00
Received Date	04-26-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-28-00
Analysis Date	05-16-00
Control Number	000692-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	2,800	5
2-Methylnaphthalene	150	5
Acenaphthylene	110	5
Acenaphthene	12	5
Fluorene	<10	5
Phenanthrene	<10	5
Anthracene	<10	5
Fluoranthene	<10	5
Pyrene	<10	5
Benzo(a)anthracene	<10	5
Chrysene	<10	5
Benzo(b)fluoranthene	<10	5
Benzo(k)fluoranthene	<10	5
Benzo(a)pyrene	<10	5
Indeno(1,2,3-cd)pyrene	<10	5
Dibenzo(a,h)anthracene	<10	5
Benzo(g,h,i)perylene	<10	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	dilutedout	35-114
2-Fluorobiphenyl	dilutedout	43-116
p-Terphenyl-d14	dilutedout	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [illegible] Date 6/15/00

Data File	Kalamazoo
MW202D	50-55

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	MW202D
Sample Depth, ft	55-60
Sample Type	water
Sample Date	04-25-00
Received Date	04-26-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000692-02

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	17	1
Ethylbenzene	24	1
m/p-Xylene	160	1
o-Xylene	37	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	99	80-120

Sample Identification	MW202D
Sample Depth, ft	55-60
Sample Type	water
Sample Date	04-25-00
Received Date	04-26-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-28-00
Analysis Date	05-12-00
Control Number	000692-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	67	5
2-Methylnaphthalene	5	5
Acenaphthylene	9	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	93	35-114
2-Fluorobiphenyl	91	43-116
p-Terphenyl-d14	96	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 6/15/00

Data File	Kalamazoo
MW202D	55-60

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KR059B030230

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	P3D	Sample Identification	P3D
Sample Depth, ft	8-13	Sample Depth, ft	8-13
Sample Type	water	Sample Type	water
Sample Date	04-26-00	Sample Date	04-26-00
Received Date	04-26-00	Received Date	04-26-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	04-28-00
Preservation Type	HCl	Analysis Date	05-12-00
Analysis Date	05-04-00		
Control Number	000692-03	Control Number	000692-03

BTEX, Method 8021	ug/L	TDL
Benzene	300	1
Toluene	22	1
Ethylbenzene	380	1
m/p-Xylene	560	1
o-Xylene	72	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	101	80-120

PAHs, Method 8270	ug/L	TDL
Naphthalene	300	5
2-Methylnaphthalene	17	5
Acenaphthylene	8	5
Acenaphthene	28	5
Fluorene	12	5
Phenanthrene	5	5
Anthracene	5	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	91	35-114
2-Fluorobiphenyl	93	43-116
p-Terphenyl-d14	99	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237235

Reviewed By [signature] Date 6/15/00

Data File	Kalamazoo
P3D	8-13

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KR059B030231

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	P3D	Sample Identification	P3D
Sample Depth, ft	13-18	Sample Depth, ft	13-18
Sample Type	water	Sample Type	water
Sample Date	04-26-00	Sample Date	04-26-00
Received Date	04-26-00	Received Date	04-26-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	04-28-00
Preservation Type	HCl	Analysis Date	05-16-00
Analysis Date	05-04-00		
Control Number	000692-04	Control Number	000692-04

BTEX, Method 8021	ug/L	TDL
Benzene	160	1
Toluene	2,100	1
Ethylbenzene	4,700	1
m/p-Xylene	3,300	1
o-Xylene	1,100	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	90	80-120

PAHs, Method 8270	ug/L	TDL
Naphthalene	1,200	5
2-Methylnaphthalene	11	5
Acenaphthylene	38	5
Acenaphthene	10	5
Fluorene	<10	5
Phenanthrene	<10	5
Anthracene	<10	5
Fluoranthene	<10	5
Pyrene	<10	5
Benzo(a)anthracene	<10	5
Chrysene	<10	5
Benzo(b)fluoranthene	<10	5
Benzo(k)fluoranthene	<10	5
Benzo(a)pyrene	<10	5
Indeno(1,2,3-cd)pyrene	<10	5
Dibenzo(a,h)anthracene	<10	5
Benzo(g,h,i)perylene	<10	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	dilutedout	35-114
2-Fluorobiphenyl	dilutedout	43-116
p-Terphenyl-d14	dilutedout	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237236

Reviewed By [signature] Date 6/15/00

Data File	Kalamazoo
P3D	13-18

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KR059B030232

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	P3D
Sample Depth, ft	18-23
Sample Type	water
Sample Date	04-26-00
Received Date	04-26-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000692-05

BTEX, Method 8021	ug/L	TDL
Benzene	270	1
Toluene	79	1
Ethylbenzene	320	1
m/p-Xylene	340	1
o-Xylene	100	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	97	80-120

Sample Identification	P3D
Sample Depth, ft	18-23
Sample Type	water
Sample Date	04-26-00
Received Date	04-26-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-28-00
Analysis Date	05-12-00
Control Number	000692-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	290	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	94	43-116
p-Terphenyl-d14	97	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 6/15/00

Data File	Kalamazoo
P3D	18-23

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	P3D
Sample Depth, ft	23-28
Sample Type	water
Sample Date	04-26-00
Received Date	04-26-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-04-00
Control Number	000692-06

BTEX, Method 8021	ug/L	TDL
Benzene	77	1
Toluene	280	1
Ethylbenzene	580	1
m/p-Xylene	560	1
o-Xylene	160	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	95	80-120

Sample Identification	P3D
Sample Depth, ft	23-28
Sample Type	water
Sample Date	04-26-00
Received Date	04-26-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-28-00
Analysis Date	05-12-00
Control Number	000692-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	240	5
2-Methylnaphthalene	nd	5
Acenaphthylene	5	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	92	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	96	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237238

Reviewed By [signature] Date 6/15/00

Data File	Kalamazoo
P3D	23-28

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	P3D	Sample Identification	P3D
Sample Depth, ft	30-35	Sample Depth, ft	30-35
Sample Type	water	Sample Type	water
Sample Date	04-26-00	Sample Date	04-26-00
Received Date	04-27-00	Received Date	04-27-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	04-28-00
Preservation Type	HCl	Analysis Date	05-12-00
Analysis Date	05-05-00		
Control Number	000704-01	Control Number	000704-01

BTEX, Method 8021	ug/L	TDL
Benzene	53	1
Toluene	15	1
Ethylbenzene	64	1
m/p-Xylene	82	1
o-Xylene	24	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	98	80-120

PAHs, Method 8270	ug/L	TDL
Naphthalene	48	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	96	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	102	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237239

Reviewed By [signature] Date 6/15/00

Data File	Kalamazoo
P3D	30-35

ORG

KR059B030235

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	P3D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	04-26-00
Received Date	04-27-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-05-00
Control Number	000704-02

BTEX, Method 8021	ug/L	TDL
Benzene	90	1
Toluene	8	1
Ethylbenzene	35	1
m/p-Xylene	50	1
o-Xylene	15	1
Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	99	80-120

Sample Identification	P3D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	04-26-00
Received Date	04-27-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	04-28-00
Analysis Date	05-12-00
Control Number	000704-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	48	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	94	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	99	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237240

Reviewed By [signature] Date 6/15/00

Data File	Kalamazoo
P3D	35-40

ORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP404
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	84
Preparation Date	05-02-00
Analysis Date, Start	04-27-00
Analysis Date, End	05-11-00
Control Number	000678-01

METALS	ug/kg	TDL
Arsenic - 7060	7,400	100
Barium - 6010	56,000	1,000
Cadmium - 7131	460	50
Chromium (total) - 6010	7,200	500
Copper - 6010	23,000	1,000
Lead - 6010	86,000	1,000
Mercury - 7470/7471	330	100
Selenium - 7740	580	200
Silver - 6010	nd	500
Zinc - 6010	68,000	1,000
Metal Results Are Reported As	Totals	Totals

Sample Identification	SP404
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	84
Extraction Date	04-26-00
Analysis Date, Amenable	04-27-00
Analysis Date, Available (OIA)	-
Analysis Date, Free	-
Control Number	000678-01

INORGANICS	ug/kg	TDL
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Available - OIA1677	-	500
Cyanide, Free - D4282/9013	-	400

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00237241

Reviewed By [illegible] Date 6/15/00

Data File	Kalamazoo
SP404	1-2

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP404 GW
Sample Depth, ft	4-8
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preparation Date	05-02-00
Analysis Date, Start	04-27-00
Analysis Date, End	05-11-00
Control Number	000678-02

METALS	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium - 6010	110	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 6010	nd	25.0
Lead - 6010	nd	3.0
Mercury - 7470/7471	nd	0.2
Selenium - 7740	nd	5.0
Silver - 6010	nd	0.5
Zinc - 6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	SP404 GW
Sample Depth, ft	4-8
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Amenable	-
Analysis Date, Available (OIA)	04-25-00
Analysis Date, Free	05-02-00
Control Number	000678-02

INORGANICS	ug/L	TDL
Cyanide, Amenable - 9010/9013	-	20
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282/9013	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237242

Reviewed By AK Date 6/15/00

Data File	Kalamazoo
SP404 GW	4-8

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP403
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	89
Preparation Date	05-02-00
Analysis Date, Start	04-27-00
Analysis Date, End	05-11-00
Control Number	000678-03

METALS	ug/kg	TDL
Arsenic - 7060	6,500	100
Barium - 6010	29,000	1,000
Cadmium - 7131	130	50
Chromium (total) - 6010	6,900	500
Copper - 6010	16,000	1,000
Lead - 6010	30,000	1,000
Mercury - 7470/7471	110	100
Selenium - 7740	280	200
Silver - 6010	nd	500
Zinc - 6010	36,000	1,000
Metal Results Are Reported As	Totals	Totals

Sample Identification	SP403
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	89
Extraction Date	04-26-00
Analysis Date, Amenable	04-27-00
Analysis Date, Available (OIA)	-
Analysis Date, Free	-
Control Number	000678-03

INORGANICS	ug/kg	TDL
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Available - OIA1677	-	500
Cyanide, Free - D4282/9013	-	400

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00237243

Reviewed By AZ Date 6/15/00

Data File	Kalamazoo
SP403	1-2

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP403 GW
Sample Depth, ft	6-10
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preparation Date	05-02-00
Analysis Date, Start	04-27-00
Analysis Date, End	05-11-00
Control Number	000678-04

METALS	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 6010	nd	25.0
Lead - 6010	nd	3.0
Mercury - 7470/7471	nd	0.2
Selenium - 7740	nd	5.0
Silver - 6010	nd	0.5
Zinc - 6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	SP403 GW
Sample Depth, ft	6-10
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Amenable	-
Analysis Date, Available (OIA)	04-25-00
Analysis Date, Free	05-02-00
Control Number	000678-04

INORGANICS	ug/L	TDL
Cyanide, Amenable - 9010/9013	-	20
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282/9013	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237244

Reviewed By AZ Date 6/15/00

Data File	Kalamazoo
SP403 GW	6-10

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP402
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	89
Preparation Date	05-02-00
Analysis Date, Start	04-27-00
Analysis Date, End	05-11-00
Control Number	000678-05

METALS	ug/kg	TDL
Arsenic - 7060	3,900	100
Barium - 6010	22,000	1,000
Cadmium - 7131	330	50
Chromium (total) - 6010	9,700	500
Copper - 6010	9,700	1,000
Lead - 6010	90,000	1,000
Mercury - 7470/7471	nd	100
Selenium - 7740	nd	200
Silver - 6010	nd	500
Zinc - 6010	37,000	1,000
Metal Results Are Reported As	Totals	Totals

Sample Identification	SP402
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	89
Extraction Date	04-26-00
Analysis Date, Amenable	04-27-00
Analysis Date, Available (OIA)	-
Analysis Date, Free	-
Control Number	000678-05

INORGANICS	ug/kg	TDL
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Available - OIA1677	-	500
Cyanide, Free - D4282/9013	-	400

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00237245

Reviewed By [signature] Date 6/15/00

Data File	Kalamazoo
SP402	1-2

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP402 GW
Sample Depth, ft	7-9.5
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preparation Date	05-02-00
Analysis Date, Start	04-27-00
Analysis Date, End	05-11-00
Control Number	000678-06

METALS	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium - 6010	130	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 6010	nd	25.0
Lead - 6010	nd	3.0
Mercury - 7470/7471	nd	0.2
Selenium - 7740	nd	5.0
Silver - 6010	nd	0.5
Zinc - 6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	SP402 GW
Sample Depth, ft	7-9.5
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Amenable	-
Analysis Date, Available (OIA)	04-25-00
Analysis Date, Free	05-02-00
Control Number	000678-06

INORGANICS	ug/L	TDL
Cyanide, Amenable - 9010/9013	-	20
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282/9013	10	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237246

Reviewed By [illegible] Date 6/15/00

Data File	Kalamazoo
SP402 GW	7-9.5

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP401
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	94
Preparation Date	05-02-00
Analysis Date, Start	04-27-00
Analysis Date, End	05-11-00
Control Number	000678-07

Sample Identification	SP401
Sample Depth, ft	1-2
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	94
Extraction Date	04-26-00
Analysis Date, Amenable	04-27-00
Analysis Date, Available (OIA)	-
Analysis Date, Free	-
Control Number	000678-07

METALS	ug/kg	TDL
Arsenic - 7060	6,300	100
Barium - 6010	11,000	1,000
Cadmium - 7131	72	50
Chromium (total) - 6010	6,600	500
Copper - 6010	7,200	1,000
Lead - 6010	14,000	1,000
Mercury - 7470/7471	nd	100
Selenium - 7740	nd	200
Silver - 6010	nd	500
Zinc - 6010	21,000	1,000
Metal Results Are Reported As	Totals	Totals

INORGANICS	ug/kg	TDL
Cyanide, Amenable - 9010/9013	nd	500
Cyanide, Available - OIA1677	-	500
Cyanide, Free - D4282/9013	-	400

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00237247

Reviewed By [illegible] Date 6/15/00

Data File	Kalamazoo
SP401	1-2

INORG

KR059B030243

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP401
Sample Depth, ft	5-6
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	65
Preparation Date	05-02-00
Analysis Date, Start	04-27-00
Analysis Date, End	05-11-00
Control Number	000678-08

Sample Identification	SP401
Sample Depth, ft	5-6
Sample Type	soil
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	65
Extraction Date	04-26-00
Analysis Date, Amenable	04-27-00
Analysis Date, Available (OIA)	-
Analysis Date, Free	-
Control Number	000678-08

METALS	ug/kg	TDL
Arsenic - 7060	26,000	100
Barium - 6010	26,000	1,000
Cadmium - 7131	58	50
Chromium (total) - 6010	3,800	500
Copper - 6010	3,800	1,000
Lead - 6010	49,000	1,000
Mercury - 7470/7471	13,000	100
Selenium - 7740	11,000	200
Silver - 6010	nd	500
Zinc - 6010	16,000	1,000
Metal Results Are Reported As	Totals	Totals

INORGANICS	ug/kg	TDL
Cyanide, Amenable - 9010/9013	indeterminate	500
Cyanide, Available - OIA1677	-	500
Cyanide, Free - D4282/9013	-	400

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00237248

Reviewed By AZL Date 6/15/00

Data File	Kalamazoo
SP401	5-6

INORG

KR059B030244

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME, Project # KE31823 - Sampling Dates of April 24-26, 2000	Project Numbers CHEM-00-0678, 00-0685, 00-0692, 00-0704

Sample Identification	SP401 GW
Sample Depth, ft	6-8
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preparation Date	05-02-00
Analysis Date, Start	04-27-00
Analysis Date, End	05-11-00
Control Number	000678-09

METALS	ug/L	TDL
Arsenic - 7060	16	5.0
Barium - 6010	210	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 6010	nd	25.0
Lead - 6010	4.0	3.0
Mercury - 7470/7471	nd	0.2
Selenium - 7740	nd	5.0
Silver - 6010	nd	0.5
Zinc - 6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	SP401 GW
Sample Depth, ft	6-8
Sample Type	water
Sample Date	04-24-00
Received Date	04-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Amenable	-
Analysis Date, Available (OIA)	04-25-00
Analysis Date, Free	05-02-00
Control Number	000678-09

INORGANICS	ug/L	TDL
Cyanide, Amenable - 9010/9013	-	20
Cyanide, Available - OIA1677	140	20
Cyanide, Free - D4282/9013	63	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237249

Reviewed By AH Date 6/15/00

Data File	Kalamazoo
SP401 GW	6-8

INORG

KR059B030245

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE31823

SAMPLING TEAM: N. LARABEL

DATE SHIPPED: 4/24/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF

SEND REPORT TO: PAT BARRASE, SME PLYMOUTH

PHONE: 734-454-920

ANALYSIS REQUESTED

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	Flammable CN	BTEX	PNAs	10 MS metals	CYANIDE	COLIFORM	CYANIDE	(FREE)	REMARKS
00-0678-1	4/24/00	0810	S	SP404	1-2	2	X	X	X	X	X		X		
-2		0830	W	SP404 GW	4-8	6		X	X	X	X		X		
-3		0940	S	SP403	1-2	2	X	X	X	X	X		X		
-4		1005	W	SP403 GW	6-10	6		X	X	X	X		X		
-5		1055	S	SP402	1-2	2	X	X	X	X	X		X		
-6		1125	W	SP402 GW	7-9.5	6		X	X	X	X		X		
-7		1215	S	SP401	1-2	2	X	X	X	X	X		X		
-8		1220	S	SP401	5-6	2	X	X	X	X					~~[illegible]~~
-9		1240	W	SP401 GW	6-8	6		X	X	X	X		X		
-10		1435	W	TMW201	8-10	3		X	X						
-11		1515	W	TMW201	18-20	3		X	X						KR059B030246

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	4-24-00, 3:00 p.m.	Aaron R. Young
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

00237250

COMMENTS
- Enviros need 48hr preserv
- MDEQ MRLs methods

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE31823

SAMPLING TEAM: N. LARABEL

DATE SHIPPED: 4/25/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARNESE SMG PLYMOUTH

PHONE: 734-454-5900

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs					REMARKS
00-0685-1	4/24/00	1635	W	TMW201 (28-30)	28-30	3	X	X					
-2		1730	W	B203 (4-6)	4-6	3	X	X					
-3		1740	W	B203 (7-9)	7-9	3	X	X					
-4	4/25/00	1315	W	MW202D (15-20)	15-20	3	X	X					
-5		1420	W	MW202D (40-45)	40-45	3	X	X					
-6		1500	W	MW202D (45-50)	45-50	3	X	X					

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[signature]	4/25/00 1515	Jason A. Young
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS: – MDEQ MOLS & Methods

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. LaRibel

DATE SHIPPED: 4/26/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Barbase, SMR-Plymouth

PHONE: 734-454-5[illegible]

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs					REMARKS
00-06921	4/26/00	1535	W	MW202D (50-55)	50-55	3	X	X					
-2	↓	1615	↓	MW202D (55-60)	55-60	3	X	X					
-3	4/26/00	1305		P-3D (8-13)	8-13	3	X	X					
-4	↓	1330		P-3D (13-18)	13-18	3	X	X					
-5	↓	1400	↓	P-3D (18-23)	18-23	3	X	X					
↓ -6	↓	1430	↓	P-3D (23-28)	23-28	3	X	X					
	↓		↓	~~P-3D (28-33)~~	~~28-33~~	~~3~~	~~X~~	~~X~~		NSR			

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RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	4/26/00 1520	Aaron R. Young
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS: – MDEQ [illegible]

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CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: 683823

SAMPLING TEAM: N. LARSEN

DATE SHIPPED: 4/27/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Barkse, SMG - Plymouth, PHONE: 734-454-9000

CPCD CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PVAS					REMARKS
00-0704-1	4/26/00	1545	W	P-3D (30-35)	30-35	3	+	+					
↓ -2	↓	1610	↓	P-3D (35-40)	35-40	3	+	+					
													KR059B030249

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[signature]	4/27/00 1215	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS: MDEQ MDCS methods

ORIGINAL TO LAB COPY TO CUSTOMER

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-251, Jackson

Date: June 15, 2000

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823
- Sampling Dates of May 22 - 24, 2000

File Index: 510017-450-877
510017-450-900

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On May 24 and 25, 2000 the Chemistry Section (CHEM) of Laboratory Services received groundwater samples collected at the KALAMAZOO former MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Michigan 10 Metals
Available (OIA) and Free Cyanide
Dissolved Iron
Nitrate
Sulfate
Alkalinity (Bicarbonate)

Analytical Note: Determinations for nitrate and sulfate were performed by Brighton Analytical, as well as a portion of the other determinations. All remaining determinations were performed by CHEM.

Analytical results are attached for your review.

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 or parameter specific recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Aromatic Volatile Organics (BTEX) - Method 8021, Halogenated And Aromatic Volatiles By Gas Chromatography Using Electrolytic Conductivity And Photoionization Detectors In Series: Capillary Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Free - Method ASTM-D4282-95, Determination Of Free Cyanide In Water And Wastewater By Micro-diffusion, ASTM.

Cyanide, Available - Method OIA-1677, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry. EPA-821-R-99-013.

Dissolved Metals Preparation – Waters (Mercury) – Method 7470, Mercury in Liquid Waste. SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	EPA Method
Arsenic	200.8, 7060
Barium	200.8, 6010
Cadmium	200.8, 7131
Chromium	200.8, 6010
Copper	200.8, 6010
Iron	200.8, 6010
Lead	200.8, 7421
Mercury	245.1, 7470
Selenium	200.8, 7740
Silver	200.8, 7761
Zinc	200.8, 6010

SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.
Methods for the Determination of Metals in Environmental Samples, USEPA, EMSL.

ANALYTICAL METHODS

Inorganic Analytes

Analyte	Test Method
Nitrate	353.2
Sulfate	375.2
Alkalinity	310.1

Methods For Chemical Analysis of Water and Wastes, USEPA, EMSL.

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P3
Sample Depth, ft	3.3-7.8
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-30-00
Control Number	000877-01

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Total Xylenes	nd	3

Surrogate Recovery	%Recovery	Criteria
opropyl Benzene	102	70-130

Sample Identification	P3
Sample Depth, ft	3.3-7.8
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	05-26-00
Analysis Date	05-26-00
Control Number	000877-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	79	43-116
p-Terphenyl-d14	-	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [illegible] Date 6/15/00

Data File	Kalamzoo
P3	3.3-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P3D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-30-00
Control Number	000877-02

BTEX, Method 8021	ug/L	TDL
Benzene	110	1
Toluene	2	1
Ethylbenzene	1	1
Total Xylenes	10	3

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	117	70-130

Sample Identification	P3D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	05-26-00
Analysis Date	05-26-00
Control Number	000877-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	22	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	77	43-116
p-Terphenyl-d14	-	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
P3D	35-40

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW2	Sample Identification	MW2
Sample Depth, ft	4.2-8	Sample Depth, ft	4.2-8
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	05-26-00
Preservation Type	HCl	Analysis Date	05-26-00
Analysis Date	05-30-00		
Control Number	000877-03	Control Number	000877-03

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Total Xylenes	nd	3

Surrogate Recovery	%Recovery	Criteria
opropyl Benzene	100	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	83	43-116
p-Terphenyl-d14	-	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW2	4.2-8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW1
Sample Depth, ft	7.9-11.6
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-31-00
Control Number	000877-04

BTEX, Method 8021	ug/L	TDL
Benzene	12	1
Toluene	1,700	1
Ethylbenzene	1,400	1
Total Xylenes	2,600	3
Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	101	70-130

Sample Identification	MW1
Sample Depth, ft	7.9-11.6
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	05-26-00
Analysis Date	05-26-00
Control Number	000877-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	260	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	73	43-116
p-Terphenyl-d14	-	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW1	7.9-11.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW105	Sample Identification	MW105
Sample Depth, ft	10.6-15.4	Sample Depth, ft	10.6-15.4
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	05-26-00
Preservation Type	HCl	Analysis Date	05-26-00
Analysis Date	05-30-00		
Control Number	000877-05	Control Number	000877-05

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Total Xylenes	nd	3

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	102	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	72	43-116
p-Terphenyl-d14	-	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW105	10.6-15.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW105D	Sample Identification	MW105D
Sample Depth, ft	38.5-43.5	Sample Depth, ft	38.5-43.5
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	05-26-00
Preservation Type	HCl	Analysis Date	05-26-00
Analysis Date	05-30-00		
Control Number	000877-06	Control Number	000877-06

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Total Xylenes	nd	3

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	99	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	73	43-116
p-Terphenyl-d14	-	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237262

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW105D	38.5-43.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW102
Sample Depth, ft	10.1-14.9
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-30-00
Control Number	000877-07

BTEX, Method 8021	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Total Xylenes	nd	3
Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	98	70-130

Sample Identification	MW102
Sample Depth, ft	10.1-14.9
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	05-26-00
Analysis Date	05-26-00
Control Number	000877-07

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	9	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	75	43-116
p-Terphenyl-d14	-	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237263

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW102	10.1-14.9

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KR059B030259

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW103	Sample Identification	MW103
Sample Depth, ft	10.5-15.4	Sample Depth, ft	10.5-15.4
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	05-26-00
Preservation Type	HCl	Analysis Date	05-26-00
Analysis Date	05-30-00		
Control Number	000877-08	Control Number	000877-08

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Total Xylenes	nd	3

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	99	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	62	43-116
p-Terphenyl-d14	-	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW103	10.5-15.4

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KR059B030260

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P1	Sample Identification	P1
Sample Depth, ft	9.3-11.1	Sample Depth, ft	9.3-11.1
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	no sample
Preservation Type	HCl	Analysis Date	no sample
Analysis Date	05-30-00		
Control Number	000877-09	Control Number	000877-09

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Total Xylenes	nd	3

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	101	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	5
Chrysene	-	5
Benzo(b)fluoranthene	-	5
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	5
Indeno(1,2,3-cd)pyrene	-	5
Dibenzo(a,h)anthracene	-	5
Benzo(g,h,i)perylene	-	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237265

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
P1	9.3-11.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW101
Sample Depth, ft	12.2-16.9
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-31-00
Control Number	000877-10

BTEX, Method 8021	ug/L	TDL
Benzene	39	1
Toluene	4,300	1
Ethylbenzene	590	1
Total Xylenes	6,600	3

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	98	70-130

Sample Identification	MW101
Sample Depth, ft	12.2-16.9
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	05-26-00
Analysis Date	05-26-00
Control Number	000877-10

PAHs, Method 8270	ug/L	TDL
Naphthalene	680	5
2-Methylnaphthalene	35	5
Acenaphthylene	nd	5
Acenaphthene	21	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	82	43-116
p-Terphenyl-d14	-	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237266

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW101	12.2-16.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-31-00
Control Number	000877-11

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	390	1
Total Xylenes	5,200	3

Surrogate Recovery	%Recovery	Criteria
opropyl Benzene	102	70-130

Sample Identification	MW101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	05-26-00
Analysis Date	05-26-00
Control Number	000877-11

PAHs, Method 8270	ug/L	TDL
Naphthalene	4,600	5
2-Methylnaphthalene	400	5
Acenaphthylene	250	5
Acenaphthene	nd	5
Fluorene	29	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	65	43-116
p-Terphenyl-d14	-	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
MW101D	34.5-39.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW202D	Sample Identification	MW202D
Sample Depth, ft	55-60	Sample Depth, ft	55-60
Sample Type	water	Sample Type	water
Sample Date	05-23-00	Sample Date	05-23-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	05-26-00
Preservation Type	HCl	Analysis Date	05-26-00
Analysis Date	06-01-00		
Control Number	000877-12	Control Number	000877-12

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Total Xylenes	5	3

Surrogate Recovery	%Recovery	Criteria
opropyl Benzene	95	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	35	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	87	43-116
p-Terphenyl-d14	-	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
MW202D	55-60

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P2
Sample Depth, ft	7.5-12
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-01-00
Control Number	000877-13

BTEX, Method 8021	ug/L	TDL
Benzene	130	1
Toluene	40	1
Ethylbenzene	30	1
Total Xylenes	450	3

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	98	70-130

Sample Identification	P2
Sample Depth, ft	7.5-12
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	05-26-00
Analysis Date	05-26-00
Control Number	000877-13

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	13	5
Fluorene	6	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	11	5
Pyrene	10	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	66	43-116
p-Terphenyl-d14	-	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [illegible] Date 6/15/00

Data File	Kalamzoo
P2	7.5-12

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P2D	Sample Identification	P2D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	05-23-00	Sample Date	05-23-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	05-26-00
Preservation Type	HCl	Analysis Date	05-26-00
Analysis Date	05-30-00		
Control Number	000877-14	Control Number	000877-14

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Total Xylenes	nd	3

Surrogate Recovery	%Recovery	Criteria
opropyl Benzene	99	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	82	43-116
p-Terphenyl-d14	-	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
P2D	35-40

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P1
Sample Depth, ft	9.2-11.1
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date	no sample
Control Number	000877-15

BTEX, Method 8021	ug/L	TDL
Benzene	-	1
Toluene	-	1
Ethylbenzene	-	1
Total Xylenes	-	3
	-	

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	-	70-130

Sample Identification	P1
Sample Depth, ft	9.2-11.1
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	05-26-00
Analysis Date	05-26-00
Control Number	000877-15

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	72	43-116
p-Terphenyl-d14	-	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237271

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
P1	9.2-11.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW201
Sample Depth, ft	3.1-7.5
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-01-00
Control Number	000877-16

BTEX, Method 8021	ug/L	TDL
Benzene	150	1
Toluene	5	1
Ethylbenzene	180	1
Total Xylenes	130	3

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	interference	70-130

Sample Identification	MW201
Sample Depth, ft	3.1-7.5
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	05-26-00
Analysis Date	05-26-00
Control Number	000877-16

PAHs, Method 8270	ug/L	TDL
Naphthalene	760	5
2-Methylnaphthalene	10	5
Acenaphthylene	nd	5
Acenaphthene	11	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	52	43-116
p-Terphenyl-d14	-	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237272

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Data File	Kalamzoo
MW201	3.1-7.5

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KR059B030268

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	Duplicate
Sample Depth, ft	-
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-31-00
Control Number	000877-17

BTEX, Method 8021	ug/L	TDL
Benzene	39	1
Toluene	4,400	1
Ethylbenzene	610	1
Total Xylenes	6,700	3
Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	98	70-130

Sample Identification	Duplicate
Sample Depth, ft	-
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date	no sample
Control Number	000877-17

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	5
Chrysene	-	5
Benzo(b)fluoranthene	-	5
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	5
Indeno(1,2,3-cd)pyrene	-	5
Dibenzo(a,h)anthracene	-	5
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
Duplicate	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-31-00
Control Number	000877-18

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Total Xylenes	nd	3

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	98	70-130

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date	no sample
Control Number	000877-18

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	5
Chrysene	-	5
Benzo(b)fluoranthene	-	5
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	5
Indeno(1,2,3-cd)pyrene	-	5
Dibenzo(a,h)anthracene	-	5
Benzo(g,h,i)perylene	-	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
Trip Blank	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW104	Sample Identification	MW104
Sample Depth, ft	4.6-9.4	Sample Depth, ft	4.6-9.4
Sample Type	water	Sample Type	water
Sample Date	05-24-00	Sample Date	05-24-00
Received Date	05-25-00	Received Date	05-25-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	05-30-00
Preservation Type	HCl	Analysis Date	06-02-00
Analysis Date	05-30-00		
Control Number	000900-01	Control Number	000900-01

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
Bromofluorobenzene	102	80-120

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	94	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	101	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
MW104	4.6-9.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW104D
Sample Depth, ft	30-35
Sample Type	water
Sample Date	05-24-00
Received Date	05-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-30-00
Control Number	000900-02

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
Bromofluorobenzene	99	80-120

Sample Identification	MW104D
Sample Depth, ft	30-35
Sample Type	water
Sample Date	05-24-00
Received Date	05-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	05-30-00
Analysis Date	06-02-00
Control Number	000900-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	91	35-114
2-Fluorobiphenyl	93	43-116
p-Terphenyl-d14	97	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237276

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW104D	30-35

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW3
Sample Depth, ft	3.2-7.8
Sample Type	water
Sample Date	05-24-00
Received Date	05-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-30-00
Control Number	000900-03

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
Bromofluorobenzene	101	80-120

Sample Identification	MW3
Sample Depth, ft	3.2-7.8
Sample Type	water
Sample Date	05-24-00
Received Date	05-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	05-30-00
Analysis Date	06-02-00
Control Number	000900-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	93	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	102	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [illegible] Date 6/15/00

Data File	Kalamzoo
MW3	3.2-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW4
Sample Depth, ft	2.5-6.9
Sample Type	water
Sample Date	05-24-00
Received Date	05-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	05-30-00
Control Number	000900-04

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
Bromofluorobenzene	101	80-120

Sample Identification	MW4
Sample Depth, ft	2.5-6.9
Sample Type	water
Sample Date	05-24-00
Received Date	05-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	05-30-00
Analysis Date	06-02-00
Control Number	000900-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	94	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	98	33-141

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW4	2.5-6.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P4	Sample Identification	P4
Sample Depth, ft	3.3-7.9	Sample Depth, ft	3.3-7.9
Sample Type	water	Sample Type	water
Sample Date	05-24-00	Sample Date	05-24-00
Received Date	05-25-00	Received Date	05-25-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	05-30-00
Preservation Type	HCl	Analysis Date	06-02-00
Analysis Date	05-30-00		
Control Number	000900-05	Control Number	000900-05

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
Bromofluorobenzene	103	80-120

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	93	35-114
2-Fluorobiphenyl	94	43-116
p-Terphenyl-d14	101	33-141

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
P4	3.3-7.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P3	Sample Identification	P3
Sample Depth, ft	3.3-7.8	Sample Depth, ft	3.3-7.8
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000877-01	Control Number	000877-01

METALS	ug/L	TDL
Arsenic - 200.8,7060	nd	5.0
Barium - 200.8,6010	nd	100.0
Cadmium - 200.8,7131	0.5	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
ead - 200.8,7421	nd	3.0
ercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	77	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	190	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	210	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
P3	3.3-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P3D	Sample Identification	P3D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000877-02	Control Number	000877-02

METALS	ug/L	TDL
Arsenic - 200.8,7060	27	5.0
Barium - 200.8,6010	190	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
Lead - 200.8,7421	nd	3.0
Mercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	30	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	6,000	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
P3D	35-40

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW2	Sample Identification	MW2
Sample Depth, ft	4.2-8	Sample Depth, ft	4.2-8
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000877-03	Control Number	000877-03

METALS	ug/L	TDL
Arsenic - 200.8,7060	nd	5.0
Barium - 200.8,6010	nd	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
' ead - 200.8,7421	nd	3.0
,ercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	30	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	350	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [illegible] Date 6/15/00

Data File	Kalamzoo
MW2	4.2-8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW1	Sample Identification	MW1
Sample Depth, ft	7.9-11.6	Sample Depth, ft	7.9-11.6
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000877-04	Control Number	000877-04

METALS	ug/L	TDL
Arsenic - 200.8,7060	nd	5.0
Barium - 200.8,6010	160	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
Lead - 200.8,7421	nd	3.0
Mercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	4,700	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [illegible] Date 6/15/00

Data File	Kalamzoo
MW1	7.9-11.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW105	Sample Identification	MW105
Sample Depth, ft	10.6-15.4	Sample Depth, ft	10.6-15.4
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000877-05	Control Number	000877-05

METALS	ug/L	TDL
Arsenic - 200.8,7060	nd	5.0
Barium - 200.8,6010	nd	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
Lead - 200.8,7421	nd	3.0
Mercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	160	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	150	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237284

Reviewed By *MC* Date 6/15/00

Data File	Kalamzoo
MW105	10.6-15.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW105D	Sample Identification	MW105D
Sample Depth, ft	38.5-43.5	Sample Depth, ft	38.5-43.5
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000877-06	Control Number	000877-06

METALS	ug/L	TDL
Arsenic - 200.8,7060	nd	5.0
Barium - 200.8,6010	150	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
Lead - 200.8,7421	nd	3.0
Mercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	210	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	540	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237285

Reviewed By [illegible] Date 6/15/00

Data File	Kalamzoo
MW105D	38.5-43.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW102
Sample Depth, ft	10.1-14.9
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00
Analysis Date, Start	06-02-00
Analysis Date, End	06-02-00
Control Number	000877-07

METALS	ug/L	TDL
Arsenic - 200.8,7060	nd	5.0
Barium - 200.8,6010	nd	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
' ead - 200.8,7421	nd	3.0
ercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW102
Sample Depth, ft	10.1-14.9
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date	06-02-00
Control Number	000877-07

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	nd	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
MW102	10.1-14.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW103	Sample Identification	MW103
Sample Depth, ft	10.5-15.4	Sample Depth, ft	10.5-15.4
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000877-08	Control Number	000877-08

METALS	ug/L	TDL
Arsenic - 200.8,7060	11	5.0
Barium - 200.8,6010	160	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
' ead - 200.8,7421	nd	3.0
ercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	36	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	370	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW103	10.5-15.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P1	Sample Identification	P1
Sample Depth, ft	9.3-11.1	Sample Depth, ft	9.3-11.1
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	no sample	Preparation Date	no sample
Analysis Date, Start	no sample	Analysis Date	no sample
Analysis Date, End	no sample		
Control Number	000877-09	Control Number	000877-09

METALS	ug/L	TDL
Arsenic - 200.8,7060	-	5.0
Barium - 200.8,6010	-	100.0
Cadmium - 200.8,7131	-	0.5
Chromium (total) - 200.8,6010	-	5.0
Copper - 200.8,6010	-	25.0
ead - 200.8,7421	-	3.0
ercury - 245.1,7470	-	0.2
Selenium - 200.8,7740	-	5.0
Silver - 200.8,7761	-	0.5
Zinc - 200.8,6010	-	20.0
Metal Results Are Reported As	-	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	-	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
P1	9.3-11.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW101	Sample Identification	MW101
Sample Depth, ft	12.2-16.9	Sample Depth, ft	12.2-16.9
Sample Type	water	Sample Type	water
Sample Date	05-23-00	Sample Date	05-23-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000877-10	Control Number	000877-10

METALS	ug/L	TDL
Arsenic - 200.8,7060	6.0	5.0
Barium - 200.8,6010	230	100.0
Cadmium - 200.8,7131	0.5	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
Lead - 200.8,7421	nd	3.0
Mercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	15	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	1,700	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237289

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW101	12.2-16.9

INORG

KR059B030285

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW101D	Sample Identification	MW101D
Sample Depth, ft	34.5-39.5	Sample Depth, ft	34.5-39.5
Sample Type	water	Sample Type	water
Sample Date	05-23-00	Sample Date	05-23-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000877-11	Control Number	000877-11

METALS	ug/L	TDL
Arsenic - 200.8,7060	23	5.0
Barium - 200.8,6010	430	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
Lead - 200.8,7421	nd	3.0
Mercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	3,000	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237290

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Data File	Kalamzoo
MW101D	34.5-39.5

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW202D	Sample Identification	MW202D
Sample Depth, ft	55-60	Sample Depth, ft	55-60
Sample Type	water	Sample Type	water
Sample Date	05-23-00	Sample Date	05-23-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000877-12	Control Number	000877-12

METALS	ug/L	TDL
Arsenic - 200.8,7060	nd	5.0
Barium - 200.8,6010	170	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
' ead - 200.8,7421	nd	3.0
lercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	310	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
MW202D	55-60

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P2	Sample Identification	P2
Sample Depth, ft	7.5-12	Sample Depth, ft	7.5-12
Sample Type	water	Sample Type	water
Sample Date	05-23-00	Sample Date	05-23-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000877-13	Control Number	000877-13

METALS	ug/L	TDL
Arsenic - 200.8,7060	8.0	5.0
Barium - 200.8,6010	nd	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	5.0	5.0
Copper - 200.8,6010	nd	25.0
' ead - 200.8,7421	nd	3.0
ercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	12,000	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
P2	7.5-12

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P2D	Sample Identification	P2D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	05-23-00	Sample Date	05-23-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000877-14	Control Number	000877-14

METALS	ug/L	TDL	METALS	ug/L	TDL
Arsenic - 200.8,7060	5.0	5.0	Iron (dissolved) - 200.8, 6010	3,100	100
Barium - 200.8,6010	nd	100.0			
Cadmium - 200.8,7131	nd	0.5			
Chromium (total) - 200.8,6010	nd	5.0			
Copper - 200.8,6010	nd	25.0			
Lead - 200.8,7421	nd	3.0			
Mercury - 245.1,7470	nd	0.2			
Selenium - 200.8,7740	nd	5.0			
Silver - 200.8,7761	nd	0.5			
Zinc - 200.8,6010	nd	20.0			
Metal Results Are Reported As	Dissolved	Dissolved			

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
P2D	35-40

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P1	Sample Identification	P1
Sample Depth, ft	9.2-11.1	Sample Depth, ft	9.2-11.1
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000877-15	Control Number	000877-15

METALS	ug/L	TDL
Arsenic - 200.8,7060	nd	5.0
Barium - 200.8,6010	100	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	8.0	5.0
Copper - 200.8,6010	nd	25.0
ead - 200.8,7421	nd	3.0
lercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	380	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
P1	9.2-11.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW201	Sample Identification	MW201
Sample Depth, ft	3.1-7.5	Sample Depth, ft	3.1-7.5
Sample Type	water	Sample Type	water
Sample Date	05-23-00	Sample Date	05-23-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000877-16	Control Number	000877-16

METALS	ug/L	TDL
Arsenic - 200.8,7060	nd	5.0
Barium - 200.8,6010	200	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
' ead - 200.8,7421	nd	3.0
,ercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	4,600	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
MW201	3.1-7.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	Duplicate	Sample Identification	Duplicate
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	05-23-00	Sample Date	05-23-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	no sample	Preparation Date	no sample
Analysis Date, Start	no sample	Analysis Date	no sample
Analysis Date, End	no sample		
Control Number	000877-17	Control Number	000877-17

METALS	ug/L	TDL	METALS	ug/L	TDL
Arsenic - 200.8,7060	-	5.0	Iron (dissolved) - 200.8, 6010	-	100
Barium - 200.8,6010	-	100.0			
Cadmium - 200.8,7131	-	0.5			
Chromium (total) - 200.8,6010	-	5.0			
Copper - 200.8,6010	-	25.0			
Lead - 200.8,7421	-	3.0			
Mercury - 245.1,7470	-	0.2			
Selenium - 200.8,7740	-	5.0			
Silver - 200.8,7761	-	0.5			
Zinc - 200.8,6010	-	20.0			
Metal Results Are Reported As	-	Dissolved			

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
Duplicate	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preparation Date (Hg)	no sample
Analysis Date, Start	no sample
Analysis Date, End	no sample
Control Number	000877-18

METALS	ug/L	TDL
Arsenic - 200.8,7060	-	5.0
Barium - 200.8,6010	-	100.0
Cadmium - 200.8,7131	-	0.5
Chromium (total) - 200.8,6010	-	5.0
Copper - 200.8,6010	-	25.0
Lead - 200.8,7421	-	3.0
Mercury - 245.1,7470	-	0.2
Selenium - 200.8,7740	-	5.0
Silver - 200.8,7761	-	0.5
Zinc - 200.8,6010	-	20.0
Metal Results Are Reported As	-	Dissolved

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preparation Date	no sample
Analysis Date	no sample
Control Number	000877-18

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	-	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
Trip Blank	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW104	Sample Identification	MW104
Sample Depth, ft	4.6-9.4	Sample Depth, ft	4.6-9.4
Sample Type	water	Sample Type	water
Sample Date	05-24-00	Sample Date	05-24-00
Received Date	05-25-00	Received Date	05-25-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-09-00		
Control Number	000900-01	Control Number	000900-01

METALS	ug/L	TDL
Arsenic - 200.8,7060	nd	5.0
Barium - 200.8,6010	420	100.0
Cadmium - 200.8,7131	0.8	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
' ead - 200.8,7421	nd	3.0
,ercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	400	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	4,700	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237298

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Data File	Kalamzoo
MW104	4.6-9.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW104D	Sample Identification	MW104D
Sample Depth, ft	30-35	Sample Depth, ft	30-35
Sample Type	water	Sample Type	water
Sample Date	05-24-00	Sample Date	05-24-00
Received Date	05-25-00	Received Date	05-25-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000900-02	Control Number	000900-02

METALS	ug/L	TDL
Arsenic - 200.8,7060	27	5.0
Barium - 200.8,6010	250	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
ead - 200.8,7421	nd	3.0
lercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	5,700	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237299

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Data File	Kalamzoo
MW104D	30-35

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW3	Sample Identification	MW3
Sample Depth, ft	3.2-7.8	Sample Depth, ft	3.2-7.8
Sample Type	water	Sample Type	water
Sample Date	05-24-00	Sample Date	05-24-00
Received Date	05-25-00	Received Date	05-25-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000900-03	Control Number	000900-03

METALS	ug/L	TDL
Arsenic - 200.8,7060	nd	5.0
Barium - 200.8,6010	nd	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
ead - 200.8,7421	nd	3.0
Mercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	nd	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
MW3	3.2-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW4	Sample Identification	MW4
Sample Depth, ft	2.5-6.9	Sample Depth, ft	2.5-6.9
Sample Type	water	Sample Type	water
Sample Date	05-24-00	Sample Date	05-24-00
Received Date	05-25-00	Received Date	05-25-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	*06-02-00*	*Preparation Date*	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000900-04	Control Number	000900-04

METALS	ug/L	TDL
Arsenic - 200.8,7060	nd	5.0
Barium - 200.8,6010	nd	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
Lead - 200.8,7421	nd	3.0
Mercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	5,900	100

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237301

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Data File	Kalamzoo
MW4	2.5-6.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P4	Sample Identification	P4
Sample Depth, ft	3.3-7.9	Sample Depth, ft	3.3-7.9
Sample Type	water	Sample Type	water
Sample Date	05-24-00	Sample Date	05-24-00
Received Date	05-25-00	Received Date	05-25-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-02-00	Preparation Date	-
Analysis Date, Start	06-02-00	Analysis Date	06-02-00
Analysis Date, End	06-02-00		
Control Number	000900-05	Control Number	000900-05

METALS	ug/L	TDL
Arsenic - 200.8,7060	nd	5.0
Barium - 200.8,6010	nd	100.0
Cadmium - 200.8,7131	nd	0.5
Chromium (total) - 200.8,6010	nd	5.0
Copper - 200.8,6010	nd	25.0
' ead - 200.8,7421	nd	3.0
ercury - 245.1,7470	nd	0.2
Selenium - 200.8,7740	nd	5.0
Silver - 200.8,7761	nd	0.5
Zinc - 200.8,6010	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8, 6010	nd	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamzoo
P4	3.3-7.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P3	Sample Identification	P3
Sample Depth, ft	3.3-7.8	Sample Depth, ft	3.3-7.8
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	05-25-00	Analysis Date, Available (OIA)	05-26-00
Analysis Date, Sulfate	05-25-00	Analysis Date, Free	06-01-00
Analysis Date, Alkalinity	05-26-00		
Control Number	000877-01	Control Number	000877-01

INORGANICS	ug/L	TDL
Nitrate - 353.2	3,200	100
Sulfate - 375.2	76,000	1,000
Alkalinity, as CaCO3 - 310.1	400,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237303

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
P3	3.3-7.8

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P3D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	05-25-00
Analysis Date, Sulfate	05-25-00
Analysis Date, Alkalinity	05-26-00
Control Number	000877-02

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2	nd	1,000
Alkalinity, as CaCO3 - 310.1	320,000	-

Sample Identification	P3D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Available (OIA)	05-26-00
Analysis Date, Free	06-01-00
Control Number	000877-02

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237304

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
P3D	35-40

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW2
Sample Depth, ft	4.2-8
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	05-25-00
Analysis Date, Sulfate	05-25-00
Analysis Date, Alkalinity	05-26-00
Control Number	000877-03

INORGANICS	ug/L	TDL
Nitrate - 353.2	1,100	100
Sulfate - 375.2	410,000	1,000
Alkalinity, as CaCO3 - 310.1	130,000	-

Sample Identification	MW2
Sample Depth, ft	4.2-8
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Available (OIA)	05-26-00
Analysis Date, Free	06-01-00
Control Number	000877-03

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237305

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW2	4.2-8

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW1	Sample Identification	MW1
Sample Depth, ft	7.9-11.6	Sample Depth, ft	7.9-11.6
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	05-25-00	Analysis Date, Available (OIA)	05-26-00
Analysis Date, Sulfate	05-25-00	Analysis Date, Free	06-01-00
Analysis Date, Alkalinity	05-26-00		
Control Number	000877-04	Control Number	000877-04

INORGANICS	ug/L	TDL
Nitrate - 353.2	160	100
Sulfate - 375.2	110,000	1,000
Alkalinity, as CaCO3 - 310.1	470,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237306

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW1	7.9-11.6

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW105
Sample Depth, ft	10.6-15.4
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	05-25-00
Analysis Date, Sulfate	05-25-00
Analysis Date, Alkalinity	05-26-00
Control Number	000877-05

INORGANICS	ug/L	TDL
Nitrate - 353.2	1,400	100
Sulfate - 375.2	51,000	1,000
Alkalinity, as CaCO3 - 310.1	370,000	-

Sample Identification	MW105
Sample Depth, ft	10.6-15.4
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Available (OIA)	05-26-00
Analysis Date, Free	06-01-00
Control Number	000877-05

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237307

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW105	10.6-15.4

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW105D	Sample Identification	MW105D
Sample Depth, ft	38.5-43.5	Sample Depth, ft	38.5-43.5
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	05-25-00	Analysis Date, Available (OIA)	05-26-00
Analysis Date, Sulfate	05-25-00	Analysis Date, Free	06-01-00
Analysis Date, Alkalinity	05-26-00		
Control Number	000877-06	Control Number	000877-06

INORGANICS	ug/L	TDL
Nitrate - 353.2	640	100
Sulfate - 375.2	76,000	1,000
Alkalinity, as CaCO3 - 310.1	380,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237308

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW105D	38.5-43.5

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW102
Sample Depth, ft	10.1-14.9
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	05-25-00
Analysis Date, Sulfate	05-25-00
Analysis Date, Alkalinity	05-26-00
Control Number	000877-07

INORGANICS	ug/L	TDL
Nitrate - 353.2	1,300	100
Sulfate - 375.2	38,000	1,000
Alkalinity, as CaCO3 - 310.1	280,000	-

Sample Identification	MW102
Sample Depth, ft	10.1-14.9
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Available (OIA)	05-26-00
Analysis Date, Free	06-01-00
Control Number	000877-07

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237309

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW102	10.1-14.9

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW103	Sample Identification	MW103
Sample Depth, ft	10.5-15.4	Sample Depth, ft	10.5-15.4
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	05-25-00	Analysis Date, Available (OIA)	05-26-00
Analysis Date, Sulfate	05-25-00	Analysis Date, Free	06-01-00
Analysis Date, Alkalinity	05-26-00		
Control Number	000877-08	Control Number	000877-08

INORGANICS	ug/L	TDL
Nitrate - 353.2	2,500	100
Sulfate - 375.2	58,000	1,000
Alkalinity, as CaCO3 - 310.1	410,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237310

Reviewed By MU Date 9/5/00

Data File	Kalamzoo
MW103	10.5-15.4

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	no sample
Analysis Date, Nitrate	no sample
Analysis Date, Sulfate	no sample
Analysis Date, Alkalinity	no sample
Control Number	000877-09

INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100
Sulfate - 375.2	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

Sample Identification	P1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	05-22-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date, Available (OIA)	no sample
Analysis Date, Free	no sample
Control Number	000877-09

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237311

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
P1	9.3-11.1

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW101	Sample Identification	MW101
Sample Depth, ft	12.2-16.9	Sample Depth, ft	12.2-16.9
Sample Type	water	Sample Type	water
Sample Date	05-23-00	Sample Date	05-23-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	05-25-00	Analysis Date, Available (OIA)	05-26-00
Analysis Date, Sulfate	05-25-00	Analysis Date, Free	06-01-00
Analysis Date, Alkalinity	05-26-00		
Control Number	000877-10	Control Number	000877-10

INORGANICS	ug/L	TDL
Nitrate - 353.2	4,500	100
Sulfate - 375.2	70,000	1,000
Alkalinity, as CaCO3 - 310.1	490,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237312

Reviewed By [illegible] Date 6/15/00

Data File	Kalamzoo
MW101	12.2-16.9

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	05-25-00
Analysis Date, Sulfate	05-25-00
Analysis Date, Alkalinity	05-26-00
Control Number	000877-11

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2	15,000	1,000
Alkalinity, as CaCO3 - 310.1	410,000	-

Sample Identification	MW101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Available (OIA)	05-26-00
Analysis Date, Free	06-01-00
Control Number	000877-11

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237313

Reviewed By [illegible] Date 6/15/00

Data File	Kalamzoo
MW101D	34.5-39.5

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW202D	Sample Identification	MW202D
Sample Depth, ft	55-60	Sample Depth, ft	55-60
Sample Type	water	Sample Type	water
Sample Date	05-23-00	Sample Date	05-23-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	05-25-00	Analysis Date, Available (OIA)	05-26-00
Analysis Date, Sulfate	05-25-00	Analysis Date, Free	06-01-00
Analysis Date, Alkalinity	05-26-00		
Control Number	000877-12	Control Number	000877-12

INORGANICS	ug/L	TDL
Nitrate - 353.2	560	100
Sulfate - 375.2	66,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237314

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW202D	55-60

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P2
Sample Depth, ft	7.5-12
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	05-25-00
Analysis Date, Sulfate	05-25-00
Analysis Date, Alkalinity	05-26-00
Control Number	000877-13

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2	47,000	1,000
Alkalinity, as CaCO3 - 310.1	360,000	-

Sample Identification	P2
Sample Depth, ft	7.5-12
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Available (OIA)	05-26-00
Analysis Date, Free	06-01-00
Control Number	000877-13

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237315

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
P2	7.5-12

INORG

KR059B030311

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P2D	Sample Identification	P2D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	05-23-00	Sample Date	05-23-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	05-25-00	Analysis Date, Available (OIA)	05-26-00
Analysis Date, Sulfate	05-25-00	Analysis Date, Free	06-01-00
Analysis Date, Alkalinity	05-26-00		
Control Number	000877-14	Control Number	000877-14

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2	93,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237316

Reviewed By [illegible] Date 6/15/00

Data File	Kalamzoo
P2D	35-40

INORG

KR059B030312

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P1	Sample Identification	P1
Sample Depth, ft	9.2-11.1	Sample Depth, ft	9.2-11.1
Sample Type	water	Sample Type	water
Sample Date	05-22-00	Sample Date	05-22-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	05-25-00	Analysis Date, Available (OIA)	05-26-00
Analysis Date, Sulfate	05-25-00	Analysis Date, Free	06-01-00
Analysis Date, Alkalinity	05-26-00		
Control Number	000877-15	Control Number	000877-15

INORGANICS	ug/L	TDL
Nitrate - 353.2	7,200	100
Sulfate - 375.2	84,000	1,000
Alkalinity, as CaCO3 - 310.1	320,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237317

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
P1	9.2-11.1

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW201	Sample Identification	MW201
Sample Depth, ft	3.1-7.5	Sample Depth, ft	3.1-7.5
Sample Type	water	Sample Type	water
Sample Date	05-23-00	Sample Date	05-23-00
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	05-25-00	Analysis Date, Available (OIA)	05-26-00
Analysis Date, Sulfate	05-25-00	Analysis Date, Free	06-01-00
Analysis Date, Alkalinity	05-26-00		
Control Number	000877-16	Control Number	000877-16

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2	34,000	1,000
Alkalinity, as CaCO3 - 310.1	490,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237318

Reviewed By [illegible] Date 6/15/00

Data File	Kalamzoo
MW201	3.1-7.5

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	Duplicate
Sample Depth, ft	-
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	no sample
Analysis Date, Nitrate	no sample
Analysis Date, Sulfate	no sample
Analysis Date, Alkalinity	no sample
Control Number	000877-17

INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100
Sulfate - 375.2	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

Sample Identification	Duplicate
Sample Depth, ft	-
Sample Type	water
Sample Date	05-23-00
Received Date	05-24-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date, Available (OIA)	no sample
Analysis Date, Free	no sample
Control Number	000877-17

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237319

Reviewed By [illegible] Date 6/15/00

Data File	Kalamzoo
Duplicate	-

INORG

KR059B030315

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	Trip Blank	Sample Identification	Trip Blank
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	-	Sample Date	-
Received Date	05-24-00	Received Date	05-24-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	no sample	Extraction Date	no sample
Analysis Date, Nitrate	no sample	Analysis Date, Available (OIA)	no sample
Analysis Date, Sulfate	no sample	Analysis Date, Free	no sample
Analysis Date, Alkalinity	no sample		
Control Number	000877-18	Control Number	000877-18

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100	Cyanide, Available - OIA1677	-	20
Sulfate - 375.2	-	1,000	Cyanide, Free - D4282	-	10
Alkalinity, as CaCO3 - 310.1	-	-			

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237320

Reviewed By [illegible] Date 6/15-00

Data File	Kalamzoo
Trip Blank	-

INORG

KR059B030316

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW104
Sample Depth, ft	4.6-9.4
Sample Type	water
Sample Date	05-24-00
Received Date	05-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	05-26-00
Analysis Date, Sulfate	05-26-00
Analysis Date, Alkalinity	05-26-00
Control Number	000900-01

INORGANICS	ug/L	TDL
Nitrate - 353.2	220	100
Sulfate - 375.2	43,000	1,000
Alkalinity, as CaCO3 - 310.1	440,000	-

Sample Identification	MW104
Sample Depth, ft	4.6-9.4
Sample Type	water
Sample Date	05-24-00
Received Date	05-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Available (OIA)	05-26-00
Analysis Date, Free	06-01-00
Control Number	000900-01

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237321

Reviewed By [illegible] Date 6/15/00

Data File	Kalamzoo
MW104	4.6-9.4

INORG

KR059B030317

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW104D
Sample Depth, ft	30-35
Sample Type	water
Sample Date	05-24-00
Received Date	05-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	05-26-00
Analysis Date, Sulfate	05-26-00
Analysis Date, Alkalinity	05-26-00
Control Number	000900-02

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2	71,000	1,000
Alkalinity, as CaCO3 - 310.1	320,000	-

Sample Identification	MW104D
Sample Depth, ft	30-35
Sample Type	water
Sample Date	05-24-00
Received Date	05-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Available (OIA)	05-26-00
Analysis Date, Free	06-01-00
Control Number	000900-02

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237322

Reviewed By [illegible] Date 6/15/00

Data File	Kalamzoo
MW104D	30-35

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW3	Sample Identification	MW3
Sample Depth, ft	3.2-7.8	Sample Depth, ft	3.2-7.8
Sample Type	water	Sample Type	water
Sample Date	05-24-00	Sample Date	05-24-00
Received Date	05-25-00	Received Date	05-25-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	05-26-00	Analysis Date, Available (OIA)	05-26-00
Analysis Date, Sulfate	05-26-00	Analysis Date, Free	06-01-00
Analysis Date, Alkalinity	05-26-00		
Control Number	000900-03	Control Number	000900-03

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2	26,000	1,000
Alkalinity, as CaCO3 - 310.1	230,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237323

Reviewed By [illegible] Date 6/15/00

Data File	Kalamzoo
MW3	3.2-7.8

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	MW4
Sample Depth, ft	2.5-6.9
Sample Type	water
Sample Date	05-24-00
Received Date	05-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	05-26-00
Analysis Date, Sulfate	05-26-00
Analysis Date, Alkalinity	05-26-00
Control Number	000900-04

INORGANICS	ug/L	TDL
Nitrate - 353.2	230	100
Sulfate - 375.2	22,000	1,000
Alkalinity, as CaCO3 - 310.1	410,000	-

Sample Identification	MW4
Sample Depth, ft	2.5-6.9
Sample Type	water
Sample Date	05-24-00
Received Date	05-25-00
Report Date	06-15-00
Percent Solids, %w/w	-
Extraction Date	-
Analysis Date, Available (OIA)	05-26-00
Analysis Date, Free	06-01-00
Control Number	000900-04

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237324

Reviewed By [signature] Date 6/15/00

Data File	Kalamzoo
MW4	2.5-6.9

INORG

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of May 22-24, 2000	Project Number CHEM-00-0877 CHEM-00-0900

Sample Identification	P4	Sample Identification	P4
Sample Depth, ft	3.3-7.9	Sample Depth, ft	3.3-7.9
Sample Type	water	Sample Type	water
Sample Date	05-24-00	Sample Date	05-24-00
Received Date	05-25-00	Received Date	05-25-00
Report Date	06-15-00	Report Date	06-15-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	05-26-00	Analysis Date, Available (OIA)	05-26-00
Analysis Date, Sulfate	05-26-00	Analysis Date, Free	06-01-00
Analysis Date, Alkalinity	05-26-00		
Control Number	000900-05	Control Number	000900-05

INORGANICS	ug/L	TDL
Nitrate - 353.2	430	100
Sulfate - 375.2	37,000	1,000
Alkalinity, as CaCO3 - 310.1	390,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00237325

Reviewed By [illegible] Date 6/15/00

Data File	Kalamzoo
P4	3.3-7.9

INORG

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CHAIN OF CUSTODY

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Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1404

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: K631023

SAMPLING TEAM: N. LaBasse

DATE SHIPPED: 5/23/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Barasse, SMG - Plymouth

PHONE: 734-459-7100

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAHs	10 met metals	TPH	Cyanide (Free)	(O.A)	Bicarbonate (Alkalinity)	REMARKS
CO-0877-1	5/22/00	1025	W	P3	3.3-7.8	8	X	X	X	X	X	X	X	
-2		1400		P3D	35-40									
-3		1200		MW2	4.2-8									
-4		1350		MW1	7.9-11.6									
-5		1730		MW 105	10.6-15.4									
-6		1915		MW 105D	38.5-43.5									
-7		1545		MW 102	10.1-14.9									
-8		1845		MW 103	10.5-15.4		X	X	X	X	X	X	X	
-9		1630		P-1	9.3-11.1	2	X							

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00237326

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	5/22/00	Sue Sample Rec
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	5-24-00 9:46 a.m.	Aaron M. Young
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MDCS a methods
- Contact Pat Barasse w/ info

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CHAIN OF CUSTODY

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135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KS 31823

SAMPLING TEAM: N. Carrel

DATE SHIPPED: 5/24/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Barrese, SME Plymouth, PHONE: 734-454-99

ANALYSIS REQUESTED: BTEX, BNAs, 10 AT metals, Cyanide, Alkalinity, Iron

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	BNAs	10 AT metals	Cyanide	Alkalinity	Iron	REMARKS
00-0877-10	5/23/00	0815	W	MW101	12.2-16.9	8	✓	✓	✓	✓	X	X	
-11		1050		MW101D	34.5-39.5								
-12		1130		MW202D	55-60								
-13		1240		PZ	7.5-12								
-14	5/23/00	1430		PZD	35-40								
-15	5/22/00	1630		P1	4.2-11.1	6		X	X	X	X	X	
-16	5/23/00	1545		MW201	3.1-7.5	8	X	X	X	X	X	X	
-17	5/23	—	W	Duplicate	—	2	X						
-18	—	—	W	A.4. Trip Blank	—	1	X						

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RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	5/23/00 1700	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	5-24-00 9:40 a.m.	Aaron R. Young
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

00237327

COMMENTS: MDEQ MALS method

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CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
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Consumers Energy

43501

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-~~1251~~ 2334 • FAX (517) 788-~~1104~~ 2533

SAMPLING SITE: Kalamazoo Former MGP

PROJECT NUMBER: 510017-450-877

SAMPLING TEAM: ——

DATE SHIPPED: 5/25/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 2

SEND REPORT TO: GL Cotter

PHONE: 517-788-2334

ANALYSIS REQUESTED

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX (8021)	PAH (8310)	MI 10 metals (DXX)	Iron (DXX)				REMARKS
00-0877-1	5/25/00	—	Aq.	P3	—	4 ea.	✓	✓	✓	✓				AT 3384
-2				P3D			✓	✓	✓	✓				85
-3				MW2			✓	✓	✓	✓				86
-4				MW1			✓	✓	✓	✓				87
-5				MW105			✓	✓	✓	✓				88
-6				MW105D			✓	✓	✓	✓				89
-7				MW102			✓	✓	✓	✓				90
-8				MW103			✓	✓	✓	✓				91
-9				P-1		~~3~~ 2 ea A.4.	✓	NO	NO	NO				92
-10	5/23/00			MW101			✓	✓	✓	✓				93
-11				MW101D			✓	✓	✓	✓				94
-12				MW202D			✓	✓	✓	✓				95

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Aaron R. Young	5-25-00, 2:30 p.m.	Laurie Reed
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

00237328

COMMENTS
- use MDEQ Mem. 6, Rev. 5 TALs
- metals were field filtered & preserved
- pick one for matrix spike / spike dup. / ~~Triplicate~~ JCC
- Routine turnaround

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy 43501

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo Former MGP

PROJECT NUMBER: 510017-450-877

SAMPLING TEAM: —

DATE SHIPPED: 5/25/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 2

SEND REPORT TO: (on pg. 1)

PHONE:

ANALYSIS REQUESTED

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX (8021)	PAHs (8310)	Metals (Diss)	Iron (Diss)				REMARKS
CC-087713	5/23/00	—	Aq.	P2	—	4ea.	✓	✓	✓	✓				3396
-14	↓			P2D			✓	✓	✓	✓				97
-15	5/22/00			P1		2 A.4. ea	NO	✓	✓	✓				98
-16	5/23/00			MW201			✓	✓	✓	✓				99
-17	↓			Duplicate		2ea.	✓	~~✓~~	~~✓~~	A.4.				3400
-18	—			trip blank		~~2~~ A.7. ea.	✓	~~✓~~	~~✓~~					3401
				Matrix Spike MW103										ATD3404
				Matrix Spike Dup MW103										3405

00237329

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RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Jason B. Young	5-25-00, 2:34 pm	Laurie Reed
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS: (on pg. 1)

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CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
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Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: K6 31823

SAMPLING TEAM: N. Lagasel

DATE SHIPPED: 5/25/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Bazarsky, SMC - Plymouth

PHONE: 734-454-9900

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 VOC metals	CN (CIA)	TPH	Alkalinity	REMARKS
00-0900-1	5/24/00	0800	W	MW 104	4.6-9.4	8	X	X	X	X	X	X	
-2	↓	0950	↓	MW 104D	30-35	↓	↓	↓	↓	↓	↓	↓	
-3	↓	1045	↓	MW 3	3.2-7.8	↓	↓	↓	↓	↓	↓	↓	
-4	↓	1210	↓	MW 4	2.5-6.9	↓	↓	↓	↓	↓	↓	↓	
-5	↓	1110	↓	P4	3.3-7.9	↓	↓	↓	↓	↓	↓	↓	

00237330

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RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	5/24/00 1200	Sue Sample Rec m
[signature]	5-25-00 10:40 am	Aaron R. Young

COMMENTS: -MDEQ MDLs & methods

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

43426

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE31823

SAMPLING TEAM: N. LARABEL

DATE SHIPPED: 5/23/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRESE SME - PLYMOUTH

PHONE: 734-459-8100

ANALYSIS REQUESTED: NITRATE, SULFATE

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE	REMARKS
3091	5/22/00	1025	W	P3	3.3-7.8	1	X	X	
92		1400		P3D	35-40				
93		1200		MW2	4.2-8				
94		1350		MW1	7.9-11.6				
95		1730		MW105	10.6-15.4				
96		1915		MW105D	38.5-43.5				
97		1545		MW102	10.1-14.9				
98		1845		MW103	10.5-15.4				

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4°C

00237331

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	5/22/00	SMS Sample Rec
	5/23/00	
	5/23/00 3:00	

COMMENTS
- MGP Manual method
- contact Pat Barrese w/ results

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy 43463

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. LARABEL

DATE SHIPPED: 5/24/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASSR, SMS PLYMOUTH

PHONE: 734-454-990

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE	REMARKS
AT 3228	5/22/00	1315	W	MW101	122-169	1	X	X	
29	↓	1050	↓	MW101D	34.5-39.5	↓	↓	↓	
30	↓	1130	↓	MW202D	55-60	↓	↓	↓	
31	↓	1240	↓	P2	7.5-12	↓	↓	↓	
32	↓	1430	↓	P2D	35-40	↓	↓	↓	
33	5/22/00	1630	↓	P1	9.2-11.1	↓	↓	↓	
34	5/23/00	1545	↓	MW201	3.1-7.5	↓	↓	↓	

00237332

KR059B030328

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	5/23/00 1700	SMS Sample Acc
NICK LARABELL (DE)	5/24/00	[signature]
[signature]	5/24/00 3:00	[signature]

COMMENTS: MDEQ MDW 3 methods

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

43498

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KF 31823

SAMPLING TEAM: N. Carabel

DATE SHIPPED: 5/25/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Barnes, SMC - Plymouth

PHONE: 734-454-9500

ANALYSIS REQUESTED: Nitrate, Sulfate

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	Nitrate	Sulfate	REMARKS
AT 33169	5/24/00	0800	W	MW104	4.6-9.4	1	X	X	
70	↓	0950	↓	MW104D	30-35	↓	↓	↓	
71	↓	1045	↓	MW3	3.2-7.8	↓	↓	↓	
72	↓	1210	↓	MW4	2.5-6.9	↓	↓	↓	
73	↓	1110	↓	P4	3.3-7.9	↓	↓	↓	

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RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	5/24/00 1600	SMC Sample Room
[signature]	5/25/00	[signature]
[signature]	5/25/00 1:40	[signature]

COMMENTS: – MDEQ MDNR methods

4°C

ORIGINAL TO LAB COPY TO CUSTOMER

EXHIBIT MGP-7

Consumers Energy

A CMS Energy Company

Environmental & Lab Services
1945 West Parnall Road
Jackson, MI 49201-8643

Fax: 517 788 2329

February 20, 2001

Carol Weaver 50111.3
Environmental Response Division
Michigan Department of Environmental Quality
Plainwell District
1342 SR-89, Suite B
Plainwell, MI 49080-1915

GROUNDWATER MONITORING REPORT
CONSUMERS ENERGY FORMER
KALAMAZOO MANUFACTURED GAS PLANT SITE

Enclosed for review is a copy of a February 19, 2001, "Groundwater Monitoring Report" as prepared by our consultant, Soil and Materials Engineers (SME).

The enclosed report summarizes completed groundwater monitoring activities related to potential manufactured gas impacts. The report indicates that another round of groundwater samples will be collected and analyzed in April of this year.

In addition to the groundwater monitoring Consumers intends to complete the additional site investigation activities identified in our September 26, 2000 submittal. Including monitoring well installations at Portage Creek(Bosch Group property, access permitted on January 24, 2001), a deep well at the intersection of Lovell and Pitcher Street(on Pharmacia property), and completion of the investigation in the vicinity of the Pharmacia coal pile.

In the meantime, should you have any questions concerning the enclosed report, or the planned site investigation activities, please contact me on 517-788-0350.

Robert G Neumann PE
Senior Engineer/Kalamazoo MGP Site Manager

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00201-20.RGN

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cc MLemmons, Pharmacia w/4 copies
CRutland, City of Kalamazoo
TEGriffiths, Royal Oak
GLKelterborn, P-24-605A
JHerdus, Kalamazoo
AMAurino, Owosso
PBarrese, SME, Plymouth w/o enclosure
JPDickey, M-1042

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00201-20.RGN

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soil and materials engineers, inc.

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February 19, 2001

received 2/20/01 RW

File 5011.3

Mr. Robert G. Neumann, P.E.
Environmental & Technical Services Department
Consumers Energy Company
1945 W. Parnall Road, Room P-22-520
Jackson, Michigan 49201

RE: Groundwater Monitoring Report
Kalamazoo MGP
Consumers Energy Company
Kalamazoo, Michigan
SME Project No. KE31823

Dear Mr. Neumann:

This letter presents the results for groundwater monitoring that SME conducted at the above referenced site on November 6, 7 and 8, 2000. The groundwater monitoring is being conducted in accordance with the recommendations that were presented in the "Report of Second Phase of Remedial Investigation," dated September 21, 2000.

SCOPE OF WORK

The following scope of work was conducted for the groundwater monitoring event:

1. Gauged groundwater elevations at MW-1, MW-2, MW-3, MW-4, P-2, P-1, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW201 and MW202D on November 6, 2000. Figure No. 1 of Attachment A depicts the locations of the wells at the site.

2. Collected groundwater samples from MW-1, MW-2, MW-3, MW-4, P-2, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW201 and MW202D on November 6, 7 and 8, 2000 for laboratory analysis of benzene, toluene, ethylbenzene and xylene(s) (BTEX); polynuclear aromatic hydrocarbons (PAHs); Michigan 10 Metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc); and cyanide (available and free).

   Groundwater samples were evaluated in the field for pH, specific conductivity and dissolved oxygen (DO).

   Groundwater samples were also submitted for laboratory analysis of dissolved iron, nitrate, sulfate and bicarbonate to initiate an evaluation of potential natural attenuation of BTEX and naphthalene.

   There was insufficient water present in P-1 to collect a sample.

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3. Prepared this summary letter report which includes the following:

   a. a groundwater elevation diagram for November 6, 2000;

   b. analytical test results.

PROCEDURES

Groundwater sampling procedures were consistent with those presented in the "Report of Second Phase of Remedial Investigation," dated September 21, 2000. In addition, the analytical methods and detection limits for BTEX, PAHs, the Michigan 10 Metals and cyanide (available and free) were also consistent with those presented in the "Report of Second Phase of Remedial Investigation," dated September 21, 2000. Groundwater samples were submitted to Consumers Energy Company's (Consumers Energy's) Chemistry & Material Services Department (C&MSD) in Jackson, Michigan for analysis.

RESULTS

The results for the November, 2000 groundwater monitoring event are discussed below. Table 1 of Attachment B lists groundwater elevations gauged on November 6, 2000, as well as groundwater elevations gauged during previous groundwater monitoring events. Table 2 of Attachment B lists the analytical results for the November, 2000 groundwater monitoring event, as well as analytical results from previous groundwater sampling events. Copies of analytical test results for the November, 2000 groundwater monitoring event are presented in Attachment C.

Groundwater Elevations

Groundwater was encountered at depths below ground surface ranging from approximately 3.4 feet at MW-4 to approximately 14.4 feet at MW202D. Where comparative data is available, groundwater elevations for November, 2000 were lower by approximately 0.7 to 1.6 feet compared with groundwater elevations gauged in May, 2000.

For the northern portion of the site, where former MGP production components, storage structures or transfer lines operations had been located, groundwater flow appears to be to the east-southeast with a calculated horizontal hydraulic gradient of 0.003 feet per foot. For the southern portion of the site, groundwater flow appears to be generally to the east with a calculated horizontal hydraulic gradient of 0.006 feet per foot. The interpreted direction of groundwater flow and horizontal gradients are generally consistent with previous groundwater gauging events. However, groundwater elevations at P-3 and MW201 in the vicinity of the intersection of Lovell and Pitcher Streets are slightly higher relative to the groundwater elevations of other nearby wells. This condition has not been encountered during previous groundwater monitoring events conducted at the site.

Vertical hydraulic gradients were calculated for the following well pairs, P-2/P-2D, MW101/MW101D, MW104/MW104D, MW105/MW105D, and P-3/P-3D. The following table summarizes the calculated vertical gradients.

Location	Gradient (feet per foot) and Direction
P-2/P-2D	0.04 – Downward
P-3/P-3D	0.01 – Downward
MW101/MW202D	0.03 – Downward
MW104/MW104D	0.01 – Upward
MW105/MW105D	0.04 – Downward

Where comparative data is available, the calculated vertical hydraulic gradients are generally consistent with those calculated for the May, 2000 groundwater sampling event with the exception of the P-3/P-3D well pair. For the May, 2000 groundwater sampling event, the calculated vertical gradient for the P-3/P-3D well pair was slightly upward.

Groundwater elevations gauged at P-2D, MW101D, MW104D and MW105D were not used to interpret groundwater flow conditions at the water table because the well screens are set below the water table.

Analytical Results – MGP Parameters

BTEX and PAHs concentrations for groundwater samples were less than the Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air Inhalation, Groundwater Contact, Flammability/Explosivity, Water Solubility and Acute Inhalation.

Comparisons of analytical results to Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI are discussed below.

BTEX

Benzene, toluene, ethylbenzene and/or xylene(s) concentrations at MW-1, P-2, P-3, P-3D, MW101, MW101D and MW201 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI.

BTEX concentrations for other groundwater samples were either less than the target detection limit (TDL) or Part 201 Commercial II Cleanup Criteria.

PAHs

Naphthalene concentrations at MW-1, P-2, P-3, P-3D, MW101, MW101D, MW201 and MW202D exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI. The concentrations of remaining PAHs constituents at MW-1, P-3, P-3D, MW101 and MW202D were either less than the TDL or Part 201 Commercial II Cleanup Criteria.

Acenaphthylene, acenapthene, fluorene, phenanthrene and/or fluoranthene concentrations at P-2, MW101D and MW201 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI. Excluding naphthalene, the concentrations of remaining PAHs constituents at P-2, MW101D and MW201 were either less than the TDL or Part 201 Commercial II Cleanup Criteria.

PAH concentrations for other groundwater samples were less than the TDL.

Michigan 10 Metals

Cadmium, chromium and lead concentrations at P-2 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water or GSI. Other metals concentrations for this groundwater sample were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Cadmium, chromium, selenium and/or silver concentrations at MW-2, P-3, MW101D, MW102, MW105 and MW201 exceeded the Part 201 Commercial II Cleanup Criteria for GSI. Other metals concentrations for these groundwater samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Metals concentrations for other groundwater samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Cyanide

Free and available cyanide concentrations for the groundwater samples were less than the TDLs.

Analytical Results – Natural Attenuation Parameters

The evaluation of natural attenuation parameters considered the analytical results from MW-1, P-2, P-3, MW101 and MW201 to be representative of wells impacted by MGP parameters; while analytical results from MW-3, MW-4, P-4, MW102, MW103 and MW105 to be representative of non-impacted wells.

MW-3, MW-4, P-4, MW102, MW103 and MW105 are believed to be representative of non-impacted wells because they are not located downgradient of the former MGP production components, storage structures or transfer lines. Previous analytical results for groundwater samples collected from these wells have indicated BTEX or PAHs to be present at concentrations less than the TDLs or slightly above. BTEX or PAHs have been detected in each of these wells at concentrations of less than 10 ppb for one previous sampling event. Since these detections have not been repeated at any of these wells, the indicated detections are believed to be anomalous.

Shallow monitoring wells MW-2, P-1 and MW104, which appear to be representative of non-impacted wells based on analytical results to date, were not used for this evaluation. These wells are located adjacent to and/or downgradient of the plume of impacted groundwater, therefore the inorganic chemistry of these wells may not be reflective of non-impacted conditions. Additionally, deep monitoring wells with screens set below the water table (P-2D, P-3D, MW101D, MW104D, MW105D and MW202D) were also not considered for this discussion because of insufficient background data available for comparison.

Dissolved Oxygen

Dissolved oxygen (DO) concentrations for impacted wells ranged from 0.34 parts per million (ppm) to 1.98 ppm. DO concentrations for non-impacted wells for ranged from 0.28 ppm to 3.97 ppm.

Alkalinity

Alkalinity concentrations for impacted wells ranged from 420,000 ppb to 550,000 ppb. Alkalinity concentrations for non-impacted wells ranged from 290,000 ppb to 490,000 ppb.

Dissolved Iron

Dissolved iron concentrations for impacted wells ranged from 940 ppb to 6,200 ppb. Dissolved iron concentrations for non-impacted wells ranged from less than the TDL (<100 ppb) to 8,900 ppb.

Nitrate

Nitrate concentrations for impacted wells ranged from less than the TDL, (<100 ppb), to 710 ppb. Nitrate concentrations for non-impacted wells ranged from less than the TDL to 2,900 ppb.

Sulfate

Sulfate concentrations for impacted wells ranged from less than the TDL, (<1,000 ppb), to 80,000 ppb. Sulfate concentrations for non-impacted wells ranged from 22,000 ppb to 80,000 ppb.

GENERAL

The next round of groundwater monitoring, including additional site investigation activities, has been tentatively scheduled for April, 2001. If you have any questions or comments concerning this report, please call.

Sincerely,

SOIL AND MATERIALS ENGINEERS, INC.

Patrick G. Barrese, CPG
Senior Project Consultant

Attachments:

Attachment A: Figure No. 1 - Monitoring Well Location Diagram
Figure No. 2 - Groundwater Elevation Contours, November 6, 2000

Attachment B: Table 1 - Groundwater Elevation Summary
Table 2 - Analytical Summary - Groundwater

Attachment C: Analytical Report

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ATTACHMENT A

FIGURES

Figure No. 1 - Monitoring Well Location Diagram
Figure No. 2 - Groundwater Elevation Contours, November 6, 2000

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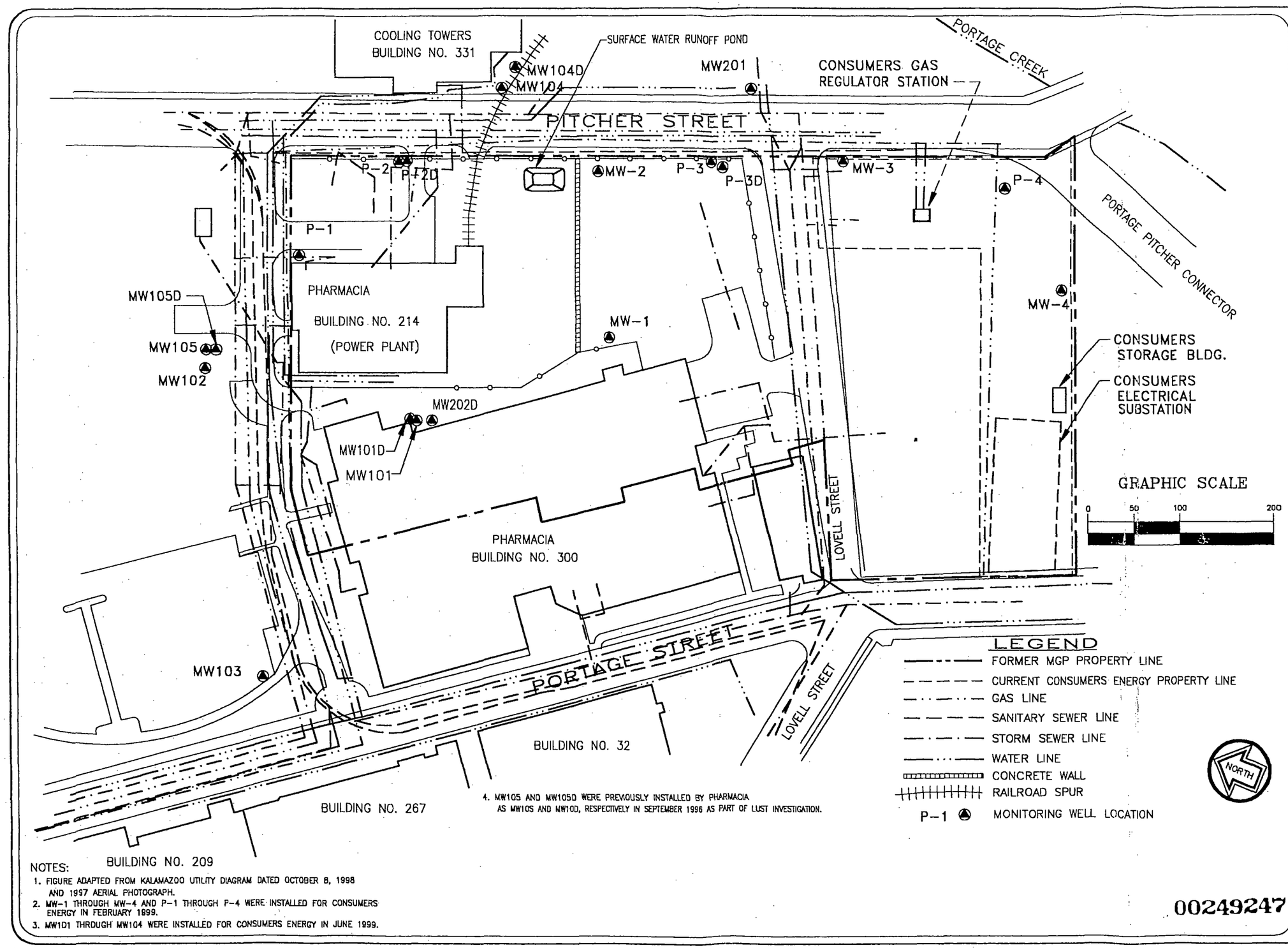

4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.

NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.

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MONITORING WELL LOCATION DIAGRAM
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 08-09-00
SCALE: 1" = 100'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-09.DWG

Figure No. 1

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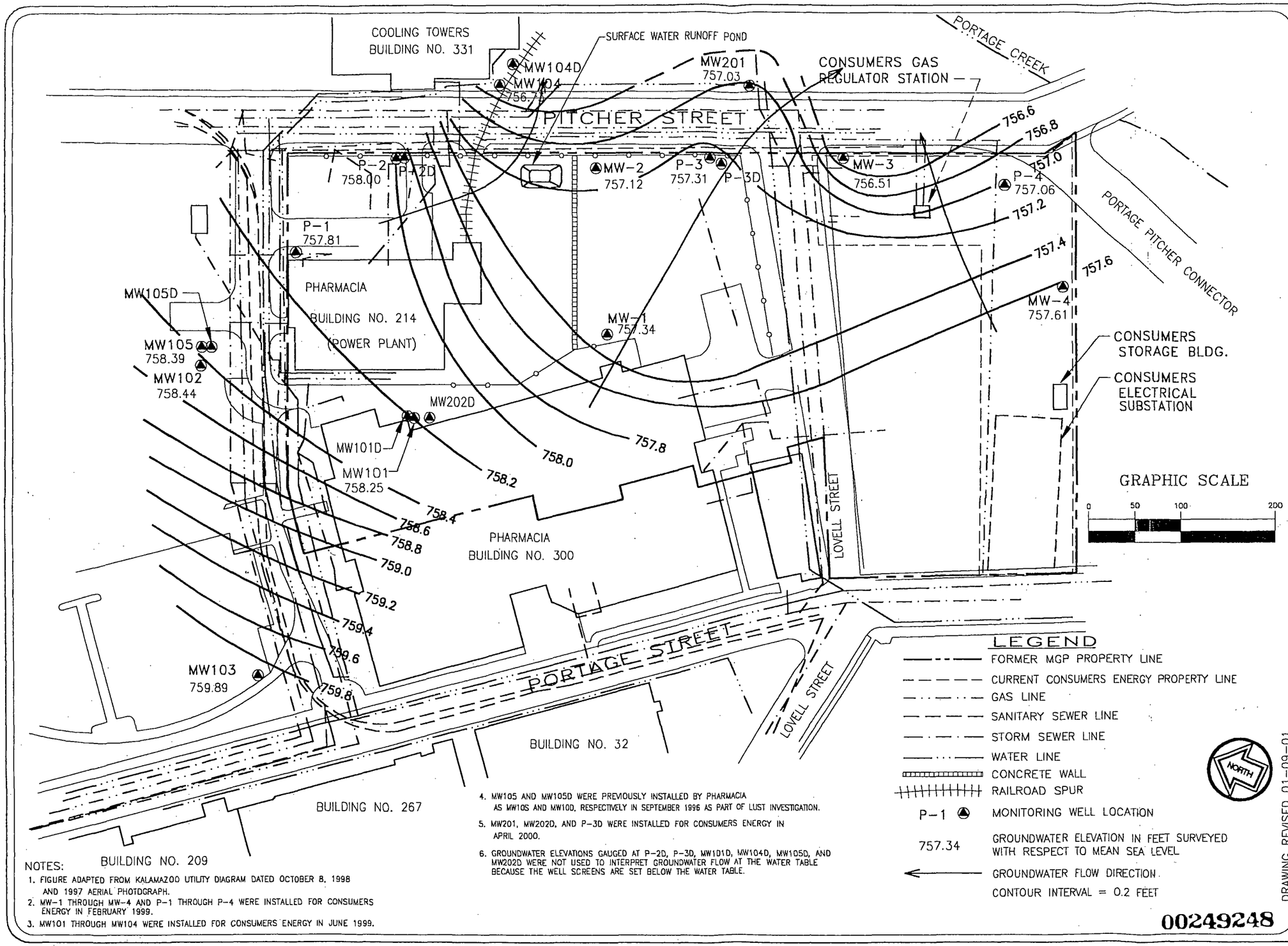

NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
5. MW201, MW202D, AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. GROUNDWATER ELEVATIONS GAUGED AT P-2D, P-3D, MW101D, MW104D, MW105D, AND MW202D WERE NOT USED TO INTERPRET GROUNDWATER FLOW AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.

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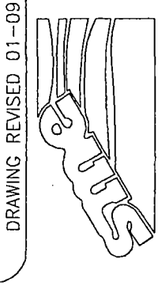
DRAWING REVISED 01-09-01

GROUNDWATER ELEVATION CONTOUR DIAGRAM
NOVEMBER 6, 2000
KALAMAZOO, MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 08-09-00
SCALE: 1" = 100'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823



FILE NAME H:CECO\31823-09.DWG

Figure No. 2

KR059B030341

ATTACHMENT B

TABLES

Table 1 - Groundwater Elevation Summary
Table 2 - Analytical Summary - Groundwater

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TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

				2/8/99		2/25/99		6/22/99 (See 6)	
Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	8.47	758.04	8.77	757.74	9.13	757.38
MW-2	763.00	762.56	759.6 - 754.6	4.89	757.67	5.27	757.29	5.66	756.90
MW-3	761.43	760.86	758.2 - 753.2	3.63	757.23	3.82	757.04	4.32	756.54
MW-4	761.70	760.99	759.2 - 754.2	2.68	758.31	3.02	757.97	3.45	757.54
P-1	768.91	768.38	762.4 - 757.4	NI	NI	10.44	757.94	10.50	757.88
P-2	766.95	766.35	759.4 - 754.4	8.17	758.18	8.38	757.97	8.87	757.48
P-2D	766.84	766.61	731.7 - 726.7	NI	NI	NI	NI	9.61	757.00
P-3	761.87	761.35	758.6 - 753.6	3.82	757.53	4.16	757.19	4.61	756.74
P-3D	762.58	762.16	727.6 - 722.6	NI	NI	NI	NI	NI	NI
P-4	761.95	761.51	758.7 - 753.7	3.39	758.12	3.95	757.56	4.46	757.05
MW101	771.74	771.41	759.6 - 754.6	NI	NI	NI	NI	13.28	758.13
MW101D	771.59	770.91	736.5 - 731.5	NI	NI	NI	NI	13.19	757.72
MW102	770.02	769.88	760.1 - 755.1	NI	NI	NI	NI	11.32	758.56
MW103	771.99	771.52	761.3 - 756.3	NI	NI	NI	NI	11.42	760.10
MW104	763.07	762.74	758.4 - 753.4	NI	NI	NI	NI	6.04	756.70
MW104D	762.92	762.66	732.8 - 727.8	NI	NI	NI	NI	5.81	756.85
MW105	770.61	770.31	760.1 - 755.1	NG	NG	NG	NG	11.77	758.54
MW105D	770.61	770.20	731.9 - 726.9	NG	NG	NG	NG	12.85	757.35
MW201	761.78	761.31	759.8 - 754.8	NI	NI	NI	NI	NI	NI
MW202D	NS	NS	NS	NI	NI	NI	NI	NI	NI

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) NG = Groundwater elevation not gauged.
(5) NS = As of this date, ground surface and TOC have not been surveyed.
(6) Groundwater elevations for MW105 and MW105D were gauged on June 23, 1999.

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TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	2/15/00 (See 7) Depth to Water from TOC (ft.)	2/15/00 (See 7) Static Groundwater Elevation (ft.)	5/22/00 Depth to Water from TOC (ft.)	5/22/00 Static Groundwater Elevation (ft.)	11/6/00 Depth to Water from TOC (ft.)	11/6/00 Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	9.58	756.93	7.92	758.59	9.17	757.34
MW-2	763.00	762.56	759.6 - 754.6	6.04	756.52	4.24	758.32	5.44	757.12
MW-3	761.43	760.86	758.2 - 753.2	4.62	756.24	3.23	757.63	4.35	756.51
MW-4	761.70	760.99	759.2 - 754.2	3.78	757.21	2.52	758.47	3.38	757.61
P-1	768.91	768.38	762.4 - 757.4	DRY	DRY	9.27	759.11	10.57	757.81
P-2	766.95	766.35	759.4 - 754.4	8.94	757.41	7.54	758.81	8.35	758.00
P-2D	766.84	766.61	731.7 - 726.7	10.00	756.61	8.29	758.32	9.59	757.02
P-3	761.87	761.35	758.6 - 753.6	4.82	756.53	3.33	758.02	--	--
P-3	--	761.26	758.6 - 753.6	--	--	--	--	3.95	757.31
P-3D	762.58	762.16	727.6 - 722.6	NI	NI	3.49	758.67	--	--
P-3D	--	761.63	727.6 - 722.6	--	--	--	--	4.52	757.11
P-4	761.95	761.51	758.7 - 753.7	4.42	757.09	3.30	758.21	4.45	757.06
MW101	771.74	771.41	759.6 - 754.6	13.80	757.61	12.24	759.17	13.16	758.25
MW101D	771.59	770.91	736.5 - 731.5	13.63	757.28	12.01	758.90	13.35	757.56
MW102	770.02	769.88	760.1 - 755.1	11.93	757.95	10.10	759.78	11.44	758.44
MW103	771.99	771.52	761.3 - 756.3	12.12	759.40	10.46	761.06	11.63	759.89
MW104	763.07	762.74	758.4 - 753.4	6.34	756.40	4.65	758.09	6.01	756.73
MW104D	762.92	762.66	732.8 - 727.8	6.18	756.48	4.46	758.20	5.80	756.86
MW105	770.61	770.31	760.1 - 755.1	12.42	757.89	10.62	759.69	11.92	758.39
MW105D	770.61	770.20	731.9 - 726.9	13.28	756.92	11.58	758.62	12.89	757.31
MW201	761.78	761.31	759.8 - 754.8	NI	NI	3.12	758.19	4.28	757.03
MW202D	--	771.52	716.5 - 711.5	NI	NI	13.07	758.45	14.35	757.17

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) NG = Groundwater elevation not gauged.
(5) NS = As of this date, ground surface and TOC have not been surveyed.
(6) Groundwater elevations for MW105 and MW105D were gauged on June 23, 1999.
(7) Groundwater elevations for MW-4 and P-4 were gauged on February 22, 2000.
(8) -- = Data not available.
(9) Top of casing elevations for P3 and P3D were resurveyed in September, 2000 due to landscaping.

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-1 7-12 2/8/99	MW-1 7-12 6/22/99	MW-1 7-12 2/15/00	MW-1 7-12 5/22/00	MW-1 7-12 11/7/00
Sample Location / Screen Depth (feet) / Date Collected							
BTEX							
Benzene	5	200	13	10	16	12	ND
Toluene	790	140	2,540	520	950	1,700	220
Ethylbenzene	74	18	910	280	900	1,400	1,300
Xylenes	280	35	1,730	920	1,540	2,600	1,100
PAHs*							
Naphthalene	1,500	13	120	50	27	260	200
2-Methylnaphthalene	750	ID	21	7	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS*							
Arsenic	50	150	ND	8	13	ND	6
Barium	2,000	1,200	ND	190	130	160	220
Chromium	100	11**	ND	ND	ND	ND	7
Selenium	50	5	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (ph Units)	NL	NL	NE	NE	7.26	7.1	--
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,920	1,960	3,590
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.65	0.35	0.38
Iron	300	NA	NE	NE	8,900	4,700	4,300
Nitrate	10,000	NA	NE	NE	ND	160	ND
Sulfate	250,000	NA	NE	NE	33,000	110,000	61,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	470,000	420,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-2 3-8 2/8/99	MW-2 3-8 6/22/99	MW-2 3-8 2/15/00	MW-2 3-8 5/22/00	MW-2 3-8 11/6/00
Sample Location / Screen Depth (feet) / Date Collected							
BTEX							
Benzene	5	200	1	ND	ND	ND	ND
Toluene	790	140	4	ND	ND	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND	ND
Xylenes	280	35	7	ND	ND	ND	ND
PAHs*							
Naphthalene	1,500	13	6	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS*							
Arsenic	50	150	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	1.6
Zinc	5,000	270	ND	ND	100	30	60
Cyanide (available)	200	20	NE	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	NE	5.5	6.59	6.50
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	3,050	860	2,110
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.84	0.51	0.40
Iron	300	NA	NE	NE	21,000	350	6,300
Nitrate	10,000	NA	NE	NE	140	1,100	600
Sulfate	250,000	NA	NE	NE	1,500,000	410,000	920,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	26,000	130,000	91,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-3 3-8 2/8/99	MW-3 3-8 6/22/99	MW-3 3-8 2/15/00	MW-3 3-8 5/24/00	MW-3 3-8 11/6/00
		Sample Location Screen Depth (feet) Date Collected					
BTEX							
Benzene	5	200	3	ND	ND	ND	ND
Toluene	790	140	1	ND	ND	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND	ND
Xylenes	280	35	3	ND	ND	ND	ND
PAHs *							
Naphthalene	1,500	13	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS *							
Arsenic	50	150	13	8	8	ND	7
Barium	2,000	1,200	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	NE	7.27	7.7	7.22
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,290	1,380	860
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.53	0.7	0.48
Iron	300	NA	NE	NE	110	ND	410
Nitrate	10,000	NA	NE	NE	ND	ND	ND
Sulfate	250,000	NA	NE	NE	33,000	26,000	25,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	260,000	230,000	290,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-4 3-8 2/8/99	MW-4 3-8 6/22/99	MW-4 3-8 2/22/00	MW-4 3-8 5/24/00	MW-4 3-8 11/6/00
Sample Location Screen Depth (feet) Date Collected							
BTEX							
Benzene	5	200	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND
Xylenes	280	35	2	ND	ND	ND	ND
PAHs *							
Naphthalene	1,500	13	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS *							
Arsenic	50	150	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	ND	6
Selenium	50	5	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	NE	NE	7.09	7.02
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	850	1,370
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.39	0.67
Iron	1,300	NA	NE	NE	8,700	5,900	8,900
Nitrate	10,000	NA	NE	NE	ND	230	ND
Sulfate	250,000	NA	NE	NE	6,900	22,000	27,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	360,000	410,000	420,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-1 7-12 See (11)	P-1 7-12 6/22/99	P-1 7-12 2/16/00	P-1 7-12 5/22/00	P-1 7-12 11/6/00
Sample Location / Screen Depth (feet) / Date Collected							
BTEX							
Benzene	5	200	ND	ND	NS	ND	NS
Toluene	790	140	ND	ND	NS	ND	NS
Ethylbenzene	74	18	ND	ND	NS	ND	NS
Xylenes	280	35	ND	ND	NS	ND	NS
PAHs*							
Naphthalene	1,500	13	ND	NE	NS	ND	NS
2-Methylnaphthalene	750	ID	ND	NE	NS	ND	NS
Acenaphthylene	150	ID	ND	NE	NS	ND	NS
Acenaphthene	3,800	19	ND	NE	NS	ND	NS
Fluorene	2,000	12	ND	NE	NS	ND	NS
Phenanthrene	150	5	ND	NE	NS	ND	NS
Anthracene	43	ID	ND	NE	NS	ND	NS
Fluoranthene	210	1.6	ND	NE	NS	ND	NS
Pyrene	140	ID	ND	NE	NS	ND	NS
INORGANICS*							
Arsenic	50	150	ND	NE	NS	ND	NS
Barium	2,000	1,200	ND	NE	NS	100	NS
Chromium (Total)	100	11	ND	NE	NS	8	NS
Selenium	50	5	6	NE	NS	ND	NS
Zinc	5,000	270	ND	NE	NS	ND	NS
Cyanide (available)	200	20	NE	NE	NS	ND	NS
Cyanide (amenable)	200	20	ND	NE	NS	NE	NS
Cyanide (free)	200	20	NE	NE	NS	ND	NS
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	NE	NS	NE	NS
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NS	NE	NS
Dissolved Oxygen (ppm)	NA	7	NE	NE	NS	NE	NS
Iron	300	NA	NE	NE	NS	380	NS
Nitrate	10,000	NA	NE	NE	NS	7,200	NS
Sulfate	250,000	NA	NE	NE	NS	84,000	NS
Alkalinity (as CaCO3)	NL	NL	NE	NE	NS	320,000	NS

* SEE NOTES ON PAGE 21

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-2 8-13 2/8/99	P-2 8-13 6/23/99	P-2 8-13 2/16/00	P-2 8-13 5/23/00	P-2 8-13 11/8/00
Sample Location / Screen Depth (feet) / Date Collected							
BTEX							
Benzene	5	200	480	140	410	130	290
Toluene	790	140	280	160	86	40	54
Ethylbenzene	74	18	320	130	220	30	200
Xylenes	280	33	1,390	610	690	450	550
PAHs *							
Naphthalene	1,500	13	2,900	200	410	ND	680
2-Methylnaphthalene	750	ID	59	15	21	ND	16
Acenaphthylene	150	ID	ND	8	5	ND	ND
Acenaphthene	3,800	19	65	38	30	13	58
Fluorene	2,000	12	32	23	16	6	32
Phenanthrene	150	5	46	24	15	ND	66
Anthracene	43	ID	ND	8	5	ND	8
Fluoranthene	210	1.6	ND	10	7	11	13
Pyrene	140	ID	ND	5	ND	10	15
INORGANICS *							
Arsenic	50	150	8	8	9	8	13
Barium	2,000	1,200	ND	ND	ND	ND	ND
Cadmium	5	4.6	ND	ND	ND	ND	4.9
Chromium (Total)	100	11**	ND	ND	ND	5	13
Lead	4	29	ND	ND	ND	ND	9
Selenium	50	5	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	31	ND	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	NE	7.09	7.61	--
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	920	1,570	1,660
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.82	0.43	0.91
Iron	300	NA	NE	NE	440	12,000	940
Nitrate	10,000	NA	NE	NE	ND	ND	ND
Sulfate	250,000	NA	NE	NE	32,000	47,000	14,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	530,000	360,000	550,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-2D 35-40 6/23/99	P-2D 35-40 2/16/00	P-2D 35-40 5/23/00	P-2D 35-40 11/8/00
Sample Location / Screen Depth (feet) / Date Collected						
BTEX						
Benzene	5	200	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND
PAHs *						
Naphthalene	1,500	13	ND	ND	ND	6
2-Methylnaphthalene	750	ID	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND
Phenanthrene	150	5	5	ND	ND	ND
Anthracene	43	ID	6	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS *						
Arsenic	50	150	ND	8	5	6
Barium	2,000	1,200	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND
Zinc	5,000	270	ND	21	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	7.34	7.02	--
Specific Conductivity (umhos/cm)	NL	NL	NE	990	1,170	2,100
Dissolved Oxygen (ppm)	NA	7	NE	3.04	2.64	1.62
Iron	300	NA	NE	3,400	3,100	3,200
Nitrate	10,000	NA	NE	ND	ND	ND
Sulfate	250,000	NA	NE	86,000	93,000	110,000
Alkalinity (as CaCO3)	NL	NL	NE	300,000	300,000	310,000

* SEE NOTES ON PAGE 21

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-3 3-8 2/8/99	P-3 3-8 6/22/99	P-3 3-8 2/15/00	P-3 3-8 5/22/00	P-3 3-8 11/6/00
Sample Location / Screen Depth (feet) / Date Collected							
BTEX							
Benzene	5	200	3	90	59	ND	25
Toluene	790	140	5	21	5	ND	2
Ethylbenzene	74	18	13	330	260	ND	67
Xylenes	280	35	31	298	129	ND	65
PAHs *							
Naphthalene	1,500	13	24	24	180	ND	71
2-Methylnaphthalene	750	ID	ND	5	10	ND	ND
Acenaphthylene	150	ID	ND	ND	5	ND	ND
Acenaphthene	3,800	19	ND	9	14	ND	ND
Fluorene	2,000	12	ND	10	12	ND	ND
Phenanthrene	150	5	ND	16	6	ND	ND
Anthracene	43	ID	ND	5	6	ND	ND
Fluoranthene	210	1.6	ND	ND	5	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS *							
Arsenic	50	150	ND	ND	6	ND	ND
Barium	2,000	1,200	ND	150	290	ND	190
Cadmium	5	4	ND	ND	ND	0.5	4.7
Chromium (total)	100	11**	ND	ND	ND	ND	12
Lead	4	29	ND	ND	ND	ND	4
Selenium	50	5	29	ND	ND	77	11
Zinc	5,000	270	ND	ND	ND	190	260
Cyanide (available)	200	20	NE	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	29	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	NE	7.26	7.18	7.05
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	4,320	1,790	4,770
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.95	0.61	1.98
Iron	300	NA	NE	NE	9,400	210	1,000
Nitrate	10,000	NA	NE	NE	ND	3,200	600
Sulfate	250,000	NA	NE	NE	35,000	76,000	80,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	400,000	440,000

* SEE NOTES ON PAGE 21

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-3D 35-40 5/22/00	P-3D 35-40 11/6/00
Sample Location / Screen Depth (feet) / Date Collected				
BTEX				
Benzene	5	200	110	110
Toluene	790	140	2	2
Ethylbenzene	74	18	1	2
Xylenes	280	35	10	9
PAHs *				
Naphthalene	1,500	13	22	28
2-Methylnaphthalene	750	ID	ND	ND
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	19	ND	ND
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
INORGANICS *				
Arsenic	50	150	27	30
Barium	2,000	1,200	190	200
Selenium	50	5	ND	ND
Zinc	5,000	270	30	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
NATURAL ATTENUATION PARAMETERS				
pH (pH units)	NL	NL	8.26	7.36
Specific Conductivity (umhos/cm)	NL	NL	1,630	1,740
Dissolved Oxygen (ppm)	NA	7	1.5	0.40
Iron	300	NA	6,000	6,300
Nitrate	10,000	NA	ND	ND
Sulfate	250,000	NA	ND	ND
Alkalinity (as CaCO3)	NL	NL	320,000	320,000

* SEE NOTES ON PAGE 21

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-4 3-8 2/8/99	P-4 3-8 6/22/99	P-4 3-8 2/22/00	P-4 3-8 5/24/00	P-4 3-8 11/6/00
Sample Location / Screen Depth (feet) / Date Collected							
BTEX							
Benzene	5	200	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	1	ND	ND
Xylenes	280	35	ND	ND	7	ND	ND
PAHs *							
Naphthalene	1,500	13	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS *							
Arsenic	50	150	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	ND	9
Selenium	50	5	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	NE	NE	7.59	7.11
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	1,770	1,990
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.15	0.28
Iron	300	NA	NE	NE	4,800	ND	3,600
Nitrate	10,000	NA	NE	NE	240	430	ND
Sulfate	250,000	NA	NE	NE	21,000	37,000	22,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	340,000	390,000	440,000

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* SEE NOTES ON PAGE 21

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW101 12-17 6/23/99	MW101 12-17 2/16/00	MW101 12-17 5/23/00	MW101 12-17 11/7/00
Sample Location / Screen Depth (feet) / Date Collected						
BTEX						
Benzene	5	200	62	80	39	110
Toluene	790	140	4,100	6,400	4,300	9,900
Ethylbenzene	74	18	760	1,400	590	1,600
Xylenes	280	35	5,600	8,000	6,600	18,000
PAHs *						
Naphthalene	1,500	13	2,800	1,100	680	3,100
2-Methylnaphthalene	750	ID	55	31	35	150
Acenaphthylene	150	ID	75	33	ND	88
Acenaphthene	3,800	19	ND	6	21	ND
Fluorene	2,000	12	23	11	ND	ND
Phenanthrene	150	5	24	7	ND	ND
Anthracene	43	ID	ND	7	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS *						
Arsenic	50	150	7	9	6	6
Barium	2,000	1,200	760	230	230	190
Cadmium	5	4	ND	ND	0.5	ND
Chromium (total)	100	11**	ND	ND	ND	7
Selenium	50	5	ND	ND	15	ND
Zinc	5,000	270	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	7.34	7.44	--
Specific Conductivity (umhos/cm)	NL	NL	NE	1,420	3,040	2,350
Dissolved Oxygen (ppm)	NCA	7	NE	0.58	0.62	0.42
Iron	300	NA	NE	5,500	1,700	1,700
Nitrate	10,000	NA	NE	310	4,500	710
Sulfate	250,000	NA	NE	63,000	70,000	44,000
Alkalinity (as CaCO3)	NL	NL	NE	470,000	490,000	490,000

* SEE NOTES ON PAGE 21

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW101D 35-40 6/23/99	MW101D 35-40 2/16/00	MW101D 35-40 5/23/00	MW101D 35-40 11/7/00
		Sample Location Screen Depth (feet) Date Collected				
BTEX						
Benzene	5	200	2	ND	ND	ND
Toluene	790	140	12	5	ND	15
Ethylbenzene	74	18	170	1,450	390	410
Xylenes	280	35	872	4,480	5,200	4,700
PAHs *						
Naphthalene	1,500	13	3,100	4,500	4,600	5,100
2-Methylnaphthalene	750	ID	210	120	400	530
Acenaphthylene	150	ID	190	150	230	370
Acenaphthene	3,800	19	65	5	ND	ND
Fluorene	2,000	12	23	25	29	32
Phenanthrene	150	5	ND	5	ND	ND
Anthracene	43	ID	ND	5	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS *						
Arsenic	50	150	16	23	23	23
Barium	2,000	1,200	420	450	430	390
Selenium	50	5	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	1.4
Zinc	5,000	270	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	7.34	8.04	--
Specific Conductivity (umhos/cm)	NL	NL	NE	1,970	2,510	3,090
Dissolved Oxygen (ppm)	NA	7	NE	2.59	1.27	0.65
Iron	300	NA	NE	3,300	3,000	2,300
Nitrate	10,000	NA	NE	ND	ND	ND
Sulfate	250,000	NA	NE	15,000	15,000	15,000
Alkalinity (as CaCO3)	NL	NL	NE	330,000	410,000	340,000

* SEE NOTES ON PAGE 21

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW102 10-15 6/22/99	MW102 10-15 2/16/00	MW102 10-15 5/22/00	MW102 10-15 11/7/00
Sample Location / Screen Depth (feet) / Date Collected						
BTEX						
Benzene	5	200	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND
PAHs *						
Naphthalene	1,500	13	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	9	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS *						
Arsenic	50	150	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	5
Selenium	50	5	ND	6	ND	9
Zinc	5,000	270	ND	250	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	7.46	7.76	7.10
Specific Conductivity (umhos/cm)	NL	NL	NE	590	1,590	1,090
Dissolved Oxygen (ppm)	NA	7	NE	3.67	7.35	3.97
Iron	300	NA	NE	ND	ND	ND
Nitrate	10,000	NA	NE	3,100	1,300	2,100
Sulfate	250,000	NA	NE	54,000	38,000	68,000
Alkalinity (as CaCO3)	NL	NL	NE	240,000	280,000	290,000

* SEE NOTES ON PAGE 21

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW103 11-16 6/22/99	MW103 11-16 2/16/00	MW103 11-16 5/22/00	MW103 11-16 11/7/00
Sample Location / Screen Depth (feet) / Date Collected						
BTEX						
Benzene	5	200	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND
Ethylbenzene	74	18	2	ND	ND	ND
Xylenes	280	35	2	ND	ND	ND
PAHs *						
Naphthalene	1,500	13	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS *						
Arsenic	50	150	ND	5	11	14
Barium	2,000	1,200	ND	ND	160	ND
Chromium (total)	100	11**	ND	ND	ND	9
Selenium	50	5	ND	ND	36	ND
Zinc	5,000	270	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	7.84	8.65	7.64
Specific Conductivity (umhos/cm)	NL	NL	NE	2,370	6,370	2,390
Dissolved Oxygen (ppm)	NA	7	NE	1.38	1.5	1.85
Iron	300	NA	NE	ND	370	ND
Nitrate	10,000	NA	NE	410	2,500	1,400
Sulfate	250,000	NA	NE	19,000	58,000	27,000
Alkalinity (as CaCO3)	NL	NL	NE	430,000	410,000	490,000

* SEE NOTES ON PAGE 21

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW104 5-10 6/23/99	MW104 5-10 2/15/00	MW104 5-10 5/24/00	MW104 5-10 11/6/00
		Sample Location Screen Depth (feet) Date Collected				
BTEX						
Benzene	5	200	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND
PAHs *						
Naphthalene	1,500	13	ND	ND	ND	10
2-Methylnaphthalene	750	ID	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS *						
Arsenic	50	150	5	ND	ND	ND
Barium	2,000	1,200	340	190	420	220
Cadmium	5	4	ND	ND	0.8	ND
Chromium (total)	100	11**	ND	ND	ND	10.0
Selenium	50	5	ND	ND	ND	ND
Zinc	5,000	270	ND	240	400	210
Cyanide (available)	200	20	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	7.37	6.88	7.42
Specific Conductivity (umhos/cm)	NL	NL	NE	3,570	4,600	4,180
Dissolved Oxygen (ppm)	NA	7	NE	0.49	0.54	0.39
Iron	300	NA	NE	5,700	4,700	5,000
Nitrate	10,000	NA	NE	340	220	ND
Sulfate	250,000	NA	NE	18,000	43,000	16,000
Alkalinity (as CaCO3)	NL	NL	NE	490,000	440,000	590,000

*** SEE NOTES ON PAGE 21**

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW104D 30-35 6/23/99	MW104D 30-35 2/15/00	MW104D 30-35 5/24/00	MW104D 30-35 11/6/00
		Sample Location Screen Depth (feet) Date Collected				
BTEX						
Benzene	5	200	ND	ND	ND	ND
Toluene	790	140	1	ND	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND
PAHs *						
Naphthalene	1,500	13	16	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS *						
Arsenic	50	150	16	28	27	25
Barium	2,000	1,200	230	260	250	270
Chromium	100	11**	ND	ND	ND	5
Selenium	50	5	ND	ND	ND	ND
Zinc	5,000	270	ND	28	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	7.34	7.44	7.52
Specific Conductivity (umhos/cm)	NL	NL	NE	1,540	1,090	1,660
Dissolved Oxygen (ppm)	NA	7	NE	3.5	2.42	1.18
Iron	300	NA	NE	5,800	5,700	5,900
Nitrate	10,000	NA	NE	ND	ND	ND
Sulfate	250,000	NA	NE	77,000	71,000	76,000
Alkalinity (as CaCO3)	NL	NL	NE	280,000	320,000	320,000

* SEE NOTES ON PAGE 21

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW105 11-16 6/24/99	MW105 11-16 2/16/00	MW105 11-16 5/22/00	MW105 11-16 11/7/00
		Sample Location Screen Depth (feet) Date Collected				
BTEX						
Benzene	5	200	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND
PAHs *						
Naphthalene	1,500	13	6	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS *						
Arsenic	50	150	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	7
Selenium	50	5	ND	ND	ND	8
Silver	98	0.2	ND	ND	ND	1.4
Zinc	5,000	270	ND	ND	160	ND
Cyanide (available)	200	20	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	7.5	8.43	7.24
Specific Conductivity (umhos/cm)	NL	NL	NE	730	1,690	1,460
Dissolved Oxygen (ppm)	NA	7	NE	2.76	5.84	2.10
Iron	300	NA	NE	ND	150	ND
Nitrate	*10,000*	NA	NE	*5,300*	*1,400*	*2,900*
Sulfate	250,000	NA	NE	90,000	51,000	80,000
Alkalinity (as CaCO3)	NL	NL	NE	270,000	370,000	350,000

* SEE NOTES ON PAGE 21

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW105D 39-44 6/24/99	MW105D 39-44 2/16/00	MW105D 39-44 5/22/00	MW105D 39-44 11/7/00
Sample Location / Screen Depth (feet) / Date Collected						
BTEX						
Benzene	5	200	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND
Xylenes	280	35	2	ND	ND	ND
PAHs *						
Naphthalene	1,500	13	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS *						
Arsenic	50	150	ND	ND	ND	ND
Barium	2,000	1,200	150	150	150	180
Selenium	50	5	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	210	200
Cyanide (available)	200	20	NE	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	NE	7.37	8.15	7.15
Specific Conductivity (umhos/cm)	NL	NL	NE	1,030	1,920	1,830
Dissolved Oxygen (ppm)	NA	7	NE	2.21	2.46	1.72
Iron	300	NA	NE	ND	540	200
Nitrate	10,000	NA	NE	540	640	400
Sulfate	250,000	NA	NE	73,000	76,000	86,000
Alkalinity (as CaCO3)	NL	NL	NE	300,000	380,000	300,000

* SEE NOTES ON PAGE 21

00249269

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW201 3-8 5/23/00	MW201 3-8 11/6/00
		Sample Location Screen Depth (feet) Date Collected		
BTEX				
Benzene	5	200	150	20
Toluene	790	140	5	ND
Ethylbenzene	74	18	180	16
Xylenes	280	35	130	11
PAHs *				
Naphthalene	1,500	13	760	950
2-Methylnaphthalene	750	ID	10	27
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	19	11	30
Fluorene	2,000	12	ND	8
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
INORGANICS *				
Arsenic	50	150	ND	ND
Barium	2,000	1,200	200	190
Chromium (total)	100	11**	ND	8
Selenium	50	5	ND	ND
Silver	98	0.2	ND	9.9
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
NATURAL ATTENUATION PARAMETERS				
pH (pH units)	NL	NL	6.59	7.07
Specific Conductivity (umhos/cm)	NL	NL	1,970	2,480
Dissolved Oxygen (ppm)	NA	7	0.35	0.34
Iron	300	NA	4,600	6,200
Nitrate	10,000	NA	ND	ND
Sulfate	250,000	NA	34,000	ND
Alkalinity (as CaCO3)	NL	NL	490,000	450,000

* SEE NOTES ON PAGE 21

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW202D 55-60 5/23/2000	MW202D 55-60 11/7/2000
		Sample Location Screen Depth (feet) Date Collected		
BTEX				
Benzene	5	200	ND	ND
Toluene	790	140	ND	ND
Ethylbenzene	74	18	ND	ND
Xylenes	280	35	5	8
PAHs *				
Naphthalene	1,500	13	35	68
2-Methylnaphthalene	750	ID	ND	6
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	19	ND	ND
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
INORGANICS *				
Arsenic	50	150	ND	ND
Barium	2,000	1,200	170	180
Selenium	50	5	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
NATURAL ATTENUATION PARAMETERS				
pH (pH units)	NL	NL	7.53	–
Specific Conductivity (umhos/cm)	NL	NL	1,720	1,770
Dissolved Oxygen (ppm)	NA	7	1.48	0.55
Iron	300	NA	310	170
Nitrate	10,000	NA	560	300
Sulfate	250,000	NA	66,000	68,000
Alkalinity (as CaCO3)	NL	NL	310,000	330,000

* SEE NOTES ON PAGE 21

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL SUMMARY
MONITORING WELLS
SME Project No. KE31823

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb) unless otherwise noted.
(2) ND= Analytical result was less than method detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) NL = Not listed under Part 201 Generic Commercial II Cleanup Criteria dated June, 2000.
(6) NE = Chemical not evaluated by analytical laboratory.
(7) ** = GSI Criteria for Hexavalent Chromium.
(8) Constituents listed for PAHs and metals are limited to those constituents that indicated detectable concentrations for at least one sample.
(9) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(10) The above data was compared to criteria for volatilization to indoor air, groundwater contact, water solubility, flammability/explosivity and acute inhalation and the data did not exceed these criteria.

00249272

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ATTACHMENT C
ANALYTICAL REPORT

00249273

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-251, Jackson

Date: November 29, 2000

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823
- Sampling Dates of November 6-8, 2000

File Index: 520017-450-900

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On November 08, 2000 the Chemistry Section (CHEM) of Laboratory Services received groundwater samples collected at the KALAMAZOO former MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Dissolved Michigan 10 Metals
Available (OIA) and Free Cyanide
Dissolved Iron
Nitrate
Sulfate
Alkalinity

Analytical results are attached for your review.

00249274

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 or parameter specific recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Aromatic Volatile Organics (BTEX) - Method 8021, Halogenated And Aromatic Volatiles By Gas Chromatography Using Electrolytic Conductivity And Photoionization Detectors In Series: Capillary Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Free - Method ASTM-D4282-95, Determination Of Free Cyanide In Water And Wastewater By Micro-diffusion, ASTM.

Cyanide, Available - Method OIA-1677, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry. EPA-821-R-99-013.

Dissolved Metals Preparation – Waters (Mercury) – Method 7470, Mercury in Liquid Waste. SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	SW846 Method
Arsenic	6020
Barium	6020
Cadmium	6020
Chromium	6020
Copper	6020
Iron	6020
Lead	6020
Mercury	7470
Selenium	6020
Silver	6020
Zinc	6020

ANALYTICAL METHODS

Inorganic Analytes

Analyte	Test Method
Nitrate	353.2; 300.0
Sulfate	375.2; 300.0
Alkalinity	310.1

Methods For Chemical Analysis of Water and Wastes, USEPA, EMSL.

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW4	**Sample Identification**	MW4
Sample Depth, ft	3.4-6.9	Sample Depth, ft	3.4-6.9
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	11-09-00
Preservation Type	HCl	Analysis Date	11-09-00
Analysis Date	11-10-00		
Control Number	001900-01	Control Number	001900-01

BTEX, Method 8021	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3
Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	105	70-130

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	83	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249277

Reviewed By *Ard* Date 12/28/00

Data File	Kzoo
MW4	3.4-6.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	P4
Sample Depth, ft	4.5-7.9
Sample Type	water
Sample Date	11-06-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	11-10-00
Control Number	001900-02

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3
Surrogate Recovery	**%Recovery**	**Criteria**
Isopropyl Benzene	104	70-130

Sample Identification	P4
Sample Depth, ft	4.5-7.9
Sample Type	water
Sample Date	11-06-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Extraction Date	11-09-00
Analysis Date	11-09-00
Control Number	001900-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	77	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249278

Reviewed By [illegible] Date 11/29/00

Data File	Kzoo
P4	4.5-7.9

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KR059B030373

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW3	Sample Identification	MW3
Sample Depth, ft	4.4-7.8	Sample Depth, ft	4.4-7.8
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	11-09-00
Preservation Type	HCl	Analysis Date	11-09-00
Analysis Date	11-10-00		
Control Number	001900-03	Control Number	001900-03

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3
Surrogate Recovery	**%Recovery**	**Criteria**
Isopropyl Benzene	104	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	81	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 11/29/00

Data File	Kzoo
MW3	4.4-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	P3
Sample Depth, ft	3.9-7.8
Sample Type	water
Sample Date	11-06-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	11-10-00
Control Number	001900-04

BTEX, Method 8021	ug/L	TDL
Benzene	25	1
Toluene	2	1
Ethylbenzene	67	1
Xylenes, Total	65	3
Surrogate Recovery	**%Recovery**	**Criteria**
Isopropyl Benzene	107	70-130

Sample Identification	P3
Sample Depth, ft	3.9-7.8
Sample Type	water
Sample Date	11-06-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Extraction Date	11-09-00
Analysis Date	11-09-00
Control Number	001900-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	71	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	73	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [illegible] Date 11/28/00

Data File	Kzoo
P3	3.9-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	P3D	Sample Identification	P3D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	11-09-00
Preservation Type	HCl	Analysis Date	11-09-00
Analysis Date	11-10-00		
Control Number	001900-05	Control Number	001900-05

BTEX, Method 8021	ug/L	TDL
Benzene	110	1
Toluene	2	1
Ethylbenzene	2	1
Xylenes, Total	9	3
Surrogate Recovery	**%Recovery**	**Criteria**
Isopropyl Benzene	115	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	28	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	83	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 11/29/00

Data File	Kzoo
P3D	35-40

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW2	**Sample Identification**	MW2
Sample Depth, ft	5.4-8	Sample Depth, ft	5.4-8
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	11-09-00
Preservation Type	HCl	Analysis Date	11-09-00
Analysis Date	11-10-00		
Control Number	001900-06	Control Number	001900-06

BTEX, Method 8021	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3
Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	99	70-130

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	83	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [illegible] Date 11/29/00

Data File	Kzoo
MW2	5.4-8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW201	Sample Identification	MW201
Sample Depth, ft	4.3-7.5	Sample Depth, ft	4.3-7.5
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	11-09-00
Preservation Type	HCl	Analysis Date	11-09-00
Analysis Date	11-13-00		
Control Number	001900-07	Control Number	001900-07

BTEX, Method 8021	ug/L	TDL
Benzene	20	1
Toluene	nd	1
Ethylbenzene	16	1
Xylenes, Total	11	3
Surrogate Recovery	**%Recovery**	**Criteria**
Isopropyl Benzene	122	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	950	5
2-Methylnaphthalene	27	5
Acenaphthylene	nd	5
Acenaphthene	30	5
Fluorene	8	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	81	60-140

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 11/28/00

Data File	Kzoo
MW201	4.3-7.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW104	**Sample Identification**	MW104
Sample Depth, ft	6-9.4	Sample Depth, ft	6-9.4
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	11-09-00
Preservation Type	HCl	Analysis Date	11-09-00
Analysis Date	11-10-00		
Control Number	001900-08	Control Number	001900-08

BTEX, Method 8021	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3
Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	96	70-130

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	10	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	79	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 11/28/00

Data File	Kzoo
MW104	6-9.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW104D
Sample Depth, ft	30-35
Sample Type	water
Sample Date	11-06-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	11-10-00
Control Number	001900-09

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3
Surrogate Recovery	**%Recovery**	**Criteria**
Isopropyl Benzene	97	70-130

Sample Identification	MW104D
Sample Depth, ft	30-35
Sample Type	water
Sample Date	11-06-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Extraction Date	11-09-00
Analysis Date	11-09-00
Control Number	001900-09

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	74	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249285

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
MW104D	30-35

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KR059B030380

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW105	Sample Identification	MW105
Sample Depth, ft	11.9-15.4	Sample Depth, ft	11.9-15.4
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	11-09-00
Preservation Type	HCl	Analysis Date	11-09-00
Analysis Date	11-10-00		
Control Number	001900-10	Control Number	001900-10

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	97	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	83	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249286

Reviewed By [illegible] Date 11/28/00

Data File	Kzoo
MW105	11.9-15.4

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KR059B030381

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW105D	Sample Identification	MW105D
Sample Depth, ft	38.5-43.5	Sample Depth, ft	38.5-43.5
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	11-09-00
Preservation Type	HCl	Analysis Date	11-09-00
Analysis Date	11-10-00		
Control Number	001900-11	Control Number	001900-11

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	97	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	84	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249287

Reviewed By *Ad* Date 11/28/00

Data File	Kzoo
MW105D	38.5-43.5

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KR059B030382

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW103
Sample Depth, ft	11.6-15.4
Sample Type	water
Sample Date	11-07-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	11-10-00
Control Number	001900-12

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3
Surrogate Recovery	**%Recovery**	**Criteria**
Isopropyl Benzene	96	70-130

Sample Identification	MW103
Sample Depth, ft	11.6-15.4
Sample Type	water
Sample Date	11-07-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Extraction Date	11-09-00
Analysis Date	11-09-00
Control Number	001900-12

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	76	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249288

Reviewed By *Al* Date 11/29/00

Data File	Kzoo
MW103	11.6-15.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW102	Sample Identification	MW102
Sample Depth, ft	11.4-14.9	Sample Depth, ft	11.4-14.9
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	11-09-00
Preservation Type	HCl	Analysis Date	11-09-00
Analysis Date	11-10-00		
Control Number	001900-13	Control Number	001900-13

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	97	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	81	60-140

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249289

Reviewed By [illegible] Date 11/29/00

Data File	Kzoo
MW102	11.4-14.9

ORG

KR059B030384

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW101	Sample Identification	MW101
Sample Depth, ft	13.2-16.9	Sample Depth, ft	13.2-16.9
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	11-09-00
Preservation Type	HCl	Analysis Date	11-09-00
Analysis Date	11-13-00		
Control Number	001900-14	Control Number	001900-14

BTEX, Method 8021	ug/L	TDL
Benzene	110	50
Toluene	9,900	50
Ethylbenzene	1,600	50
Xylenes, Total	18,000	150
Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	99	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	3,100	20
2-Methylnaphthalene	150	20
Acenaphthylene	88	20
Acenaphthene	nd	20
Fluorene	nd	20
Phenanthrene	nd	20
Anthracene	nd	20
Fluoranthene	nd	20
Pyrene	nd	20
Benzo(a)anthracene	nd	20
Chrysene	nd	20
Benzo(b)fluoranthene	nd	20
Benzo(k)fluoranthene	nd	20
Benzo(a)pyrene	nd	20
Indeno(1,2,3-cd)pyrene	nd	20
Dibenzo(a,h)anthracene	nd	20
Benzo(g,h,i)perylene	nd	20
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	98	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249290

Reviewed By AK Date 11/28/00

Data File	Kzoo
MW101	13.2-16.9

ORG

KR059B030385

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW101D	Sample Identification	MW101D
Sample Depth, ft	34.5-39.5	Sample Depth, ft	34.5-39.5
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	11-09-00
Preservation Type	HCl	Analysis Date	11-09-00
Analysis Date	11-13-00		
Control Number	001900-15	Control Number	001900-15

BTEX, Method 8021	ug/L	TDL
Benzene	nd	10
Toluene	15	10
Ethylbenzene	410	10
Xylenes, Total	4,700	30
Surrogate Recovery	**%Recovery**	**Criteria**
Isopropyl Benzene	98	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	5,100	20
2-Methylnaphthalene	530	20
Acenaphthylene	370	20
Acenaphthene	nd	20
Fluorene	52	20
Phenanthrene	nd	20
Anthracene	nd	20
Fluoranthene	nd	20
Pyrene	nd	20
Benzo(a)anthracene	nd	20
Chrysene	nd	20
Benzo(b)fluoranthene	nd	20
Benzo(k)fluoranthene	nd	20
Benzo(a)pyrene	nd	20
Indeno(1,2,3-cd)pyrene	nd	20
Dibenzo(a,h)anthracene	nd	20
Benzo(g,h,i)perylene	nd	20
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	91	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249291

Reviewed By *Mel* Date 11/28/00

Data File	Kzoo
MW101D	34.5-39.5

ORG

KR059B030386

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW202D
Sample Depth, ft	55-60
Sample Type	water
Sample Date	11-07-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	11-13-00
Control Number	001900-16

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	8	3
Surrogate Recovery	**%Recovery**	**Criteria**
Isopropyl Benzene	102	70-130

Sample Identification	MW202D
Sample Depth, ft	55-60
Sample Type	water
Sample Date	11-07-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Extraction Date	11-09-00
Analysis Date	11-09-00
Control Number	001900-16

PAHs, Method 8270	ug/L	TDL
Naphthalene	68	5
2-Methylnaphthalene	6	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	83	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249292

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
MW202D	55-60

ORG

KR059B030387

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW1	Sample Identification	MW1
Sample Depth, ft	9.2-11.6	Sample Depth, ft	9.2-11.6
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	11-09-00
Preservation Type	HCl	Analysis Date	11-09-00
Analysis Date	11-13-00		
Control Number	001900-17	Control Number	001900-17

BTEX, Method 8021	ug/L	TDL
Benzene	nd	10
Toluene	220	10
Ethylbenzene	1,300	10
Xylenes, Total	1,100	30

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	102	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	200	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	81	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249293

Reviewed By AZL Date 11/29/00

Data File	Kzoo
MW1	9.2-11.6

ORG

KR059B030388

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	Duplicate	Sample Identification	Duplicate
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	no sample
Preservation Type	HCl	Analysis Date	no sample
Analysis Date	11-13-00		
Control Number	001900-18	Control Number	001900-18

BTEX, Method 8021	ug/L	TDL
Benzene	100	50
Toluene	9,500	50
Ethylbenzene	1,500	50
Xylenes, Total	17,000	150
Surrogate Recovery	**%Recovery**	**Criteria**
Isopropyl Benzene	93	70-130

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	5
Chrysene	-	5
Benzo(b)fluoranthene	-	5
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	5
Indeno(1,2,3-cd)pyrene	-	5
Dibenzo(a,h)anthracene	-	5
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	-	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249294

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
Duplicate	-

ORG

KR059B030389

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	P2
Sample Depth, ft	8.4-12.1
Sample Type	water
Sample Date	11-08-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	11-14-00
Control Number	001900-19

BTEX, Method 8021	ug/L	TDL
Benzene	290	2
Toluene	54	2
Ethylbenzene	200	2
Xylenes, Total	550	6

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	107	70-130

Sample Identification	P2
Sample Depth, ft	8.4-12.1
Sample Type	water
Sample Date	11-08-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Extraction Date	11-09-00
Analysis Date	11-09-00
Control Number	001900-19

PAHs, Method 8270	ug/L	TDL
Naphthalene	680	5
2-Methylnaphthalene	16	5
Acenaphthylene	nd	5
Acenaphthene	58	5
Fluorene	32	5
Phenanthrene	66	5
Anthracene	8	5
Fluoranthene	13	5
Pyrene	15	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	78	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249295

Reviewed By [illegible] Date 11/29/00

Data File	Kzoo
P2	8.4-12.1

ORG

KR059B030390

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	P2D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	11-08-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	11-13-00
Control Number	001900-20

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
Isopropyl Benzene	99	70-130

Sample Identification	P2D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	11-08-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Extraction Date	11-09-00
Analysis Date	11-09-00
Control Number	001900-20

PAHs, Method 8270	ug/L	TDL
Naphthalene	6	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	5
Chrysene	nd	5
Benzo(b)fluoranthene	nd	5
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	5
Indeno(1,2,3-cd)pyrene	nd	5
Dibenzo(a,h)anthracene	nd	5
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	94	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249296

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
P2D	35-40

ORG

KR059B030391

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	11-13-00
Control Number	001900-21

BTEX, Method 8021	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3
Surrogate Recovery	**%Recovery**	**Criteria**
Isopropyl Benzene	95	70-130

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date	no sample
Control Number	001900-21

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	5
Chrysene	-	5
Benzo(b)fluoranthene	-	5
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	5
Indeno(1,2,3-cd)pyrene	-	5
Dibenzo(a,h)anthracene	-	5
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	-	60-140

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249297

Reviewed By *AL* Date 11/28/00

Data File	Kzoo
Trip Blank	-

ORG

KR059B030392

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW4	Sample Identification	MW4
Sample Depth, ft	3.4-6.9	Sample Depth, ft	3.4-6.9
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-10-00	Analysis Date	11-10-00
Analysis Date, End	11-13-00		
Control Number	001900-01	Control Number	001900-01

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	6.0	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	8,900	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249298

Reviewed By [illegible] Date 11/29/00

Data File	Kzoo
MW4	3.4-6.9

INORG1

KR059B030393

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	P4	Sample Identification	P4
Sample Depth, ft	4.5-7.9	Sample Depth, ft	4.5-7.9
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-10-00	Analysis Date	11-10-00
Analysis Date, End	11-13-00		
Control Number	001900-02	Control Number	001900-02

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	9.0	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	3,600	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249299

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
P4	4.5-7.9

INORG1

KR059B030394

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW3	Sample Identification	MW3
Sample Depth, ft	4.4-7.8	Sample Depth, ft	4.4-7.8
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-10-00	Analysis Date	11-10-00
Analysis Date, End	11-13-00		
Control Number	001900-03	Control Number	001900-03

METALS	ug/L	TDL
Arsenic - 6020	7.0	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	410	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249300

Reviewed By *Acl* Date 11/29/00

Data File	Kzoo
MW3	4.4-7.8

INORG1

KR059B030395

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	P3	Sample Identification	P3
Sample Depth, ft	3.9-7.8	Sample Depth, ft	3.9-7.8
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-10-00	Analysis Date	11-10-00
Analysis Date, End	11-13-00		
Control Number	001900-04	Control Number	001900-04

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	190	100.0
Cadmium - 6020	4.7	0.5
Chromium (total) - 6020	12	5.0
Copper - 6020	nd	25.0
Lead - 6020	4.0	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	11	5.0
Silver - 6020	nd	0.5
Zinc - 6020	260	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	1,000	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249301

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
P3	3.9-7.8

INORG1

KR059B030396

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	P3D	Sample Identification	P3D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-10-00	Analysis Date	11-10-00
Analysis Date, End	11-13-00		
Control Number	001900-05	Control Number	001900-05

METALS	ug/L	TDL
Arsenic - 6020	30	5.0
Barium - 6020	200	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	6,300	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249302

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
P3D	35-40

INORG1

KR059B030397

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW2	Sample Identification	MW2
Sample Depth, ft	5.4-8	Sample Depth, ft	5.4-8
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-10-00	Analysis Date	11-10-00
Analysis Date, End	11-13-00		
Control Number	001900-06	Control Number	001900-06

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	1.6	0.5
Zinc - 6020	60	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	6,300	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249303

Reviewed By *MC* Date 11/29/00

Data File	Kzoo
MW2	5.4-8

INORG1

KR059B030398

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW201
Sample Depth, ft	4.3-7.5
Sample Type	water
Sample Date	11-06-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00
Analysis Date, Start	11-10-00
Analysis Date, End	11-13-00
Control Number	001900-07

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	190	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	8.0	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	9.9	0.5
Zinc - 6020	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW201
Sample Depth, ft	4.3-7.5
Sample Type	water
Sample Date	11-06-00
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date	11-10-00
Control Number	001900-07

METALS	ug/L	TDL
Iron (dissolved) - 6020	6,200	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249304

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
MW201	4.3-7.5

INORG1

KR059B030399

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW104	Sample Identification	MW104
Sample Depth, ft	6-9.4	Sample Depth, ft	6-9.4
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-10-00	Analysis Date	11-10-00
Analysis Date, End	11-13-00		
Control Number	001900-08	Control Number	001900-08

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	220	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	10	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	210	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	5,000	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249305

Reviewed By [illegible] Date 11/28/00

Data File	Kzoo
MW104	6-9.4

INORG1

KR059B030400

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW104D	Sample Identification	MW104D
Sample Depth, ft	30-35	Sample Depth, ft	30-35
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-10-00	Analysis Date	11-10-00
Analysis Date, End	11-13-00		
Control Number	001900-09	Control Number	001900-09

METALS	ug/L	TDL
Arsenic - 6020	25	5.0
Barium - 6020	270	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	5.0	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	5,900	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249306

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
MW104D	30-35

INORG1

KR059B030401

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW105	Sample Identification	MW105
Sample Depth, ft	11.9-15.4	Sample Depth, ft	11.9-15.4
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-10-00	Analysis Date	11-10-00
Analysis Date, End	11-13-00		
Control Number	001900-10	Control Number	001900-10

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	7.0	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	8.0	5.0
Silver - 6020	1.4	0.5
Zinc - 6020	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	nd	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249307

Reviewed By [illegible] Date 11/30/00

Data File	Kzoo
MW105	11.9-15.4

INORG1

KR059B030402

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW105D	Sample Identification	MW105D
Sample Depth, ft	38.5-43.5	Sample Depth, ft	38.5-43.5
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-10-00	Analysis Date	11-10-00
Analysis Date, End	11-13-00		
Control Number	001900-11	Control Number	001900-11

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	180	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	200	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	200	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249308

Reviewed By [illegible] Date 11/28/00

Data File	Kzoo
MW105D	38.5-43.5

INORG1

KR059B030403

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW103	Sample Identification	MW103
Sample Depth, ft	11.6-15.4	Sample Depth, ft	11.6-15.4
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-10-00	Analysis Date	11-10-00
Analysis Date, End	11-13-00		
Control Number	001900-12	Control Number	001900-12

METALS	ug/L	TDL
Arsenic - 6020	14	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	9.0	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	nd	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249309

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
MW103	11.6-15.4

INORG1

KR059B030404

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW102	Sample Identification	MW102
Sample Depth, ft	11.4-14.9	Sample Depth, ft	11.4-14.9
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-10-00	Analysis Date	11-10-00
Analysis Date, End	11-13-00		
Control Number	001900-13	Control Number	001900-13

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	5.0	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	9.0	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	nd	100

NOTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249310

Reviewed By [illegible] Date 11/28/00

Data File	Kzoo
MW102	11.4-14.9

INORG1

KR059B030405

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW101	Sample Identification	MW101
Sample Depth, ft	13.2-16.9	Sample Depth, ft	13.2-16.9
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-10-00	Analysis Date	11-10-00
Analysis Date, End	11-13-00		
Control Number	001900-14	Control Number	001900-14

METALS	ug/L	TDL
Arsenic - 6020	6.0	5.0
Barium - 6020	190	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	7.0	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	1,700	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249311

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
MW101	13.2-16.9

INORG1

KR059B030406

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW101D	Sample Identification	MW101D
Sample Depth, ft	34.5-39.5	Sample Depth, ft	34.5-39.5
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-10-00	Analysis Date	11-10-00
Analysis Date, End	11-13-00		
Control Number	001900-15	Control Number	001900-15

METALS	ug/L	TDL
Arsenic - 6020	23	5.0
Barium - 6020	390	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	1.4	0.5
Zinc - 6020	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	2,300	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249312

Reviewed By [illegible] Date 11/20/00

Data File	Kzoo
MW101D	34.5-39.5

INORG1

KR059B030407

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW202D		**Sample Identification**	MW202D	
Sample Depth, ft	55-60		Sample Depth, ft	55-60	
Sample Type	water		Sample Type	water	
Sample Date	11-07-00		Sample Date	11-07-00	
Received Date	11-08-00		Received Date	11-08-00	
Report Date	11-29-00		Report Date	11-29-00	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
Preparation Date (Hg)	11-13-00		Preparation Date	-	
Analysis Date, Start	11-10-00		Analysis Date	11-10-00	
Analysis Date, End	11-13-00				
Control Number	001900-16		Control Number	001900-16	
METALS	**ug/L**	**TDL**	**METALS**	**ug/L**	**TDL**
Arsenic - 6020	nd	5.0	Iron (dissolved) - 6020	170	100
Barium - 6020	180	100.0			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5.0			
Copper - 6020	nd	25.0			
Lead - 6020	nd	3.0			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5.0			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	20.0			
Metal Results Are Reported As	Dissolved	Dissolved			

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249313

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
MW202D	55-60

INORG1

KR059B030408

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW1	Sample Identification	MW1
Sample Depth, ft	9.2-11.6	Sample Depth, ft	9.2-11.6
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-10-00	Analysis Date	11-10-00
Analysis Date, End	11-13-00		
Control Number	001900-17	Control Number	001900-17

METALS	ug/L	TDL
Arsenic - 6020	6.0	5.0
Barium - 6020	220	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	7.0	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	4,300	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249314

Reviewed By [illegible] Date 11/28/00

Data File	Kzoo
MW1	9.2-11.6

INORG1

KR059B030409

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	Duplicate	Sample Identification	Duplicate
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	no sample	Preparation Date	no sample
Analysis Date, Start	no sample	Analysis Date	no sample
Analysis Date, End	no sample		
Control Number	001900-18	Control Number	001900-18

METALS	ug/L	TDL
Arsenic - 6020	-	5.0
Barium - 6020	-	100.0
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5.0
Copper - 6020	-	25.0
Lead - 6020	-	3.0
Mercury - 7470	-	0.2
Selenium - 6020	-	5.0
Silver - 6020	-	0.5
Zinc - 6020	-	20.0
Metal Results Are Reported As	-	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	-	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249315

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
Duplicate	-

INORG1

KR059B030410

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	P2	Sample Identification	P2
Sample Depth, ft	8.4-12.1	Sample Depth, ft	8.4-12.1
Sample Type	water	Sample Type	water
Sample Date	11-08-00	Sample Date	11-08-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-13-00	Analysis Date	11-13-00
Analysis Date, End	11-13-00		
Control Number	001900-19	Control Number	001900-19

METALS	ug/L	TDL
Arsenic - 6020	13	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	4.9	0.5
Chromium (total) - 6020	13	5.0
Copper - 6020	nd	25.0
Lead - 6020	9.0	3.0
Mercury - 7470		0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	940	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249316

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
P2	8.4-12.1

INORG1

KR059B030411

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	P2D	**Sample Identification**	P2D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	11-08-00	Sample Date	11-08-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	11-13-00	Preparation Date	-
Analysis Date, Start	11-13-00	Analysis Date	11-13-00
Analysis Date, End	11-13-00		
Control Number	001900-20	Control Number	001900-20

METALS	**ug/L**	**TDL**
Arsenic - 6020	6.0	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	20.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 6020	3,200	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249317

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
P2D	35-40

INORG1

KR059B030412

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	Trip Blank	Sample Identification	Trip Blank
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	-	Sample Date	-
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	no sample	Preparation Date	no sample
Analysis Date, Start	no sample	Analysis Date	no sample
Analysis Date, End	no sample		
Control Number	001900-21	Control Number	001900-21

METALS	ug/L	TDL
Arsenic - 6020	-	5.0
Barium - 6020	-	100.0
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5.0
Copper - 6020	-	25.0
Lead - 6020	-	3.0
Mercury - 7470	-	0.2
Selenium - 6020	-	5.0
Silver - 6020	-	0.5
Zinc - 6020	-	20.0
Metal Results Are Reported As	-	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	-	100

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249318

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
Trip Blank	-

INORG1

KR059B030413

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW4	Sample Identification	MW4
Sample Depth, ft	3.4-6.9	Sample Depth, ft	3.4-6.9
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-08-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-08-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-01	Control Number	001900-01

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100.0
Sulfate - 375.2; 300.0	27,000	1000.0
Alkalinity, as CaCO3 - 310.1	420,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249319

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
MW4	3.4-6.9

INORG2

KR059B030414

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	P4	**Sample Identification**	P4
Sample Depth, ft	4.5-7.9	Sample Depth, ft	4.5-7.9
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-08-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-08-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-02	Control Number	001900-02

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	nd	100.0
Sulfate - 375.2; 300.0	22,000	1000.0
Alkalinity, as CaCO3 - 310.1	440,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249320

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
P4	4.5-7.9

INORG2

KR059B030415

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW3	Sample Identification	MW3
Sample Depth, ft	4.4-7.8	Sample Depth, ft	4.4-7.8
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-08-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-08-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-03	Control Number	001900-03

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100.0
Sulfate - 375.2; 300.0	25,000	1000.0
Alkalinity, as CaCO3 - 310.1	290,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249321

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
MW3	4.4-7.8

INORG2

KR059B030416

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	P3	Sample Identification	P3
Sample Depth, ft	3.9-7.8	Sample Depth, ft	3.9-7.8
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-08-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-08-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-04	Control Number	001900-04

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	600	100.0
Sulfate - 375.2; 300.0	80,000	1000.0
Alkalinity, as CaCO3 - 310.1	440,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249322

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
P3	3.9-7.8

INORG2

KR059B030417

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	P3D	Sample Identification	P3D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-08-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-08-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-05	Control Number	001900-05

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100.0
Sulfate - 375.2; 300.0	nd	1000.0
Alkalinity, as CaCO3 - 310.1	320,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249323

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
P3D	35-40

INORG2

KR059B030418

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW2	Sample Identification	MW2
Sample Depth, ft	5.4-8	Sample Depth, ft	5.4-8
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-08-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-08-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-06	Control Number	001900-06

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	600	100.0
Sulfate - 375.2; 300.0	920,000	1000.0
Alkalinity, as CaCO3 - 310.1	91,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249324

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
MW2	5.4-8

INORG2

KR059B030419

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW201	Sample Identification	MW201
Sample Depth, ft	4.3-7.5	Sample Depth, ft	4.3-7.5
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-08-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-08-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-07	Control Number	001900-07

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100.0
Sulfate - 375.2; 300.0	nd	1000.0
Alkalinity, as CaCO3 - 310.1	450,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249325

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
MW201	4.3-7.5

INORG2

KR059B030420

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW104	Sample Identification	MW104
Sample Depth, ft	6-9.4	Sample Depth, ft	6-9.4
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-08-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-08-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-08	Control Number	001900-08

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100.0
Sulfate - 375.2; 300.0	16,000	1000.0
Alkalinity, as CaCO3 - 310.1	590,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249326

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
MW104	6-9.4

INORG2

KR059B030421

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW104D	Sample Identification	MW104D
Sample Depth, ft	30-35	Sample Depth, ft	30-35
Sample Type	water	Sample Type	water
Sample Date	11-06-00	Sample Date	11-06-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-08-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-08-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-09	Control Number	001900-09

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100.0
Sulfate - 375.2; 300.0	76,000	1000.0
Alkalinity, as CaCO3 - 310.1	320,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249327

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
MW104D	30-35

INORG2

KR059B030422

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW105	Sample Identification	MW105
Sample Depth, ft	11.9-15.4	Sample Depth, ft	11.9-15.4
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-09-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-09-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-10	Control Number	001900-10

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	2,900	100.0
Sulfate - 375.2; 300.0	80,000	1000.0
Alkalinity, as CaCO3 - 310.1	350,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249328

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
MW105	11.9-15.4

INORG2

KR059B030423

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW105D	Sample Identification	MW105D
Sample Depth, ft	38.5-43.5	Sample Depth, ft	38.5-43.5
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-09-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-09-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-11	Control Number	001900-11

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	400	100.0
Sulfate - 375.2; 300.0	86,000	1000.0
Alkalinity, as CaCO3 - 310.1	300,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249329

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
MW105D	38.5-43.5

INORG2

KR059B030424

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW103	**Sample Identification**	MW103
Sample Depth, ft	11.6-15.4	Sample Depth, ft	11.6-15.4
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-09-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-09-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-12	Control Number	001900-12

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	1,400	100.0
Sulfate - 375.2; 300.0	27,000	1000.0
Alkalinity, as CaCO3 - 310.1	490,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249330

Reviewed By [illegible] Date 11/29/00

Data File	Kzoo
MW103	11.6-15.4

INORG2

KR059B030425

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW102	**Sample Identification**	MW102
Sample Depth, ft	11.4-14.9	Sample Depth, ft	11.4-14.9
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-09-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-09-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-13	Control Number	001900-13

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	2,100	100.0
Sulfate - 375.2; 300.0	68,000	1000.0
Alkalinity, as CaCO3 - 310.1	290,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249331

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
MW102	11.4-14.9

INORG2

KR059B030426

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW101	Sample Identification	MW101
Sample Depth, ft	13.2-16.9	Sample Depth, ft	13.2-16.9
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-09-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-09-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-14	Control Number	001900-14

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	710	100.0
Sulfate - 375.2; 300.0	44,000	1000.0
Alkalinity, as CaCO3 - 310.1	490,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249332

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
MW101	13.2-16.9

INORG2

KR059B030427

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW101D	Sample Identification	MW101D
Sample Depth, ft	34.5-39.5	Sample Depth, ft	34.5-39.5
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-09-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-09-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-15	Control Number	001900-15

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100.0
Sulfate - 375.2; 300.0	15,000	1000.0
Alkalinity, as CaCO3 - 310.1	340,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249333

Reviewed By [signature] Date 11/29/00

Data File	Kzoo
MW101D	34.5-39.5

INORG2

KR059B030428

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW202D	Sample Identification	MW202D
Sample Depth, ft	55-60	Sample Depth, ft	55-60
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-09-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-09-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-16	Control Number	001900-16

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	300	100.0
Sulfate - 375.2; 300.0	68,000	1000.0
Alkalinity, as CaCO3 - 310.1	330,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249334

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
MW202D	55-60

INORG2

KR059B030429

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	MW1	Sample Identification	MW1
Sample Depth, ft	9.2-11.6	Sample Depth, ft	9.2-11.6
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-09-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-09-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-17	Control Number	001900-17

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100.0
Sulfate - 375.2; 300.0	61,000	1000.0
Alkalinity, as CaCO3 - 310.1	420,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249335

Reviewed By: [illegible] Date 11/28/00

Data File	Kzoo
MW1	9.2-11.6

INORG2

KR059B030430

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	Duplicate	Sample Identification	Duplicate
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	11-07-00	Sample Date	11-07-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	no sample	Extraction Date	no sample
Analysis Date, Nitrate	no sample	Analysis Date, Available (OIA)	no sample
Analysis Date, Sulfate	no sample	Analysis Date, Free	no sample
Analysis Date, Alkalinity	no sample		
Control Number	001900-18	Control Number	001900-18

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	-	100.0
Sulfate - 375.2; 300.0	-	1000.0
Alkalinity, as CaCO3 - 310.1	-	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

NOTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249336

Reviewed By [illegible] Date 11/28/00

Data File	Kzoo
Duplicate	-

INORG2

KR059B030431

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	P2	**Sample Identification**	P2
Sample Depth, ft	8.4-12.1	Sample Depth, ft	8.4-12.1
Sample Type	water	Sample Type	water
Sample Date	11-08-00	Sample Date	11-08-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-09-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-09-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-19	Control Number	001900-19

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	nd	100.0
Sulfate - 375.2; 300.0	14,000	1000.0
Alkalinity, as CaCO3 - 310.1	550,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249337

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
P2	8.4-12.1

INORG2

KR059B030432

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	P2D	Sample Identification	P2D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	11-08-00	Sample Date	11-08-00
Received Date	11-08-00	Received Date	11-08-00
Report Date	11-29-00	Report Date	11-29-00
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Extraction Date	-
Analysis Date, Nitrate	11-09-00	Analysis Date, Available (OIA)	11-10-00
Analysis Date, Sulfate	11-09-00	Analysis Date, Free	11-15-00
Analysis Date, Alkalinity	11-10-00		
Control Number	001900-20	Control Number	001900-20

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100.0
Sulfate - 375.2; 300.0	110,000	1000.0
Alkalinity, as CaCO3 - 310.1	310,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249338

Reviewed By [signature] Date 11/28/00

Data File	Kzoo
P2D	35-40

INORG2

KR059B030433

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo, Former MGP - SME Project # KE31823 - Sampling Dates of November 6-8, 2000	Project Number CHEM-00-1900

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Preservation Date	no sample
Analysis Date, Nitrate	no sample
Analysis Date, Sulfate	no sample
Analysis Date, Alkalinity	no sample
Control Number	001900-21

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	-	100.0
Sulfate - 375.2; 300.0	-	1000.0
Alkalinity, as CaCO3 - 310.1	-	-

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	11-08-00
Report Date	11-29-00
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date, Available (OIA)	no sample
Analysis Date, Free	no sample
Control Number	001900-21

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

NOTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00249339

Reviewed By AC Date 11/28/00

Data File	Kzoo
Trip Blank	-

INORG2

KR059B030434

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. LARABEL

DATE SHIPPED: 11/8/00 ARY consumers

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

ANALYSIS REQUESTED

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASE, SMG - PLYMOUTH

PHONE: 734-454-9500

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAS	10 mg metals	CYANIDE (AVAIL)	AND Free	IRON	BICARBONATE (ALKALINITY)	REMARKS
00-19001	11/6/00	0950	W	MW4	3.4-6.9	8	X	X	X	X	X	X	X	
-2		1030		P4	4.5-7.9									
-3		1130		MW3	4.4-7.8									
-4		1230		P3	3.9-7.8									
-5		1500		P3D	35-40									
-6		1325		MW2	5.4-8									
-7		1440		MW201	4.3-7.5									
-8		1600		MW104	6-9.4									
-9		1745		MW104D	30-35									

KR059B030435

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	11/6/00	SMG Sample Room
RELINQUISHED BY: (SIGNATURE) SMG Sample Room	DATE / TIME 11/8/00 ARY consumers 3:15 p.m.	RECEIVED BY: (SIGNATURE) Aaron R. Young
RELINQUISHED BY: (SIGNATURE) 00249340	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ Methods & MDLs

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823

SAMPLING TEAM: N. LARABEL

DATE SHIPPED: 11/8/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BOURASSE, SME-PLYMOUTH

PHONE: 734-454-9900

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 mi metals	TPOM	Alkalinity	CYANIDE (OLA & free)		REMARKS
CO-19000-70	11/7/00	0800	W	MW 105	11.9-15.4	8	X	X	X	X	X	X		
-71		1000		MW 105D	38.5-43.5									
-72		0940		MW 103	11.6-15.4									
-73		0845		MW 102	11.4-14.9									
-74		1340		MW 101	13.2-16.9									
-75		1300		MW 101D	34.5-39.5									
-76		1430		MW 202D	55-60									
-77		1500		MW1	9.2-11.6									
-78	11/7/00	—	W	Duplicate	—	2	X							

KR059B030436

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	11/7/00 1800	SME Sample Lab
SME Sample Lab	11-8-00, 3:15pm	Aaron R. Young
00249341		

COMMENTS: - MDEQ MOLSA methods

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31823

SAMPLING TEAM: N. Larabel

DATE SHIPPED: 11/8/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: Pat Barresse, SME - Plymouth

PHONE: 734-454-9400

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 MS metals	Tox	Alkalinity	Chloride	COD & FLEO	REMARKS
00-1900-19	11/8/00	0820	W	P2	8.4-12.1	8	X	X	X	X	X	X		
-20	↓	1015	W	P2D	35-40	8	X	X	X	X	X	X		
-21			W	Trip Blank A.Y.	–	1	✓							

KR059B030437

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	11/8/00 3:15 p.m.	Aaron A. Young
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE) 00249342	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
– MDEQ methods & MDLs

ORIGINAL TO LAB COPY TO CUSTOMER

47063

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823

SAMPLING TEAM: N. LARABEL

DATE SHIPPED: 11/7/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASSE
SMU - PLYMOUTH
PHONE: 734-454-5500

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE	REMARKS
L07789	11/6/00	0950	W	MW4	3.4-6.9	1	X	X	
7790		1030		P4	4.5-7.9				
7791		1130		MW3	4.4-7.8				
7792		1230		P3	3.9-7.8				INVOICE:
7793		1500		P3D	35-40				CONSUMERS POWER
7794		1325		MW2	5.4-8				
7795		1440		MW201	4.3-7.5				
7796		1600		MW104	6-9.4				
7797		1745		MW104D	30-35				

KR059B030438

00249343

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	11/6/00	SMU Sample Room
SMU Sample Room	11/7/00 11:00	
	11/7/00 1:00	

COMMENTS
- NDEQ MDLS2 method
- Contact Gordon Cattell with Questions 1-517-788-2334

4°C

ORIGINAL TO LAB COPY TO CUSTOMER

47112

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823

SAMPLING TEAM: N. LARABEL

DATE SHIPPED: 11/8/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASCE, SME - PLYMOUTH, PHONE: 734-454-9900

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NI NATD	SULFATE	REMARKS
7980	11/7/00	0800	W	MW105	11.9-15.4	#1	X	X	
7981		1000		MW105D	38.5-43.5	1			
7982		0940		MW 103	11.6-15.4	1			
7983		0845		MW 102	11.4-14.9	1			
7984		1340		MW 101	13.2-16.9	1			
7985		1300		MW 101D	34.5-39.5	1			
7986		1430		MW 202D	55-60	1			
7987		1500		MW1	9.2-11.6	1			
	11/7		W	DUPLICATE		2			

00249344

KR059B030439

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	11/7/00 1800	SME Sample Room
SME Sample Room	11/8/00	
	11/8/00 4:40	

COMMENTS
- MDEQ MDUSA methods
- Contact Gerson Cattell with Questions (Consumers)

4°C

ORIGINAL TO LAB COPY TO CUSTOMER

47113

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: 1631823

SAMPLING TEAM: N. LARGEL

DATE SHIPPED: 11/8/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Baresse, SME - DLT MOUTH

PHONE: 734-454-9900

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NH3 NITR	SULFATE					REMARKS
M07988	11/8/00	0820	W	PZ	8.4-17.1	1	X	X					
7989	↓	1015	W	PZD	35-40	1	X	X					
													KR059B030440

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	11/8/00	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	11/8/00 4:40	
RELINQUISHED BY: (SIGNATURE) 00249345	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

- MDEQ MDLs + methods
- Contact Gordon Cattell with Questions

4°C

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo Former MGP

PROJECT NUMBER: —

SAMPLING TEAM: —

DATE SHIPPED: 11/09/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 2

SEND REPORT TO: G.L. Cattell

PHONE: (517) 788-2334

ANALYSIS REQUESTED

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAH	MI 10 dis. metals	Dis. Iron				REMARKS
00-1900-1	11/06/00	Am	water	MW4	—	AR4 4 Zea.	✓	✓	✓	✓				
-2				P4			✓	✓	✓	✓				
-3				MW3			✓	✓	✓	✓				
-4		Pm		P3			✓	✓	✓	✓				
-5				P3D			✓	✓	✓	✓				
-6				MW2			✓	✓	✓	✓				
-7				MW201			✓	✓	✓	✓				
-8				MW104			✓	✓	✓	✓				
-9				MW104D			✓	✓	✓	✓				
-10	11/07/00	Am		MW105			✓	✓	✓	✓				
-11				MW105D			✓	✓	✓	✓				KR059B030441
-12				MW103			✓	✓	✓	✓				

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Aaron R. Young	11-09-00, 1:00p.m.	Laurie Gerlach
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
00249346		

COMMENTS
- metals were field filtered
- Use MDEQ op. memo 6, Rev 5 TDLs
- Reference RMR# when billing
- Pick one for MS/MSD/Dup – metals only.
- Routine turnaround

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo former MGP

PROJECT NUMBER: —

SAMPLING TEAM: —

DATE SHIPPED: 11/09/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 2

SEND REPORT TO:

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAH	MIO diss. metals	diss. Iron				REMARKS
00-19900-13	11/7/00	Am	water	MW102	—	ARY 4 ea.	✓	✓	✓	✓				
-14		Pm		MW101			✓	✓	✓	✓				
-15				MW101D			✓	✓	✓	✓				
-16				MW202D			✓	✓	✓	✓				
-17				MW1			✓	✓	✓	✓				
-18		—		Duplicate		2ea.	✓	NO →						
-19	11/8/00	Am		P2		ARY 4 ea.	✓	✓	✓	✓				
-20				P2D			✓	✓	✓	✓				
-21	—			Trip blank		1ea.	✓	NO →						

KR059B030442

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Aaron A. Young	11-09-00, 1:00p.m.	Laurie Beech
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
00249347		

COMMENTS

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EXHIBIT MGP-8

REPORT OF
THIRD PHASE OF REMEDIAL INVESTIGATION
AND
GROUNDWATER MONITORING ACTIVITIES

CONSUMERS ENERGY
KALAMAZOO MGP SITE
KALAMAZOO, MICHIGAN

NOVEMBER 12, 2001
SME PROJECT NO. KE31823

KR059B030444

Consultants in the geosciences, materials and the environment

- *Caissons/Piles*
- *Corrosion*
- *Dewatering*
- *Drilling*
- *Earth Retention Systems*
- *Foundation Engineering*
- *Geodynamics/Vibrations*
- *Geophysical Survey*
- *Geosynthetics*
- *Ground Modification*
- *Instrumentation*
- *Settlement Analysis*
- *Site Condition Assessment*
- *Slope Stability*
- *Building Restoration*
- *Coatings*
- *Concrete*
- *Condition Survey*
- *Construction Materials Services*
- *Facility Asset Management*
- *Forensic Engineering*
- *Masonry/Stone*
- *Metals*
- *Nondestructive Testing*
- *Pavement Evaluation/Design*
- *Roof System Management*
- *Sealants/Waterproofing*
- *Structural Steel/Welding*
- *Air Quality*
- *Asbestos/Lead Based Paint*
- *Baseline Environmental Assessm.*
- *Due Care Analysis*
- *Environmental Site Assessment*
- *Hydrogeologic Evaluation*
- *Industrial Hygiene*
- *Landfill Services*
- *Pollution Prevention*
- *Regulatory Compliance*
- *Remediation*
- *Risk Assessment*
- *Storm Water Discharge*
- *Underground Storage Tanks*

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REPORT OF
THIRD PHASE OF REMEDIAL INVESTIGATION
AND
GROUNDWATER MONITORING ACTIVITIES

CONSUMERS ENERGY
KALAMAZOO MGP SITE
KALAMAZOO, MICHIGAN

NOVEMBER 12, 2001
SME PROJECT NO. KE31823

KR059B030445

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- *Remediation*
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- *Underground Storage Tanks*

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EXECUTIVE SUMMARY

SME conducted a third phase of remedial investigation activities at Consumers Energy Company's (Consumers Energy's) Kalamazoo former manufactured gas plant (MGP). The Kalamazoo MGP is located in the City of Kalamazoo, Kalamazoo County, Michigan.

Field activities for the remedial investigation were conducted in May and June 2001. The remedial investigation activities consisted of conducting 1 quarter of groundwater monitoring, as well as installing 5 shallow and 3 deep monitoring wells. Additionally, vertical groundwater sampling was conducted at soil borings located east of Pitcher Street. With the exception of vertical groundwater samples, soil and groundwater samples were evaluated for BTEX, PAHs, cyanide (amenable, available and/or free) and the 10 Michigan Metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc). Vertical groundwater samples were evaluated for BTEX and naphthalene only. Groundwater samples collected from site monitoring wells for the quarterly groundwater monitoring event were also evaluated for natural attenuation parameters consisting of dissolved oxygen, alkalinity, nitrate, dissolved iron and sulfate. A total of 1 soil sample and 39 groundwater samples were submitted for laboratory analysis for the third phase of remedial investigation.

Generally, the results of remedial investigation activities conducted in May and June 2001 at the site were consistent with the results of previous remedial investigation activities conducted at the site. The results of the third phase of remedial investigation indicate groundwater impact, at concentrations exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water, as well as Part 201 Cleanup Criteria for GSI, is migrating off-site to the southeast towards Portage Creek based on analytical results for groundwater samples collected at monitoring wells MW303 and MW304.

A more detailed presentation of the remedial investigation results is presented below.

Coal Tar Impact

Coal tar was encountered at 13 of 28 soil probe or hand auger locations on the south side of the Power Plant (Building No. 214) in the current coal storage area. The coal tar was encountered at depths ranging from approximately 1 to 7 feet. The thickness of the coal tar ranged from approximately 0.25 to 3.5 feet where encountered. Coal tar impact appears to be delineated into 3 discontinuous areas on the south side of the Power Plant. One area is located on the west side of the current coal storage area and is adjacent to the west fence line. A second area is also located on the west side of the current coal storage area and is located adjacent to the south concrete wall. A third and larger area is located centrally within the current coal storage area and appears to extend to the north under a concrete pad for the Power Plant.

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MGP Impact to Groundwater

1. BTEX and PAH concentrations for groundwater samples collected from site monitoring wells in May and June 2001 did not exceed Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, as well as Part 201 Cleanup Criteria for Groundwater Contact, Flammability/Explosivity, Acute Inhalation and Water Solubility, where applicable. In addition, dissolved metals and cyanide concentrations for groundwater samples collected from site monitoring wells in May and June 2001 did not exceed Part 201 Cleanup Criteria for Groundwater Contact.

2. BTEX and/or PAH impact to groundwater was identified at the following site monitoring wells for the groundwater monitoring event conducted in May and June 2001: MW-1, MW-3, P-2, P-3D, MW101, MW101D, MW202D, MW301, MW303 and MW304. The BTEX and/or PAH concentrations at these monitoring wells exceeded Part 201 Commercial II Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI. The PAH impact consisted primarily of naphthalene, however other PAHs were detected.

   BTEX and PAH impact to groundwater appears to be migrating to the south-southeast towards Portage Creek, which is consistent with the interpreted direction of groundwater flow. The lateral extent of BTEX and PAH impact to groundwater at the site appears to be delineated to the north, east and south.

   BTEX and PAH impact is present at depth within the aquifer at the MW101/MW101D/MW202D and the P-3/P-3D well clusters. The indicated concentrations for benzene, xylene(s) and/or naphthalene at these locations exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or the Part 201 Cleanup Criteria for GSI.

3. Zinc, silver and/or arsenic were detected at P-3, MW103 and MW301, respectively, for the May and June 2001 groundwater sampling event at concentrations slightly exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water or the Part 201 Cleanup Criteria for GSI. At P-3 and MW103, zinc and silver have not been previously detected at concentrations exceeding Part 201 Cleanup Criteria.

4. Available and free cyanide were not detected at site monitoring wells at concentrations exceeding the TDLs for the May and June 2001 groundwater monitoring event.

Natural Attenuation Parameters

Based on 4 quarters of groundwater monitoring, analytical results continue to suggest natural attenuation may be occurring within the plume of impacted groundwater based on DO, nitrate, dissolved iron and alkalinity concentrations for impacted wells.

The summary presented above is general in nature and should not be considered apart from the entire text of the report with all the qualifications and considerations mentioned therein. Details of our findings and recommendations are discussed in the following sections and in the appendices of this report.

1. INTRODUCTION

This document presents the results of the third phase of remedial investigation activities conducted at Consumers Energy Company's (Consumers Energy's) Kalamazoo former manufactured gas plant (MGP). The Kalamazoo MGP is located between Pitcher Street and Portage Street at Lovell Street in the City of Kalamazoo, Kalamazoo County, Michigan. Figure No. 1 of Appendix A is a site location diagram. Remedial investigation activities were conducted at the site in May and June of 2001. The remedial investigation activities were recommended in the "Report of Second Phase of Remedial Investigation and Groundwater Monitoring Activities," dated September 21, 2000 and prepared by SME.

Previous remedial investigation activities were conducted at the site in 1999 and 2000. These remedial investigation activities were documented in the reports listed below.

- "Interim Report of Remedial Investigation," dated December 28, 1999
- "Report of Second Phase of Remedial Investigation and Groundwater Monitoring Activities," dated September 21, 2000
- "Groundwater Monitoring Report," dated February 19, 2001

Project information detailing the former MGP operations and a current site description are presented in the "Report of Second Phase of Remedial Investigation and Groundwater Monitoring Activities." However, Figures No. 2 and 3 of Appendix A show the layout of the former MGP operations in 1937 and the current site features, respectively.

2. SCOPE OF SERVICES

The scope of services for the remedial investigation activities conducted in May and June 2001 is presented below. Figure No. 4 of Appendix A shows the locations of previous and new soil probes, soil borings and monitoring wells.

1. Conducted vertical groundwater sampling at B302, B303 and B304 on May 8, 9 and 10, 2001 to evaluate the vertical extent of impact to groundwater off-site, east of Pitcher Street. Vertical groundwater sampling was not conducted at B301.

   Groundwater samples collected during vertical groundwater sampling were submitted for laboratory analysis of benzene, toluene, ethylbenzene and xylenes (BTEX) and naphthalene.

2. Installed 7 monitoring wells, MW301, MW302, MW302I, MW302D, MW303, MW304 and MW304D on May 8, 16 and 17, 2001.

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MW301 was installed at the southeast corner of the Power Plant (Building No. 214) to further evaluate the extent of on-site groundwater impact. MW302, MW302I, MW302D, MW303, MW304 and MW304D were installed east of Pitcher Street to further evaluate the extent of off-site groundwater impact.

MW301 was installed in soil boring B301. MW302, MW302I, MW302D, MW303, MW304 and MW304D were installed in soil borings that were offset from the corresponding soil borings B302, B303 and B304.

3. Advanced 24 soil probes, SP501 through SP524, on May 23, 2001 and 4 hand augers, HA525, HA526, HA527 and HA528, on June 8, 2001. The purpose of the soil probes and hand augers was to evaluate the extent of coal tar impact to the subsurface south of the Power Plant (Building No. 214) in the current coal storage area. Figure No. 5 of Appendix A shows the locations of the soil probes and hand augers conducted on the south side of the Power Plant (Building No. 214) in the current coal storage area. HA525 through HA528 were conducted using hand augers due to the presence of subsurface utilities.

4. Collected groundwater samples from MW-1 through MW-4, P-1, P-2, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW201, MW202D, MW301, MW302, MW302I, MW302D, MW303, MW304 and MW304D on May 29, 30, 31 and June 1 and 4, 2001.

   The groundwater samples were submitted for laboratory analysis of BTEX; polynuclear aromatic hydrocarbons (PAHs); the 10 Michigan Metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc) and cyanide (available and free). The groundwater samples were also submitted for laboratory analysis of alkalinity, nitrate, dissolved iron and sulfate as part of the on-going evaluation of natural attenuation at the site.

5. Conducted an elevation survey at monitoring wells installed in May 2001. At each monitoring well, the mean sea level elevations for both top-of-casing and ground level were determined. In addition, an elevation was surveyed at a point on the north side of the Pitcher Street bridge over Portage Creek.

Byre Environmental Soil Testing (BEST) of Okemos, Michigan provided soil probe services. Stearns Drilling of Dutton, Michigan provided soil boring, vertical sampling and monitoring well installation services. Brave Controls & Engineering of Battle Creek, Michigan provided surveying services. Consumers Energy's Chemistry Section - Environmental & Laboratory Services Department of Jackson, Michigan provided laboratory analytical services for soil and groundwater samples.

3. PROCEDURES

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3.1 Soil Borings and Vertical Groundwater Sampling

Soil borings for B301, B302, B303 and B304 were advanced with a truck-mounted drill rig using 4.25-inch inner diameter (ID) hollow stem augers. Soil samples at each soil boring were collected continuously above the water table and at 5-foot intervals below the

water table to the termination depth of the soil borings. Soil boring depths ranged from 10.5 feet at B301 to 55 feet at B302, B303 and B304. Soil samples were collected using a 24-inch long split-barrel sampler that was driven into undisturbed soil ahead of the augers. Soil samples collected from the split-barrel sampler were containerized in 8-ounce glass jars, as well as physically classified and recorded on boring logs by the SME field staff. Copies of soil boring logs are presented in Appendix C.

Only one soil sample from the soil borings was submitted for laboratory analysis. At B304, a soil sample, B304-S3, was collected from a depth of approximately 5 to 7 feet below grade. The 5 to 7 foot depth corresponds approximately with the depth groundwater was encountered. The selection of the soil sample for laboratory analysis was based on sample depth, as well as soil characteristics, i.e. soil type, odors, staining, etc. The soil sample was submitted for laboratory analysis of BTEX, PAHs, the 10 Michigan Metals and amenable cyanide. With the exception of that portion collected for BTEX analysis, the soil sample was transferred from the split-barrel sampler to a pre-cleaned jar provided by the analytical laboratory using a disposable plastic or stainless steel putty knife. The portion of the soil sample collected for BTEX analysis was obtained in accordance with EPA VOC sediment sampling Method 5035 using a disposable Encore ® sampling device. Analytical methods, detection limits and corresponding containers were consistent with those presented in the "Report of Second Phase of Remedial Investigation and Groundwater Monitoring Activities," dated September 21, 2000 and prepared by SME.

Vertical groundwater sampling was conducted at B302, B303 and B304. At each soil boring, groundwater samples were collected at the water table, which ranged from approximately 4 to 7 feet BG, and at intervals of approximately 20 to 25 feet BG, 35 to 40 feet BG and 50 to 55 feet BG. Vertical groundwater samples were collected using a 5-foot long, 4.25–inch ID slotted hollow stem auger. Groundwater samples were collected by advancing the slotted lead auger to the desired depth for sample collection. At the water table, groundwater samples were obtained by lowering a Keck® Sampling Pump to the slotted interval of the auger and pumping through 0.5-inch ID polyethylene tubing. Below the water table, groundwater samples were obtained by lowering the Keck® Sampling Pump with an overlying inflatable packer to the slotted interval. The inflated packer was placed directly above the pump and slotted portion of the auger to prevent downward migration of groundwater within the augers. The groundwater sample was again collected by pumping through 0.5-inch ID polyethylene tubing. Approximately three volumes were purged prior to sampling at each sampling interval.

Vertical groundwater samples were submitted for laboratory analysis of BTEX and naphthalene. Analytical methods, detection limits and corresponding containers with

appropriate preservatives were consistent with those presented in the "Report of Second Phase of Remedial Investigation and Groundwater Monitoring Activities," dated September 21, 2000 and prepared by SME.

For both the soil sample and vertical groundwater samples, the analytical laboratory supplied pre-cleaned containers with appropriate preservatives (for groundwater samples only). After sample collection, the containerized samples were kept cool, i.e. refrigerated, until delivery to the analytical laboratory. Chain of custody procedures documenting the sample handling sequence were followed by the SME field staff.

At the completion of soil sampling and vertical groundwater sampling activities each soil boring was backfilled to grade with a cement/bentonite grout.

Soil cuttings generated from the soil borings, and groundwater generated from purging during vertical groundwater sampling, were containerized in labeled, MDOT approved, 55-gallon drums. A detailed description of decontamination and waste disposal procedures is presented in Sections 3.6 and 3.7, respectively.

3.2 Monitoring Well Installation

Soil borings for the installation of MW301, MW302, MW302I, MW302D, MW303, MW304 and MW304D were advanced with a truck-mounted drill rig using 4.25-inch ID hollow stem augers. MW301 was installed in B301, however, MW302, MW302I, and MW302D were installed in separate soil borings offset from B302; MW303 was installed in a boring offset from B303 and MW304 and MW304D were installed in separate borings offset from B304.

Soil samples were not collected from the soil borings corresponding to the installation of MW302, MW302I, MW303 and MW304. Soil descriptions at these locations were based on soil descriptions at corresponding soil borings B302, B303 and B304. At MW302D and MW304D, soil descriptions from grade to approximately 55 feet BG were also based on previous soil descriptions logged at corresponding soil borings B302 and B304, respectively. However, additional soil samples were collected from approximately 58 to 60 feet BG at MW302D; and at approximately 58 to 60 feet BG and 63 to 65 feet BG at MW304D, to provide soil descriptions at the screened interval for both wells.

Each monitoring well was constructed with a 5-foot long, 2-inch ID, schedule 40 PVC well screen and 2-inch ID, schedule 40 PVC riser pipe. The well screens were machine slotted with a slot size of 0.010 inch. For monitoring wells with the well screen set at the water table surface (MW301, MW302, MW303 and MW304) an attempt was made to set the well screen such that the water table would be within the screened interval. For monitoring wells with well screens set at depth below the water table (MW302I, MW302D and MW304D) screen interval depths were based on the results of vertical groundwater sampling,

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which are discussed in Section 7 of this report. The annular space surrounding the well screens for each monitoring well was packed with washed silica sand to a level approximately 2 feet above the top of the screens. At MW301, MW302, MW303 and MW304, a hydrated bentonite pellet seal was set above the sand pack to approximately 1 foot BG because the top of the sand pack was within 5 feet of grade. At MW302I, MW302D and MW304D, a hydrated bentonite pellet seal approximately 1 to 2 feet in thickness was set above the sand pack; while the remaining annular space was backfilled with a cement/bentonite grout to approximately 1 foot BG. Each monitoring well was completed at grade with a water-tight, traffic-rated, flush-mount well guard installed in concrete. Each well casing was capped with a water-tight, locking lid at the completion of well construction activities.

Monitoring wells were developed by intermittent surging of the screened interval with a surge block followed by pumping of the screened interval with a down-hole pump. The wells were developed until a minimum of six casing volumes of water had been removed and/or the development water was judged to be sufficiently clear.

SME field staff documented the final completion depths for the monitoring wells, as well as the associated sand packs and seals. SME field staff also documented the condition of the well development water, i.e. odors, turbidity, etc., as well as final volume of development water.

Soil cuttings generated from the soil borings were containerized in labeled, MDOT approved, 55-gallon drums. A detailed description of decontamination and waste disposal procedures is presented in Sections 3.6 and3.7, respectively.

3.3 Soil Probes

Soil probes were advanced with an ATV-mounted, pneumatically driven, direct-push coring device. Soil samples were collected continuously from grade to the termination depth of the soil probes, which was approximately 8 feet BG at each soil probe, with the exception of SP522, which was advanced to approximately 5.5 feet BG where refusal was encountered. As previously stated, 4 sampling locations were manually hand augered due to the presence of subsurface utilities. Soil samples at hand auger locations were also collected continuously from grade to the termination depth of the hand augered borings, which ranged from approximately 6 to 8 feet BG.

Soil samples from the direct-push coring device were collected using a 48-inch long, 2-inch outside diameter (OD) Geoprobe ® Macro Sampler lined with a disposable acetate liner. Soil samples were collected from the acetate liner by cutting open the liner with a utility knife and transferring the soil to a pre-cleaned geotechnical jar. Soil samples collected from the soil probes were physically classified and recorded on probe logs by the SME field staff. Copies of soil probe logs are presented in Appendix C.

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Soil samples collected during hand augering were collected as grab samples from the cutting head. Otherwise soil sampling procedures were consistent with those used with the direct-push coring device.

No soil or groundwater samples collected from either the soil probes or hand augers were submitted for laboratory analysis. Soil samples were collected for physical classification only.

Soil cuttings generated from the soil probes and hand augers were returned to the corresponding soil probe hole after sampling activities were completed. The remaining space in the soil probe holes was then backfilled with bentonite chips. Acetate liners and any excess soil cuttings that could not be returned to the soil probe holes were containerized in labeled, Michigan Department of Transportation (MDOT) approved, 55-gallon drums. Purged groundwater obtained from the soil probe temporary wells was also containerized in labeled, MDOT approved, 55-gallon drums. A detailed description of decontamination and waste disposal procedures is presented in Sections 3.6 and 3.7, respectively.

3.4 Monitoring Well Surveying

Ground surface and top-of-casing elevations for monitoring wells were surveyed relative to mean sea level with an accuracy of +/-0.01 feet. Ground surface and top-of-casing elevations for monitoring wells are indicated on the logs presented in Appendix C and on Table 1 of Appendix D. Ground surface elevations at soil probes and hand augers were not surveyed.

3.5 Monitoring Well Sampling

Prior to conducting monitoring well purging and sampling, well caps at each monitoring well were removed to allow the water level within the well casing to equilibrate with respect to atmospheric pressure for a minimum of 15 minutes. After equilibration occurred, the depth to water and total well depth were gauged referenced to the top-of-casing using an electronic water level meter incremented to 0.01 feet.

After gauging the depth to water and total well depth, each well was purged using a variable flow rate, portable peristaltic pump with 3/8-inch ID silicone tubing, or equivalent, at a low flow pumping rate of 100 to 400 milliliters per minute (ml/min), until a minimum of 3 casing volumes was purged and the discharged groundwater appeared to be relatively sediment free. For monitoring wells with well screens set at the water table surface (MW-1 through MW-4, P-1 through P-4, MW101 through MW105, MW201, MW301, MW302, MW303 and MW304) purging consisted of slowly lowering the pump intake to a level approximately half-way between the water level surface and the bottom of the well. For monitoring wells with well screens set at depth below the water table (P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D and MW304D) purging

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consisted of slowly lowering the pump intake through the portion of the water column above the screened interval where approximately one-casing volume was purged, then the pump intake was lowered to the center of the screened interval and purging was continued until a minimum of 2 more casing volumes had been purged and the discharged groundwater appeared to be relatively sediment free.

After purging was completed, groundwater samples were collected at the same flow rate for the following parameters in the order presented: PAHs, 10 Michigan Metals, cyanide (available and free) and BTEX. Groundwater samples collected for PAHs and free cyanide were pumped directly from the pump outlet into the appropriate containers with no preservatives. Groundwater samples collected for metals were pumped directly into the appropriate container with preservative directly from the pump outlet after passing through a 0.45 micron filter that had been inserted into the pump outlet. Groundwater samples collected for available cyanide were first pumped directly into a container containing a pre-measured amount of lead carbonate, then withdrawn from the container with a syringe and field filtered into a second container with preservative. Groundwater samples collected for BTEX analysis were collected by crimping the silicone tubing at grade and withdrawing the tubing from the well. The groundwater sample was then gravity drained from the influent end of the pump tubing into the appropriate container with preservative to minimize negative pressure effects from the peristaltic pump. Analytical methods, detection limits and corresponding containers with preservatives were consistent with those presented in the "Report of Second Phase of Remedial Investigation and Groundwater Monitoring Activities," dated September 21, 2000 and prepared by SME.

Groundwater samples collected from site monitoring wells were also submitted for laboratory analysis of various inorganic parameters to evaluate the potential for natural attenuation occurring on the site. The parameters, analytical methods, TDLs and sample containers are presented below.

Analytical Parameter	EPA Method Number	Target Detection Limits	Container w/ Preservative
Alkalinity As CaCO3	310.1	--	40 ml VOA/NP
Nitrate	353.2;300.0	100	250 ml plastic/NP
Iron	7380	20	250 ml plastic/HNO3
Sulfate	375.2;300.0	1,000	250 ml plastic/NP

Notes:
1. TDLs are presented in parts per billion (ppb or micrograms per Liter (ug/L)).
2. NP = No preservative.

As a quality assurance/quality control measure for the May and June 2001 sampling event, duplicate groundwater samples from MW101 and MW304 were also submitted to the analytical laboratory for BTEX analysis only.

The analytical laboratory supplied pre-cleaned containers with appropriate preservatives for groundwater samples. After sample collection, the containerized samples were kept cool, i.e. refrigerated, until delivery to the analytical laboratory. Chain of custody procedures documenting the sample handling sequence were followed by the SME field staff.

Depths to groundwater, total well depths, purge volumes, field descriptions of purge water condition (i.e. color, odors, etc.) and other relevant information were documented by the SME field staff.

Purge water from monitoring well sampling activities was containerized in labeled MDOT approved 55-gallon drums. A detailed description of decontamination and waste disposal procedures is presented in Sections 3.6 and 3.7, respectively.

3.6 Decontamination

Downhole soil probe and drilling tools, i.e. augers, drill-rod, probe-rods, etc., were decontaminated with a high pressure/temperature wash prior to conducting each soil probe and soil boring. Downhole and reusable soil sampling equipment, i.e. Macro Samplers, split-barrel samplers, stainless steel putty knives, were decontaminated with a laboratory grade detergent and rinsed with distilled water prior to each use. Downhole and reusable groundwater sampling equipment, i.e. Keck pump, temporary well screens, water level meter, were decontaminated with a laboratory grade detergent and rinsed with distilled water prior to each use. For groundwater sampling, new polyethylene or silicone tubing, as well as new groundwater filter elements were used at each sampling location, i.e. soil probes or monitoring wells.

Monitoring well materials were either pre-cleaned and wrapped in plastic from the manufacturer or cleaned on-site with a high pressure/temperature wash.

Waste water generated from decontamination activities was containerized in labeled MDOT approved 55-gallon drums. A more detailed description of waste disposal procedures is presented under Section 3.7.

3.7 Solid and Liquid Disposal

As previously stated, residual soil and acetate liners generated from soil probe activities; soil cuttings generated during soil boring activities; groundwater generated during soil probe sampling, well development and monitoring well sampling activities, and wash water generated during the decontamination of soil and groundwater sampling equipment were containerized in labeled, MDOT approved 55-gallon drums.

The MDOT approved 55-gallon drums were provided by SME's subcontractors. Drum labels were provided by Consumers Energy. The drum labels were marked using a water-proof, indelible pen with the following information:

- Contents: Type of material, i.e. soil cuttings, acetate liners, purge water and/or decon water.
- Origin of Materials: Source of material, i.e. MW202D.
- Address: 1945 W. Parnall Road/Jackson, MI
- Contact: Robert Neumann
- SME Project No.: KE31823
- Date: Date material was placed in drum.

Consumers Energy has disposed of the soil and liquid wastes generated during the remedial investigation activities at licensed disposal facilities.

4. GEOLOGY/HYDROGEOLOGY

4.1 Soil Stratigraphy

The site is located within the Kalamazoo River Valley. Unconsolidated sediments within the Kalamazoo River Valley range in thickness from about 50 to 100 feet and generally consist of interbedded sands and silts. The deposition of the unconsolidated sediments can be primarily attributed to alluvial processes, i.e. stream and river action. The underlying bedrock unit is the Coldwater Shale. A more detailed presentation of site stratigraphy is presented below.

Generally, the soil conditions encountered during remedial investigation activities conducted in May and June 2001 were consistent with soil conditions encountered during previous remedial investigation activities conducted in 1999 and 2000.

At SP501, SP502, SP503, SP509, SP510 and SP514, surficial material consisted of approximately 2 inches to 1 foot of coal. At B304, surficial material consisted of approximately 5 inches of cement concrete of gravel base material. At B303, surficial material consisted of approximately 1 foot of topsoil. At B301, B302, SP504 through SP508, SP511, SP512, SP513, SP515 through SP524 and HA525 through HA528, the surficial materials consisted of sand fill.

Below surficial material, the soil stratigraphy at the site is characterized as follows:

Stratum A: Fill. Fill consisting predominantly of sand was encountered beneath the surficial materials at each soil probe and soil boring location. The sand fill varied in grain size and contained various amounts of silt, clay and gravel. The fill also contained varying amounts of coal, slag, cinders, brick pieces, root fibers and limestone fragments. Coal tar was encountered within fill material at SP504, SP505, SP506, SP508, SP509, SP510, SP513, SP514, SP521, SP522, HA525, HA526 and HA528. A more detailed discussion regarding the extent of coal tar impact is presented in Section 6. The fill extended to depths varying from approximately 2.5 feet to approximately 8 feet. At SP507, SP508, SP511, SP518, SP519, SP522 and HA525 through HA528 the sand fill extended to the termination depth of the soil probe or hand auger.

Stratum B: Fibrous Peat. Fibrous peat was encountered at B301, B302, B304, SP504, SP505, SP506, SP509, SP510, SP513, SP514, SP517, SP520 and SP521. The peat was encountered either beneath either the fill of Stratum A or interbedded within the native sands and silts of Stratum B. The peat ranged in thickness from approximately 0.2 feet at SP506 and SP514 to 5 feet at B302. Occasional root pieces and sand partings were encountered within the peat. The peat extended to depths ranging from approximately 6 feet to 8 feet. At SP505, SP506, SP509, SP510, SP514, SP520 and SP521 the peat extended to the termination depth of the soil boring or soil probe.

Stratum C: Native Sands and Silts. Natural sand and/or silt layers were encountered either beneath the fill of Stratum A or the fibrous peat of Stratum B at B301 through B304, SP501 through SP504, SP506, SP510, SP512 through SP517, SP521, SP523 and SP524. The native sand layers were assorted in grain size and contained variable amounts of gravel, silt and/or clay. The native silt layers included clayey silt and sandy silt with sand seams and partings at various locations. At B301 through B304, SP501 through SP504, SP512, SP513, SP515, SP516, SP517, SP523 and SP524, the soil borings or soil probes terminated in the native sands or silts of Stratum C at depths ranging from 8 feet to 61 feet.

Figure No. 4 of Appendix A is a site map showing the location of the section line for geologic cross section A-A'. Figure No. 6 of Appendix A is geologic cross section A-A' which shows the interpreted correlation of the soil stratigraphy described above. The soil stratigraphy is consistent with the depositional environment of the area, as well as soil conditions encountered at previous soil probes and soil borings conducted at the site.

Odors were noted at B302, B304, SP501, SP503, SP504 through SP510, SP512 through SP518, SP522, HA525, HA526 and HA528. Black staining was prevalent within soil samples collected from soil probes and hand augers conducted within the coal storage area south of the Power Plant (Building No. 214), which included SP501 through SP524 and HA525 through HA528. A discussion of the extent of coal tar impact is presented in Section 5.

4.2 Groundwater Conditions

Figure No. 7 of Appendix A shows the groundwater elevation contours for groundwater levels gauged in site monitoring wells on May 29, 2001. Table 1 of Appendix D lists groundwater elevation data for the May 29, 2001, as well as previous groundwater monitoring events.

For May 2001, groundwater was encountered at depths below ground surface ranging from approximately 3.3 feet at MW302D to approximately 13.3 feet at MW202D. Where comparative data is available, groundwater elevations for May 2001 were higher by approximately 0.7 to 1.5 feet compared with groundwater elevations gauged in November 2000.

For the northern portion of the site, where former MGP production components, storage structures and/or transfer lines had been located, groundwater flow appears to be to the east with a calculated horizontal hydraulic gradient of 0.003 feet per foot. This horizontal hydraulic gradient was calculated between the 760.6 and 757.6 contour lines on the north side of the site. For the southern portion of the site, groundwater flow appears to be generally to the east-northeast with a calculated horizontal hydraulic gradient of 0.006 feet per foot. This horizontal hydraulic gradient was calculated between the 758.8 and 757.6 contour lines on the south side of the site. The interpreted groundwater flow direction and corresponding horizontal gradients are generally consistent with previous groundwater gauging events. Groundwater elevations gauged at P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D and MW304D were not used to interpret groundwater flow conditions at the water table because the well screens are set below the water table surface.

Based on the May 2001 groundwater elevation data, it appears that groundwater at the water table in the vicinity of the site is discharging to Portage Creek since groundwater elevations at MW302 and MW304, which are located adjacent to Portage Creek and are screened at the water table, were higher than the gauged elevation of the creek.

Vertical hydraulic gradients were calculated for the following well pairs, P-2/P-2D, P-3/P-3D, MW101/MW202D, MW104/MW104D, MW105/MW105D, MW302/MW302D and MW304/MW304D. The following table summarizes the calculated vertical gradients.

Well Pair Location	Gradient (feet per foot) and Direction
P-2/P-2D	0.01 – Downward
P-3/P-3D	0.005 – Downward
MW101/MW202D	0.01 – Downward
MW104/MW104D	0.009 – Upward
MW105/MW105D	0.03 – Downward
MW302/MW302D	0.01 – Upward
MW304/MW304D	0.01 – Upward

Where comparative data is available, the calculated vertical hydraulic gradients are slightly lower, though in the same direction, compared with those calculated for November 2000 groundwater elevation data. The calculated vertical gradients for well pairs located on the west side of Pitcher Street, P-2/P-2D, P-3/P-3D, MW101/MW202D and MW105/MW105D, are downward, however calculated vertical gradients for well pairs located on the east side of Pitcher Street, MW104/MW104D, MW302/MW302D and MW304/MW304D are upward.

5. ESTIMATED EXTENT OF COAL TAR IMPACT

Coal tar was encountered at SP504, SP505, SP506, SP508, SP509, SP510, SP513, SP514, SP521, SP522, HA525, HA526 and HA528. Each of these soil probe and hand auger were advanced on the south side of the Power Plant (Building No. 214) in the current coal storage area. With the exception of SP509, coal tar was encountered within fill material at depths ranging from approximately 1 to 7 feet and extended to depths ranging from approximately 2.5 to 7.5 feet. At SP509, the coal tar was encountered at two depth intervals, approximately 3.5 to 3.8 feet and approximately 6.3 to 6.5 feet. The thickness of the fill containing coal tar ranged from approximately 0.25 feet to 3.5 feet, however at 11 of the soil probe or hand auger locations, the total thickness of the fill containing coal tar was less than or equal to 1 foot. It should also be noted that at 8 of the 13 soil probe and hand auger locations where coal tar was encountered, the coal tar was encountered at a depth below the water table.

Figure No. 8 of Appendix A shows the estimated extent of coal tar impact to surface and subsurface soil on the south side of the Power Plant (Building No. 214) in the coal storage area. The figure also shows the approximate boundaries of excavations conducted by

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Pharmacia personnel in September 1999 to remove near-surface coal tar. The excavations conducted in September 1999 did not exceed approximately 2 feet in depth. Coal tar impact appears to have been identified in 3 areas. The extent of coal tar appears to be delineated in each area with the exception of the detections along the south wall where the extent of coal tar impact was not delineated to the south of SP521 and SP522. However, coal tar was not encountered at the soil boring corresponding to MW1, which is located approximately 45 feet south of SP521 and approximately 40 feet southeast of SP522.

6. ANALYTICAL RESULTS FOR SOIL

Laboratory testing results for the soil sample collected at B304 are listed on Tables 2 and 3 of Appendix D. Tables 2 and 3 also lists the Part 201 Commercial II Cleanup Criteria for Drinking Water Protection, Groundwater Contact Protection, Volatilization to Indoor Air Inhalation and Direct Contact, as well as Part 201 Cleanup Criteria for Groundwater/Surface Water Interface (GSI) Protection. The laboratory analytical report for the soil sample is presented in Appendix E.

Benzene, ethylbenzene and xylene(s) concentrations exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water Protection and/or Part 201 Cleanup Criteria for GSI. The toluene concentration was less than the Part 201 Commercial II Cleanup Criteria, as well as GSI.

The naphthalene concentration exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water Protection and Part 201 Cleanup Criteria for GSI. Concentrations of other PAHs were either less than TDLs or than the Part 201 Commercial II Cleanup Criteria, as well as GSI.

BTEX and PAHs concentrations for the soil sample were less than the Part 201 Commercial II Cleanup Criteria for Groundwater Contact Protection, Volatilization to Indoor Air, Infinite Source Volatile Groundwater Volatilization to Indoor Air Inhalation, as well as Part 201 Cleanup Criteria for Groundwater Contact, Water Solubility, Flammability and Explosivity Screening Levels and Acute Inhalation Screening Levels.

Mercury and selenium concentrations exceeded the Part 201 Cleanup Criteria for GSI. The concentrations of other metals were less than the Part 201 Generic Commercial II Cleanup Criteria, as well as GSI.

The amenable cyanide concentration was less than the TDL.

7. ANALYTICAL RESULTS FOR VERTICAL GROUNDWATER SAMPLING

Laboratory testing results for vertical groundwater samples collected at B302, B303 and B304 are listed on Table 4 of Appendix D. Table 4 also lists the Part 201 Commercial II Cleanup Criteria for Drinking Water and Volatilization to Indoor Air and Part 201 Cleanup Criteria for Groundwater Contact and Groundwater/Surface Water Interface (GSI). Laboratory analytical reports for the vertical groundwater samples are presented in Appendix F.

BTEX and naphthalene concentrations for vertical groundwater samples were less than the Part 201 Commercial II Cleanup Criteria for Groundwater Volatilization to Indoor Air Inhalation, as well as Part 201 Cleanup Criteria for Groundwater Contact, Water Solubility, Flammability and Explosivity Screening Levels and Acute Inhalation Screening Levels.

7.1 B302

BTEX and naphthalene concentrations for the vertical groundwater sample collected at 4 to 9 feet BG were either less than the target detection levels (TDLs) or Part 201 Cleanup Criteria.

Benzene, xylene(s) and/or naphthalene concentrations for the vertical groundwater samples collected at 20 to 25 feet BG, 35 to 40 feet BG and 50 to 55 feet BG exceeded Part 201 Commercial II Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI. Toluene and ethylbenzene concentrations for vertical groundwater samples collected at 20 to 25 feet BG, 35 to 40 feet BG and 50 to 55 feet BG were less than the Part 201 Commercial II Cleanup Criteria for Drinking Water and Part 201 Cleanup Criteria for GSI.

7.2 B303

The benzene concentration for the vertical groundwater sample collected at 4 to 9 feet BG exceeded the Part 201 Commercial II Cleanup Criterion for Drinking Water, but was less than the Part 201 Cleanup Criterion for GSI. However, toluene, ethylbenzene, xylene(s) and naphthalene concentrations for the vertical groundwater sample collected at 4 to 9 feet BG were either less than the TDLs or Part 201 Cleanup Criteria.

BTEX and naphthalene concentrations for the vertical groundwater sample collected at 20 to 25 feet BG, 35 to 40 feet BG and 50 to 55 feet BG were either less than the TDLs or Part 201 Cleanup Criteria.

7.3 B304

Benzene, ethylbenzene, xylene(s) and naphthalene concentrations for the vertical groundwater samples collected at 4 to 9 feet BG and 20 to 25 feet BG exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or the Part 201 Cleanup Criteria for

GSI. Toluene concentrations for the vertical groundwater sample collected at 4 to 9 feet BG and 20 to 25 feet BG were less than the Part 201 Cleanup Criteria.

Ethylbenzene, xylene(s) and naphthalene concentrations for the vertical groundwater sample collected at 35 to 40 feet exceeded the Part 201 Criteria for GSI, but were less than the Part 201 Commercial II Cleanup Criteria for Drinking Water. Benzene and toluene concentrations for the vertical groundwater sample collected at 35 to 40 feet BG were less than the Part 201 Cleanup Criteria.

The naphthalene concentration for the vertical groundwater sample collected at 50 to 55 feet BG exceeded the Part 201 Criterion for GSI, but was less than the Part 201 Commercial II Cleanup Criterion for Drinking Water. BTEX concentrations for the vertical groundwater sample collected at 50 to 55 feet BG were less than the Part 201 Cleanup Criteria.

7.4 Basis for Vertical Groundwater Sampling

The analytical results for the vertical groundwater samples collected from B302, B303 and B304 indicate that BTEX and naphthalene are present in groundwater at locations adjacent to Portage Creek at concentrations exceeding the Part 201 Commercial Cleanup Criteria for Drinking Water and/or GSI. The analytical results also indicate that the vertical extent of impact to the aquifer along Portage Creek at concentrations exceeding Part 201 Cleanup Criteria may extend to 55 feet BG, but with the indicated BTEX and naphthalene concentrations at B302 and B304 generally decreasing with depth.

The analytical results for the vertical groundwater sampling were used to evaluate the screened interval depths of proposed permanent monitoring wells to be set at locations corresponding to B302, B303 and B304. At the location corresponding to B302, 3 permanent monitoring wells, identified as MW302, MW302I and MW302D, were installed. The screened interval for MW302 was set at the water table, which was encountered at approximately 4 feet BG. The screened interval for MW302I was set at approximately 20 to 25 feet BG, and the screened interval for MW302D was set from approximately 55 to 60 feet BG. At the location corresponding to B303, 1 permanent monitoring well, identified as MW303, was installed. The screened interval for MW303 was set at the water table, which was encountered at approximately 4 feet BG. At the location corresponding to B304, 2 permanent monitoring wells, identified as MW304 and MW304D, were installed. The screened interval for MW304 was set at the water table, which was encountered at approximately 7 feet BG. The screened interval for MW304D was set from approximately 65 to 70 feet BG.

8. ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES COLLECTED FROM MONITORING WELLS

Laboratory testing results for 27 groundwater samples collected from permanent site monitoring wells in May and June 2001 are listed on Table 5 of Appendix D. For each monitoring well, Table 5 lists only those PAHs and metals that have been detected for at least one sampling event. Table 5 also lists the Part 201 Commercial II Cleanup Criteria for Drinking Water and Part 201 Cleanup Criteria for GSI. Laboratory analytical reports for the groundwater samples collected from permanent site monitoring wells in May and June 2001 are presented in Appendix G.

BTEX and PAH concentrations for groundwater samples were less than the Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air Inhalation, as well as Part 201 Cleanup Criteria for Groundwater Contact, Water Solubility, Flammability and Explosivity Screening Levels and Acute Inhalation Screening Levels.

Metals and cyanide (available and free) concentrations were less than the Part 201 Cleanup Criteria for Groundwater Contact.

8.1 MGP Parameters

8.1.1 BTEX

Benzene, toluene, ethylbenzene and/or xylene(s) concentrations at MW-1, MW-3, P-2, P-3D, MW101, MW101D, MW301, MW303 and MW304 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI.

BTEX concentrations for other groundwater samples were less than the TDL.

8.1.2 PAHs

Naphthalene concentrations at MW-1, MW-3, P-2, P-3D, MW101, MW101D, MW202D, MW301, MW303 and MW304 exceeded the Part 201 Commercial II Cleanup Criterion for Drinking Water and/or Part 201 Cleanup Criterion for GSI. The concentrations of remaining PAHs constituents at MW-1, MW-3, P-3D, MW202D, MW303 and MW304 were either less than the TDL or Part 201 Commercial II Cleanup Criteria.

Acenaphthylene, acenaphthene, fluorene, phenanthrene and/or fluoranthene concentrations at P-2, MW101, MW101D and MW301 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI. Excluding naphthalene, the concentrations of remaining PAHs constituents at P-2, MW101, MW101D and MW301 were either less than the TDL or Part 201 Commercial II Cleanup Criteria.

PAH concentrations for other groundwater samples were less than the TDL.

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8.1.3 Michigan 10 Metals

Zinc concentrations at P-3 exceeded the Part 201 Cleanup Criterion for GSI. Other metals concentrations for this groundwater sample were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Silver concentrations at MW103 exceeded the Part 201 Cleanup Criterion for GSI. Other metals concentrations for this groundwater sample were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Arsenic concentrations at MW301 exceeded the Part 201 Commercial II Cleanup Criterion for Drinking Water by 1 ppb. Other metals concentrations for this groundwater sample were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Metals concentrations for other groundwater samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

8.1.4 Cyanide

Available and free cyanide concentrations were less than the TDLs at each well.

8.2 Natural Attenuation Parameters

A discussion of the analytical results for the natural attenuation parameters dissolved oxygen, alkalinity, dissolved iron, nitrate and sulfate is presented below. Natural attenuation parameters have been evaluated at site monitoring wells for at least 4 consecutive sampling events. Natural attenuation is evaluated by looking at data trends over time for non-impacted wells compared to impacted wells. These criteria are discussed below.

The criteria for a well to be considered "non-impacted" were as follows:

1. the well is located upgradient of suspected MGP source areas;
2. neither BTEX nor PAHs have been detected at concentrations greater than the TDL for more than 1 sampling event; and,
3. neither BTEX nor PAHs have been detected in the well at concentrations exceeding Part 201 Cleanup Criteria for all sampling events conducted to date.

MW-4, P-4, MW102, MW103 and MW105 were considered to be representative of non-impacted wells for this evaluation. At each of these wells, BTEX and PAH constituents have generally been detected at concentrations less than the TDLs with the exception of MW-4 and P-4 where BTEX constituents have been detected at concentrations slightly above the TDL, but below Part 201 Cleanup Criteria, for one sampling event.

The criteria for a well to be considered impacted were as follows:

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1. The well is located either within or downgradient of suspected MGP source areas; and,

2. BTEX and/or PAHs have been detected in the well at concentrations exceeding Part 201 Cleanup Criteria for a minimum of 2 sampling events.

MW-1, P-2, P-3, MW101 and MW201 were considered to be representative of impacted wells for this evaluation.

Shallow monitoring wells MW-3, MW301, MW303 and MW304, which appear to be representative of impacted wells, were not used for this evaluation because there has been only one sampling event where concentrations have exceeded Part 201 Cleanup Criteria.

Shallow monitoring wells MW-2, P-1, MW104 and MW302, which appear to be representative of non-impacted wells based on analytical results to date, were not used for this evaluation. These wells are located adjacent to and/or downgradient of the plume of impacted groundwater, therefore the inorganic chemistry of these wells may not be reflective of non-impacted conditions.

Deep monitoring wells with screens set below the water table (P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D and MW304D) were not considered for this discussion because of insufficient background data available for comparison.

For the evaluation of natural attenuation data, concentrations reported as less than the TDL were set as equal to the TDL as a conservative assumption.

8.2.1 Dissolved Oxygen

Chart No. 1 of Appendix B shows a comparison of dissolved oxygen (DO) concentrations for non-impacted wells and impacted wells for the May and June 2001 groundwater-sampling event.

DO concentrations for non-impacted wells for the May and June 2001 groundwater sampling event ranged from 0.45 parts per million (ppm) at MW-4 and P-4 to 4.40 ppm at MW102, with a mean value of 2.09 ppm. When further evaluated, the DO concentrations for non-impacted wells MW-4 and P-4 were 0.45 ppm, respectively; while the DO concentrations for non-impacted wells MW102, MW103 and MW105 ranged from 1.90 ppm to 4.40 ppm. The apparent variation in DO concentrations for non-impacted wells may result from the well screens of MW-4 and P-4 being partially set within the fibrous peat unit; while the well screens for MW102, MW103 and MW105 are not.

DO concentrations for impacted wells for the May and June 2001 groundwater-sampling event ranged from 0.36 ppm at MW101 to 1.10 ppm at P-3, with a mean value of 0.62 ppm.

An indicator of natural attenuation is when DO concentrations for impacted wells are lower than DO concentrations for non-impacted wells. Discounting DO concentrations for non-impacted wells screened within the peat unit, this trend was observed for the May and June 2001 groundwater-sampling event.

Chart No. 2 of Appendix B shows a trend plot comparing the mean DO concentrations of non-impacted wells to impacted wells for the 4 groundwater sampling events for which natural attenuation data has been collected. This chart indicates that mean DO concentrations for non-impacted wells have been greater than the mean DO concentrations for impacted well consistently over the period of time for the 4 groundwater sampling events.

8.2.2 Alkalinity

Chart No. 3 of Appendix B shows a comparison of alkalinity concentrations for non-impacted wells and impacted wells for the May and June 2001 groundwater-sampling event.

Alkalinity concentrations for non-impacted wells for the May and June 2001 groundwater-sampling event ranged from 230,000 ppb at MW103 to 410,000 ppb at MW105, with a mean value of 336,000 ppb.

Alkalinity concentrations for impacted wells for the May and June 2001 groundwater-sampling event ranged from 310,000 ppb at P-3 to 440,000 ppb at MW201, with a mean value of 374,000 ppb.

An indicator of natural attenuation is when alkalinity concentrations for impacted wells are higher than alkalinity concentrations for non-impacted wells. Generally, this trend was observed for the May and June 2001 groundwater-sampling event.

Chart No. 4 of Appendix B shows a trend plot comparing the mean alkalinity concentrations of non-impacted wells to impacted wells for the 4 groundwater sampling events for which natural attenuation data has been collected. This chart indicates that mean alkalinity concentrations for impacted wells have been slightly greater than the mean alkalinity concentrations for non-impacted well consistently over the period of time for the 4 groundwater sampling events.

8.2.3 Nitrate

Chart No. 5 of Appendix B shows a comparison of nitrate concentrations for non-impacted wells and impacted wells for the May and June 2001 groundwater-sampling event.

Nitrate concentrations for non-impacted wells for the May and June 2001 groundwater-sampling event ranged from 490 ppb at P-4 to 3,300 ppb at MW103, with a mean value of 1,568 ppb.

Nitrate concentrations for impacted wells for the May and June 2001 groundwater sampling event ranged from less than the TDL (<100 ppb) at P-2 to 970 ppb at MW101, with a mean value of 388 ppb.

An indicator of natural attenuation is when nitrate concentrations for impacted wells are lower than nitrate concentrations for non-impacted wells. This trend was observed for the May and June 2001 groundwater-sampling event.

Chart No. 6 of Appendix A shows a trend plot comparing the mean nitrate concentrations of non-impacted wells to impacted wells for the 4 groundwater sampling events for which natural attenuation data has been collected. This chart indicates that mean nitrate concentrations for non-impacted wells have been greater than the mean nitrate concentrations for impacted well for 3 of the 4 groundwater sampling events.

8.2.4 Dissolved Iron

Chart No. 7 of Appendix B shows a comparison of dissolved iron concentrations for non-impacted wells and impacted wells for the May and June 2001 groundwater-sampling event.

Dissolved iron concentrations for non-impacted wells for the May and June 2001 groundwater sampling event ranged from less than the TDL (<20ppb) at MW102 and MW105 to 100 ppb at MW103, with a mean value of 37 ppb.

Dissolved iron concentrations for impacted wells for the May and June 2001 groundwater-sampling event ranged 300 ppb at P-3 to 11,000 ppb at P-2, with a mean value of 4,740 ppb.

An indicator of natural attenuation is when dissolved iron concentrations for impacted wells are higher than dissolved iron concentrations for non-impacted wells. This trend was observed for the May and June 2001 groundwater-sampling event.

Chart No. 8 of Appendix B shows a trend plot comparing the mean dissolved iron concentrations of non-impacted wells to impacted wells for the 4 groundwater sampling events for which natural attenuation data has been collected. This chart indicates that mean dissolved concentrations for non-impacted wells have been less than the mean dissolved iron

concentrations for impacted wells consistently over the period of time for the 4 groundwater sampling events.

8.2.5 Sulfate

Chart No. 9 of Appendix B shows a comparison of sulfate concentrations for non-impacted wells and impacted wells for the May and June 2001 groundwater-sampling event.

Sulfate concentrations for non-impacted wells for the May and June 2001 groundwater-sampling event ranged from 40,000 ppb at MW-4 to 150,000 ppb at MW103, with a mean value of 71,600 ppb.

Sulfate concentrations for impacted wells for the May and June 2001 groundwater-sampling event ranged from 12,000 ppb at P-2 to 130,000 ppb at P-3, with a mean value of 66,400 ppb.

An indicator of natural attenuation is when sulfate concentrations for impacted wells are less than sulfate concentrations for non-impacted wells. This trend was observed for the May and June 2001 groundwater-sampling event.

Chart No. 10 of Appendix B shows a trend plot comparing the mean sulfate concentrations of non-impacted wells to impacted wells for the 4 groundwater sampling events for which natural attenuation data has been collected. This chart indicates that mean sulfate concentrations for non-impacted wells have been greater than the mean sulfate concentrations for impacted wells for 2 of the 4 groundwater sampling events.

9. CONCLUSIONS

9.1 Coal Tar Impact

Coal tar was encountered at 13 soil probe or hand auger locations on the south side of the Power Plant (Building No. 214) in the current coal storage area. The coal tar was encountered at depths ranging from approximately 1 to 7 feet and extended to depths ranging from approximately 2.5 to 7.5 feet. The thickness of the fill containing coal tar generally ranged from approximately 0.25 feet to 3.5 feet, however at 11 of the soil probe or hand auger locations, the total thickness of the fill containing coal tar was less than or equal to 1 foot. At 8 of the soil probe and hand auger locations where coal tar was encountered, the coal tar was encountered at a depth below the water table. Coal tar impact appears to be limited to 3 areas on the south side of the Power Plant. The extent of coal tar impact appears to have been delineated in the area adjacent to the south side of the Power Plant, however the coal tar impact was not delineated along the south wall and the west fence line.

9.2 MGP Impact to Groundwater

1. BTEX and PAH concentrations for groundwater samples collected from site monitoring wells in May and June 2001 did not exceed Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air, as well as Part 201 Cleanup Criteria for Groundwater Contact, Flammability/Explosivity, Acute Inhalation and Water Solubility, where applicable. In addition, dissolved metals and cyanide concentrations for groundwater samples collected from site monitoring wells in May and June 2001 did not exceed Part 201 Cleanup Criteria for Groundwater Contact.

2. BTEX and/or PAH impact to groundwater was identified at the following site monitoring wells for the groundwater monitoring event conducted in May and June 2001: MW-1, MW-3, P-2, P-3D, MW101, MW101D, MW202D, MW301, MW303 and MW304. The BTEX and/or PAH concentrations at these monitoring wells exceeded Part 201 Commercial II Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI. The PAH impact consisted primarily of naphthalene, however other PAHs were detected.

   Figure Nos. 9, 10 and 11 of Appendix A present isoconcentration contours for benzene, xylene(s) and naphthalene impact to groundwater at the water table, respectively. These diagrams were developed using analytical results from monitoring wells screened at the water table and sampled in May and June 2001. Each contour diagram indicates BTEX and PAH impact to groundwater may be present as two distinct plumes that appear to be migrating to the south-southeast towards Portage Creek, which is consistent with the interpreted direction of groundwater flow. The interpretation for the presence of two distinct plumes is based primarily on the reported benzene, xylene(s) and naphthalene concentrations at MW-2 and P-3, which were less than the TDL. BTEX and PAH concentrations at MW-2 have historically been less than the TDL, however for the 6 groundwater sampling events conducted to date at P-3, BTEX and PAH concentrations have exceeded the Part 201 Cleanup Criteria for 3 of the 6 sampling events. Therefore, the presence of two distinct plumes based on data from the May and June 2001 groundwater-sampling event is believed to represent a seasonal variation.

   Figure Nos. 9, 10 and 11 of Appendix A also indicate the lateral extent of BTEX and PAH impact to groundwater at the site appears to be delineated to the north, east and south based on BTEX and PAH concentrations for groundwater samples collected from MW-4, P-4, MW102, MW103, MW104 and MW105 which were less than the TDLs. However, as indicated on Figures Nos. 10 and 11, BTEX and PAH impact appears to extend to Portage Creek. This interpretation is based on the reported xylene(s) and naphthalene concentrations at MW304, which is located adjacent to Portage Creek, of 610 and 90 ppb, respectively, which exceed the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or the Part 201 Cleanup Criteria for GSI. Additionally, the ethylbenzene concentration at MW304 was 320 ppb, which also exceeds both the Part 201 Commercial II Cleanup Criterion for Drinking Water and the Part 201 Cleanup Criterion for GSI.

As stated in the "Report of Second Phase of Remedial Investigation and Groundwater Monitoring Activities," the migration of BTEX and PAH impact at the water table in the downgradient direction may be influenced by the storm sewer located beneath Lovell Street which extends to the northeast and discharges to Portage Creek. Elevation data suggests the storm sewer is at least partially below the water table.

Figure Nos. 12, 13 and 14 present additional isoconcentration contours for benzene, xylene(s) and naphthalene impact to groundwater below the water table, respectively. However, these diagrams were developed using analytical results from monitoring wells screened below the water table and sampled in May and June 2001. The screen depths of the wells range from approximately 20 to 25 feet BG at MW302I to approximately 65 to 70 feet BG at MW304D. The figures indicate that BTEX and PAH impact is present at depth within the aquifer at the MW101/MW101D/MW202D and the P-3/P-3D well clusters. The indicated concentrations for benzene, xylene(s) and/or naphthalene at these locations exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or the Part 201 Cleanup Criteria for GSI.

At the MW101/MW101D/MW202D monitoring well cluster, both benzene and xylene(s) appear to be delineated in the upper 55 feet based on analytical results for the groundwater sample collected from MW202D, where benzene and xylene(s) concentrations were less than the TDL. However, the naphthalene impact has not been delineated since the indicated concentration at MW202D was 37 ppb.

At the P-3/P-3D monitoring well cluster, xylene(s) appear to be delineated in the upper 40 feet based on analytical results for the groundwater sample collected from P-3D where xylene(s) concentrations were less than the TDL. However, benzene and naphthalene impact to groundwater has not been delineated at this well cluster since the indicated concentrations at MW202D were 180 ppb for benzene and 58 ppb for naphthalene.

BTEX and PAH concentrations at MW302I, MW302D and MW304D were less than the TDLs indicating that BTEX and PAH impact to groundwater below the water table does not appear to migrating downgradient.

3. Zinc, silver and/or arsenic were detected at P-3, MW103 and MW301, respectively, for the May and June 2001 groundwater sampling event at concentrations slightly exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water or the Part 201 Cleanup Criteria for GSI. At P-3 and MW103, zinc and silver have not been previously detected at concentrations exceeding Part 201 Cleanup Criteria.

   With the exception of P-3, the detection of dissolved metals at site monitoring wells at concentrations exceeding Part 201 Commercial II Cleanup Criteria has generally not been repeatable since groundwater monitoring was initiated in February 1999. At P-3, selenium has been detected at concentrations exceeding the Part 201 Commercial II Cleanup Criterion for Drinking Water and/or the Part 201 Cleanup Criterion for GSI for 3 of 6 groundwater-sampling events.

4. Available and free cyanide were not detected at site monitoring wells at concentrations exceeding the TDLs for the May and June 2001 groundwater monitoring event.

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Available and free cyanide have not been detected at site monitoring wells at concentrations exceeding the TDLs for the last 3 consecutive groundwater sampling events.

9.3 Natural Attenuation Parameters

Based on 4 quarters of groundwater monitoring, analytical results continue to suggest natural attenuation may be occurring within the plume of impacted groundwater based on DO, nitrate, dissolved iron and alkalinity concentrations for impacted wells. Additional sampling for sulfate is required to evaluate if sulfate is indicative of natural attenuation. Figure Nos. 15, 16 and 17 show isoconcentration contours for DO, nitrate and dissolved iron at the site. Each of the contour diagrams show interpreted contour patterns that are generally consistent with the dimensions of the plume of impacted groundwater at the site. With respect to both the DO and dissolved iron isoconcentration diagrams, the lowest DO concentrations and highest dissolved iron concentrations appear to be located on the north side of the site in the source area. Lower DO concentrations are also appear to be present on the south side of the site based on the reported concentrations at MW-4 and P-4, however as previously stated in Section 8.2.1, the apparent variation in DO concentrations for MW-4 and P-4 is believed to result from their well screens being partially set within the fibrous peat unit and is not associated with MGP impact. This opinion is supported by previous analytical results for BTEX and PAHs at MW-4 and P-4, which have been less than the TDLs for 5 of the 6 groundwater sampling events conducted to date at the site.

10. RECOMMENDATIONS

Recommendations for additional remedial investigation activities are discussed below.

1. Advance 5 soil probes, SP601 through SP605, to further evaluate for the presence of coal tar. Two soil probes will be advanced immediately south of the south wall for coal storage area, two soil probes will be advanced immediately west of the west fence line for the coal storage area and one soil probe will be advanced approximately 50 feet southwest of the southeast corner of the Power Plant (Building No. 214). Each soil probe will be advanced to approximately 8 feet BG. Soil samples collected from the soil probes will be physically classified only. Figure No. 18 of Appendix A shows the proposed soil probe locations.

2. Conduct a limited source area removal within the area where coal tar impacted soil has been identified on the south side of the Power Plant (Building No. 214). Limited source area removal will be conducted by excavation and subsequent transport of impacted soil to a licensed Type II landfill. Figure No. 18 of Appendix A shows the proposed area of excavation with estimated depths. Excavation of coal tar impacted soil will not include the northern portion of coal tar impact located beneath the Power Plant and in the vicinity of active subsurface utilities. In addition the estimated limits of excavation assumes no sheet piling or shoring will be employed during excavation activities, therefore, excavation sidewalls will be 5 to 10 feet away from existing structures. The final limits of excavation activities will be based on visual confirmation of coal tar removal and/or limits imposed by existing structures. For estimating purposes it is assumed the total depth of the resulting excavation would range from 5 to 8 feet BG, with a total estimated volume to be removed to be on the order of 2,000 tons. This estimate assumes a 1.3 bulking factor. Post excavation soil samples will be collected in general accordance with the MDEQ's "Verification of Soil Remediation Guidance Document," dated April 1994. Post excavation soil samples will be submitted for laboratory analysis of MGP parameters, BTEX, PAHs, Michigan 10 Metals and Cyanide.

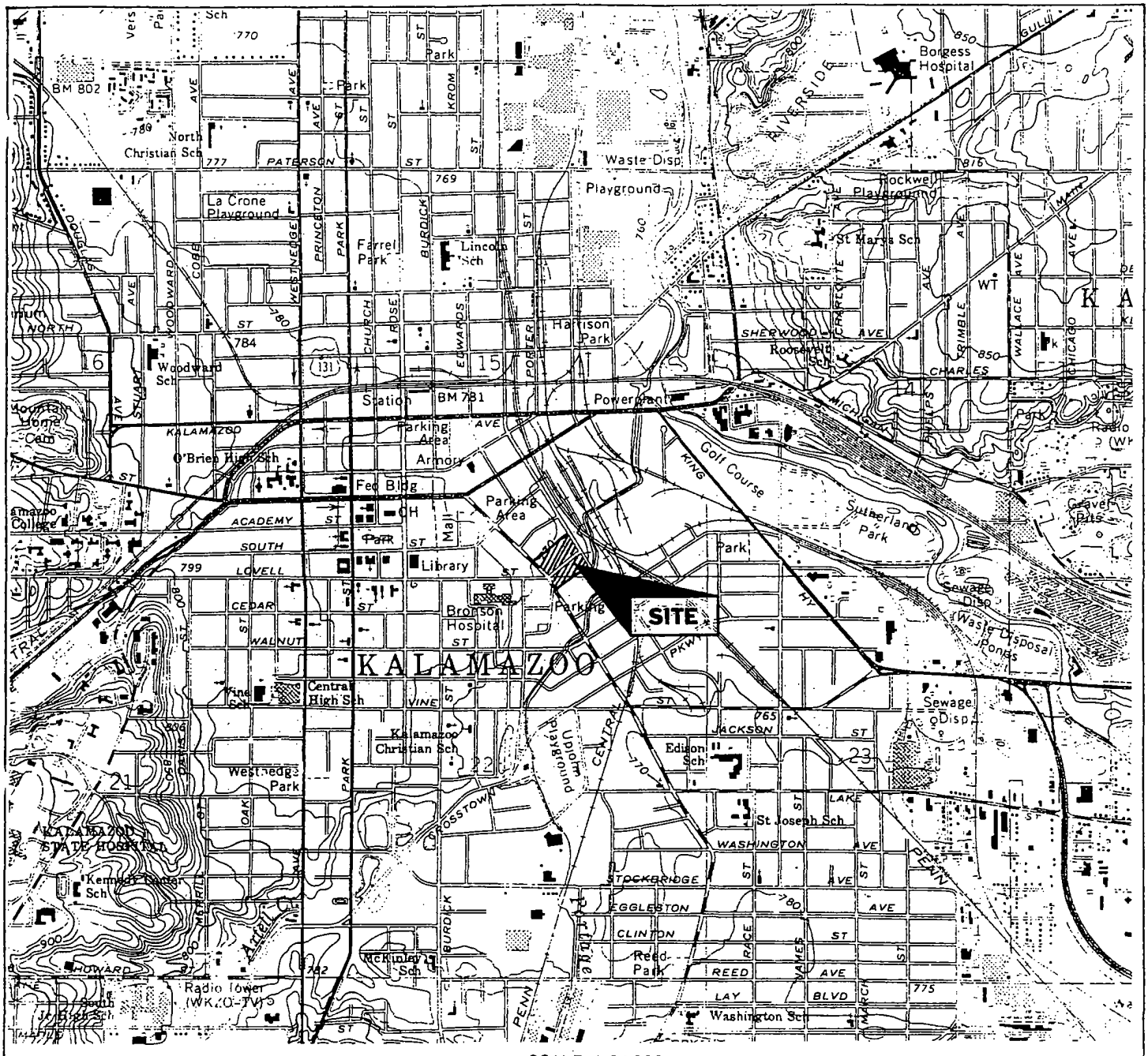
3. Conduct quarterly groundwater monitoring at permanent site monitoring wells to evaluate seasonal variations.

Field procedures for soil probe and groundwater monitoring activities will be consistent with those presented in Section 3 of this report. Unless otherwise specified groundwater samples collected during the recommended additional groundwater monitoring activities will be submitted for laboratory analysis of MGP constituents. Analytical methods and detection limits for soil and groundwater samples will be consistent with those presented in Section 3 of this report. The proposed locations of the soil probes may be subject to change pending utility clearance. The area of excavation for the proposed limited source area removal may be subject to revision based on discussions with Consumers Energy and Pharmacia, as well as the verification of subsurface utilities.

A work plan will be prepared by SME for review by Consumers Energy and Pharmacia, and subsequent submittal to the MDEQ, addressing the recommendations presented above.

APPENDIX A

FIGURES



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CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

KALAMAZOO QUADRANGLE
MICHIGAN—KALAMAZOO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

1967
PHOTOREVISED 1973
AMS 3868 I SE—SERIES V862

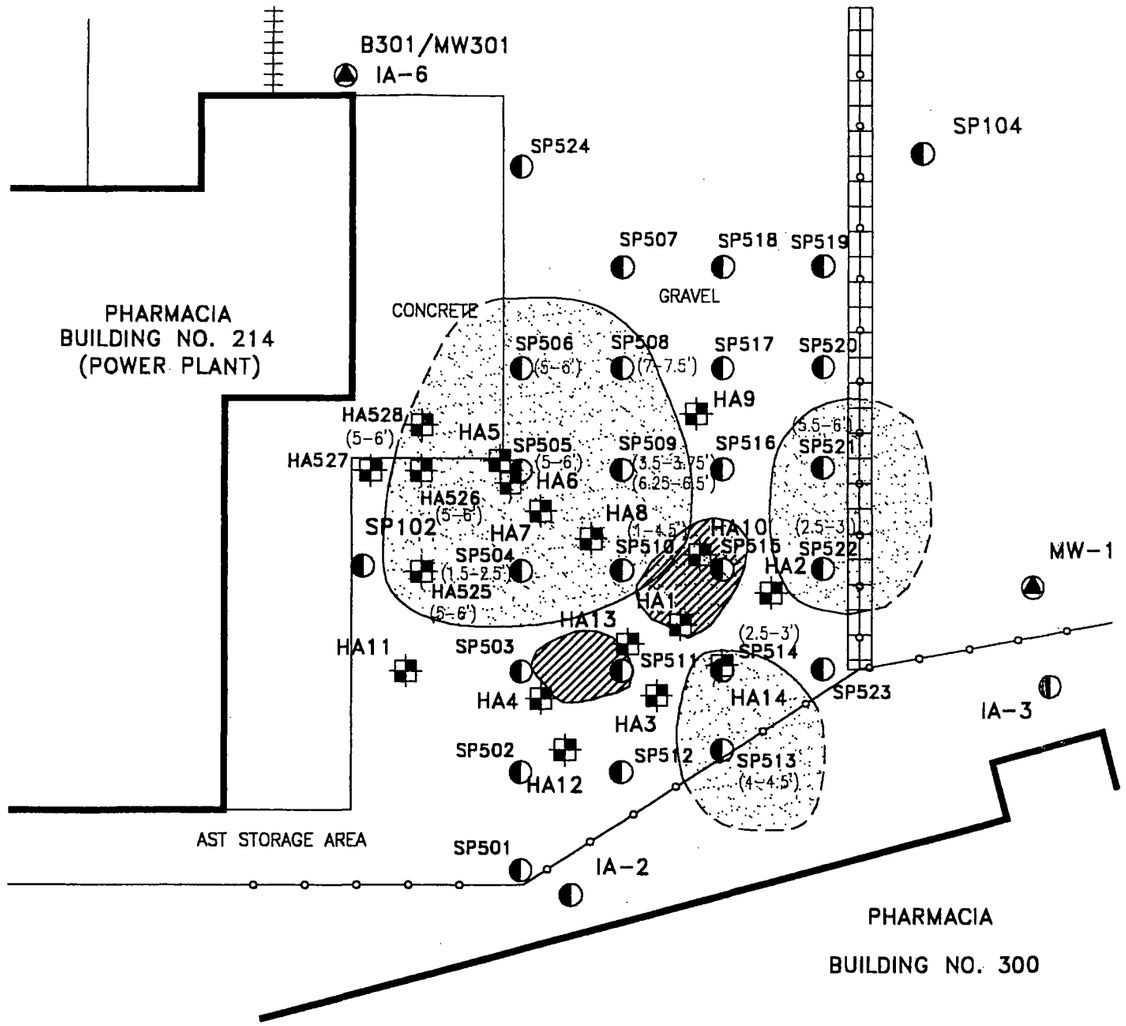
00274370

MICHIGAN
QUADRANGLE LOCATION

Date 10-22-98	BAY CITY KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc	SITE LOCATION DIAGRAM KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN
Drawn By ARR			
Scale AS SHOWN			
Job KE 31823			

DWG. NO. 31823-01

Figure No. 1



LEGEND

- FENCE
- CONCRETE WALL
- RAILROAD SPUR
- MW-1 — MONITORING WELL LOCATION
- IA-2 — SOIL PROBE LOCATION
- HA1 — HAND AUGER LOCATION
- APPROXIMATE AREA OF FORMER EXCAVATION CONDUCTED BY PHARMACIA IN SEPTEMBER 1999
- APPROXIMATE LIMITS OF COAL TAR IMPACT (DASHED WHERE INFERED)
- (2.5-3') — APPROXIMATE DEPTH OF COAL TAR IMPACT IN FEET BG.

NOTES:

1. IA-2, IA-3 AND IA-6 WERE ADVANCED FOR CONSUMERS ENERGY COMPANY IN JANUARY AND FEBRUARY 1999.
2. MW1 WAS INSTALLED FOR CONSUMERS ENERGY COMPANY IN FEBRUARY 1999.
3. SP102 WAS ADVANCED FOR CONSUMERS ENERGY COMPANY IN JUNE 1999.
4. HA1 TO HA14 WERE ADVANCED FOR CONSUMERS ENERGY COMPANY IN JULY 1999.
5. SP501 TO SP524 AND HA525 TO HA526 WERE ADVANCED FOR CONSUMERS ENERGY COMPANY IN JUNE 2001.

GRAPHIC SCALE

0 15 30 60

FEET

NORTH

ESTIMATED EXTENT OF COAL TAR IMPACT DIAGRAM SOUTH SIDE OF POWER PLANT KALAMAZOO, MICHIGAN

DATE: 9-4-01
SCALE: 1" = 30'
DRAFTER: ARR
JOB: KE 31823B-8

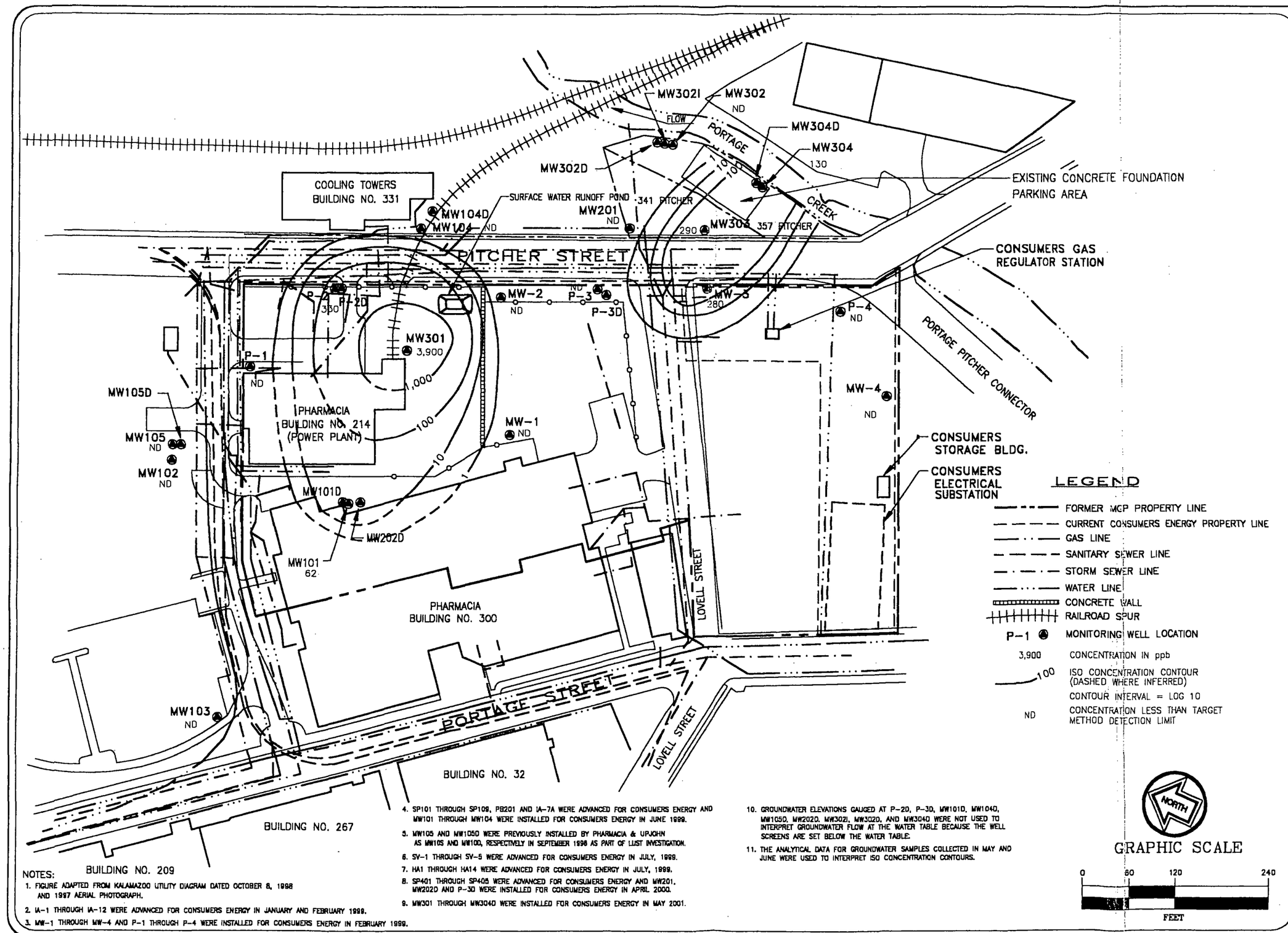
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-4A.DWG

KR059B030479

Figure No. 8

00274371

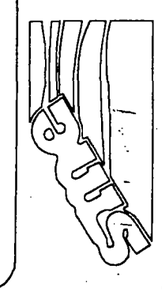


NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW10D, RESPECTIVELY IN SEPTEMBER 1998 AS PART OF LIST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
9. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
10. GROUNDWATER ELEVATIONS GAUGED AT P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D, AND MW304D WERE NOT USED TO INTERPRET GROUNDWATER FLOW AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.
11. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN MAY AND JUNE WERE USED TO INTERPRET ISO CONCENTRATION CONTOURS.

ISO CONCENTRATION DIAGRAM FOR BENZENE IMPACT TO GROUNDWATER AT THE WATER TABLE
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 9-4-01
SCALE: 1" = 120'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

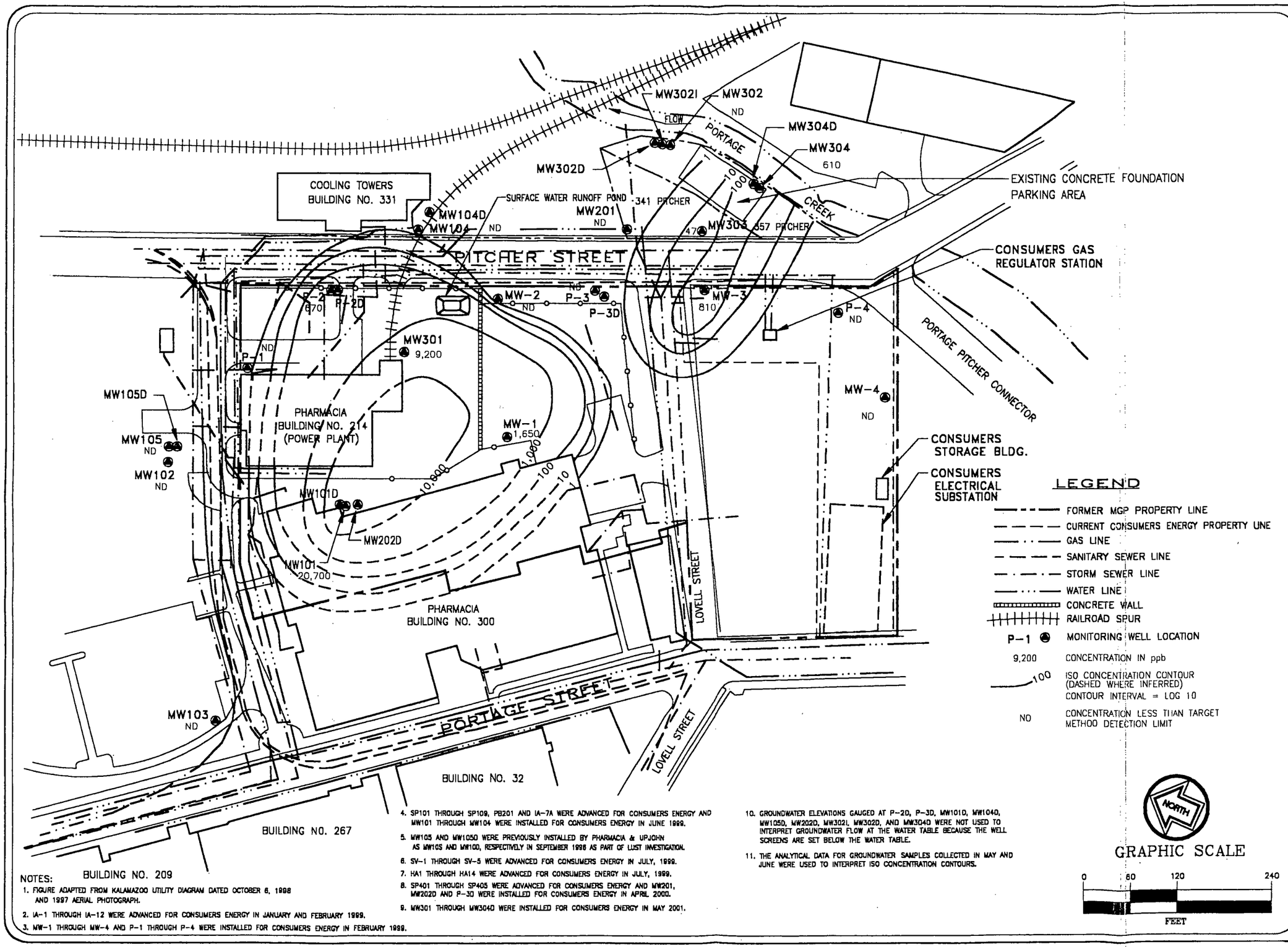


FILE NAME H:CECO\31823-14.DWG

KR059B030480

Figure No. 9

00274372

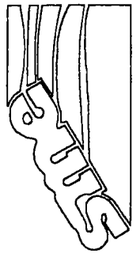


NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 6, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1998 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
9. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
10. GROUNDWATER ELEVATIONS GAUGED AT P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D, AND MW304D WERE NOT USED TO INTERPRET GROUNDWATER FLOW AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.
11. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN MAY AND JUNE WERE USED TO INTERPRET ISO CONCENTRATION CONTOURS.

ISO CONCENTRATION DIAGRAM FOR XYLENE(S)
IMPACT TO GROUNDWATER AT THE WATER TABLE
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 9-4-01
SCALE: 1" = 120'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823



FILE NAME H:CECO\31823-14.DWG

KR059B030481

Figure No. 10

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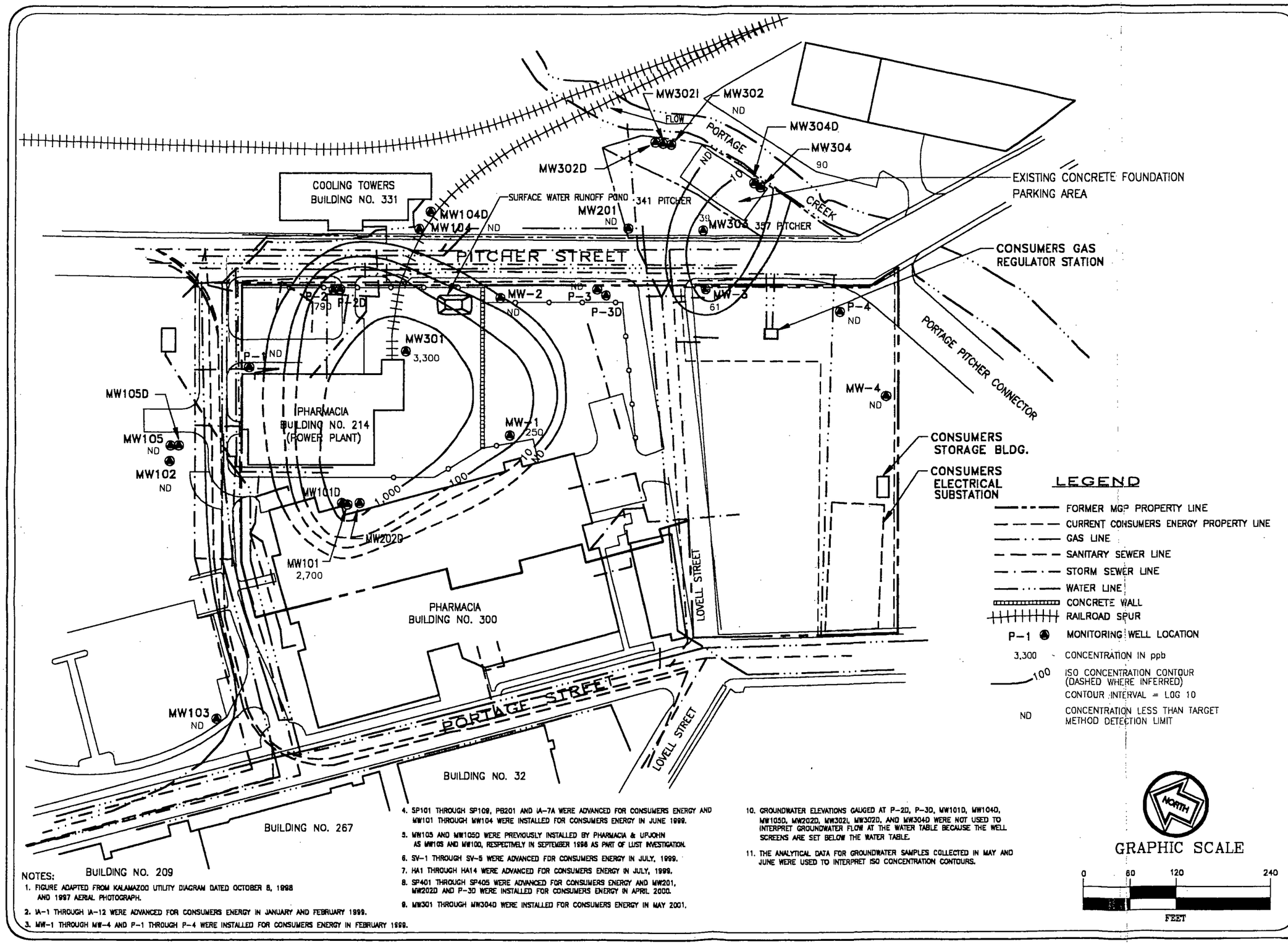


NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW100, RESPECTIVELY IN SEPTEMBER 1998 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
9. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
10. GROUNDWATER ELEVATIONS GAUGED AT P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D, AND MW304D WERE NOT USED TO INTERPRET GROUNDWATER FLOW AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.
11. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN MAY AND JUNE WERE USED TO INTERPRET ISO CONCENTRATION CONTOURS.

ISO CONCENTRATION DIAGRAM FOR NAPHTHALENE IMPACT TO GROUNDWATER AT THE WATER TABLE
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 9-4-01
SCALE: 1" = 120'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

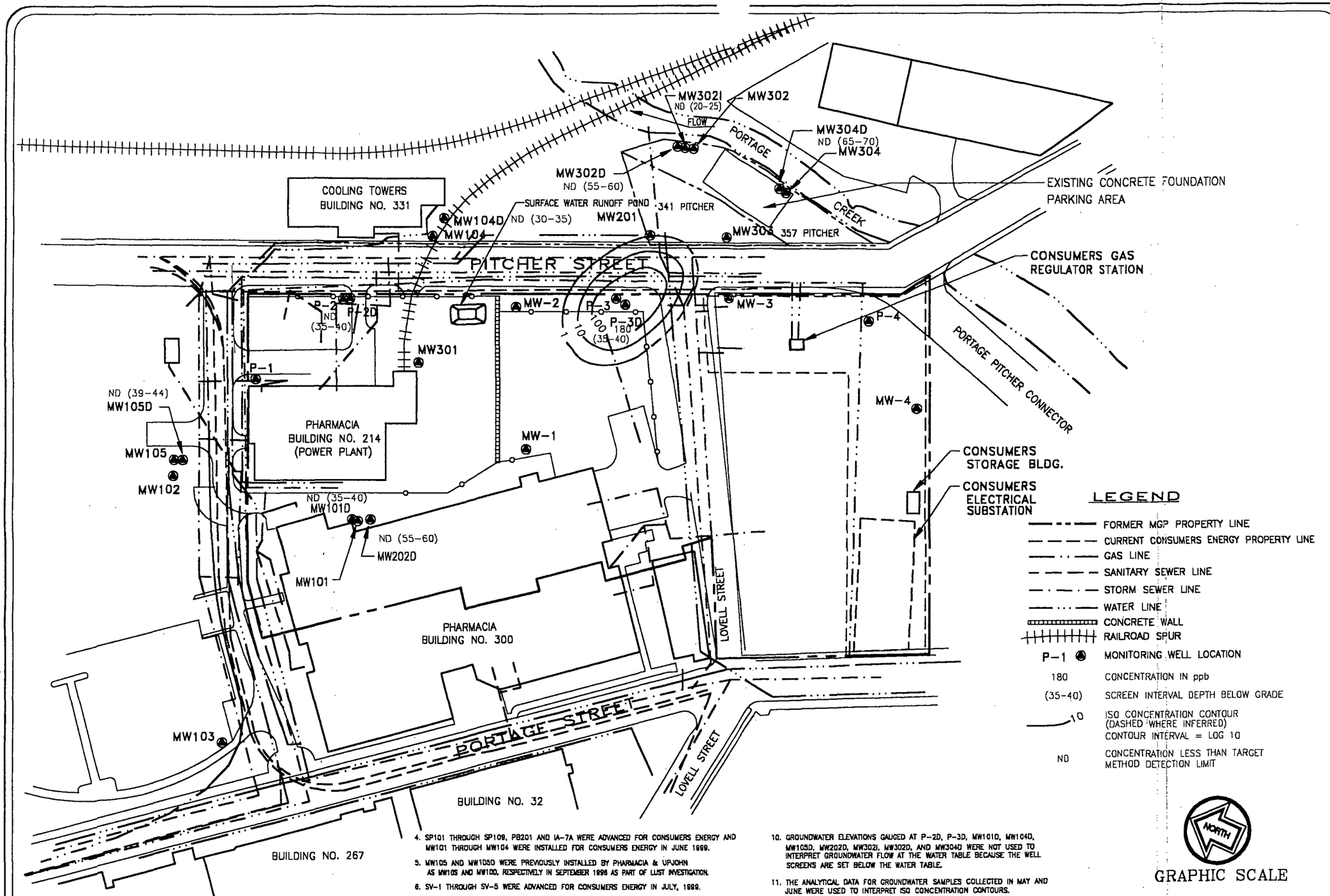
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-14.DWG

KR059B030482

Figure No. 11

002743374



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW100, RESPECTIVELY IN SEPTEMBER 1998 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
9. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
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11. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN MAY AND JUNE WERE USED TO INTERPRET ISO CONCENTRATION CONTOURS.

ISO CONCENTRATION DIAGRAM FOR BENZENE IMPACT TO GROUNDWATER BELOW THE WATER TABLE
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 9-4-01
SCALE: 1" = 120'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

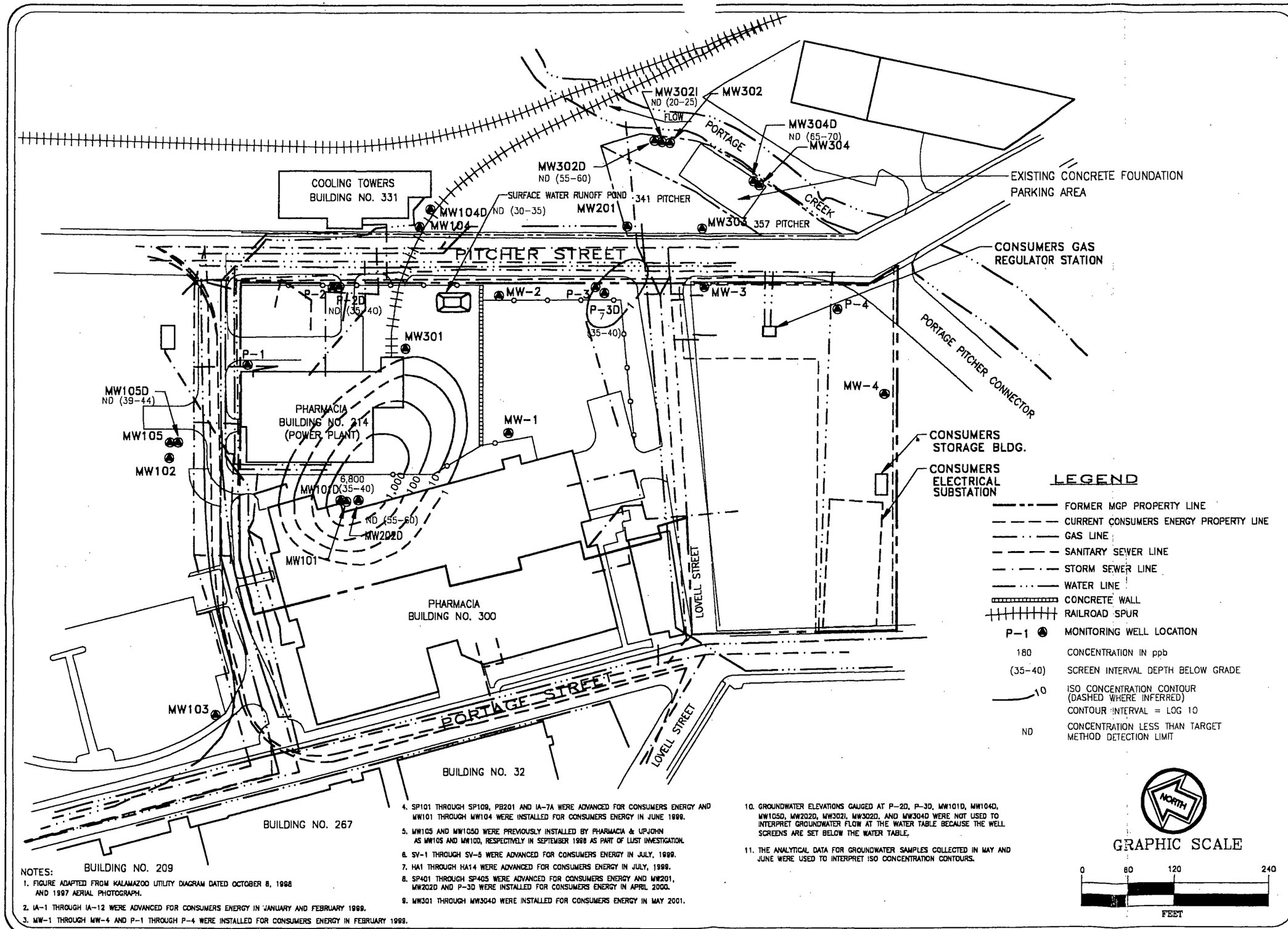
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-14.DWG

KR059B030483

Figure No. 12

00274375



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1998 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
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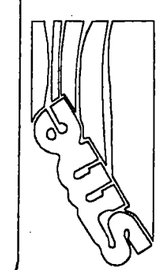
ISO CONCENTRATION DIAGRAM FOR XYLENE(S)
IMPACT TO GROUNDWATER BELOW THE WATER TABLE
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 9-4-01
SCALE: 1" = 120'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823



FILE NAME H:GECO\31823-14.DWG

KR059B030484

Figure No. 13

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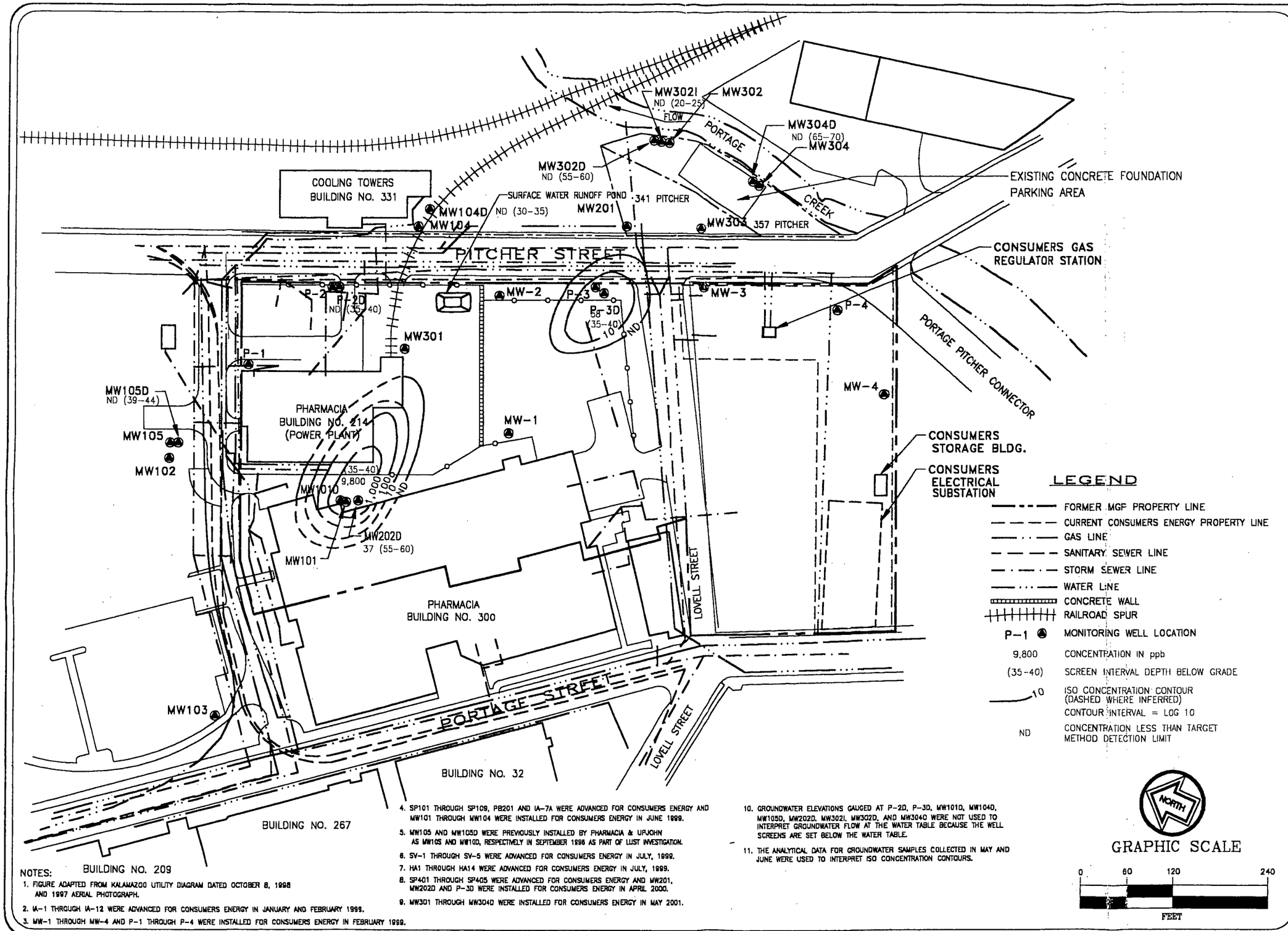

NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
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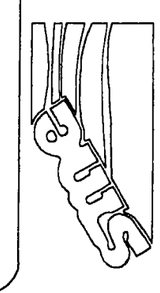
11. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN MAY AND JUNE WERE USED TO INTERPRET ISO CONCENTRATION CONTOURS.

ISO CONCENTRATION DIAGRAM FOR NAPHTHALENE IMPACT TO GROUNDWATER BELOW THE WATER TABLE
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 9-4-01
SCALE: 1" = 120'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

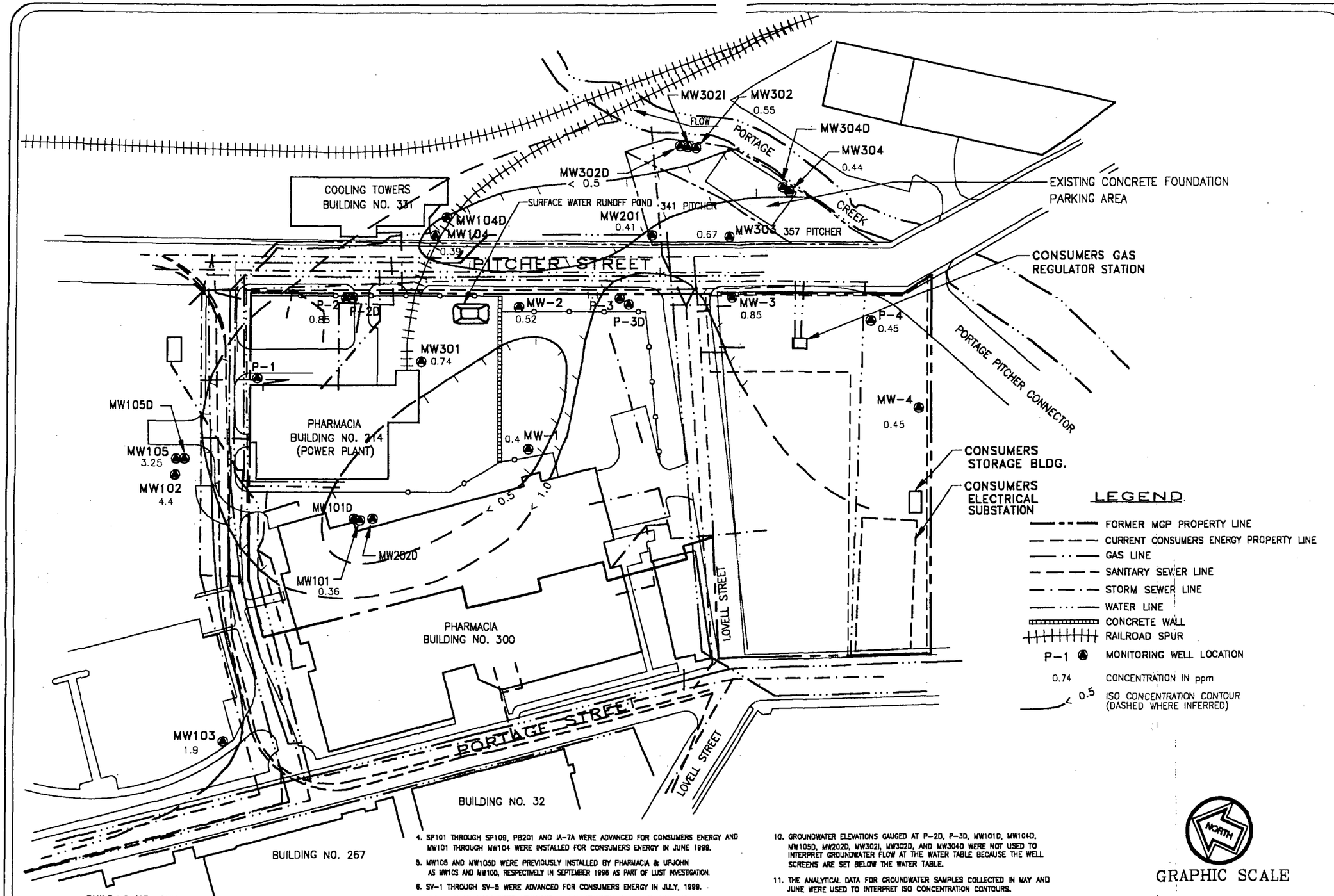


FILE NAME H:CECO\31823-14.DWG

KR059B030485

Figure No. 14

00274372

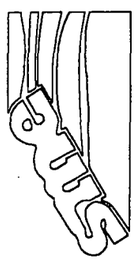


NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW100, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
9. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
10. GROUNDWATER ELEVATIONS GAUGED AT P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D, AND MW304D WERE NOT USED TO INTERPRET GROUNDWATER FLOW AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.
11. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN MAY AND JUNE WERE USED TO INTERPRET ISO CONCENTRATION CONTOURS.

ISO CONCENTRATION DIAGRAM FOR DISSOLVED OXYGEN IN GROUNDWATER KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN

DATE: 9-27-01
SCALE: 1" = 120'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

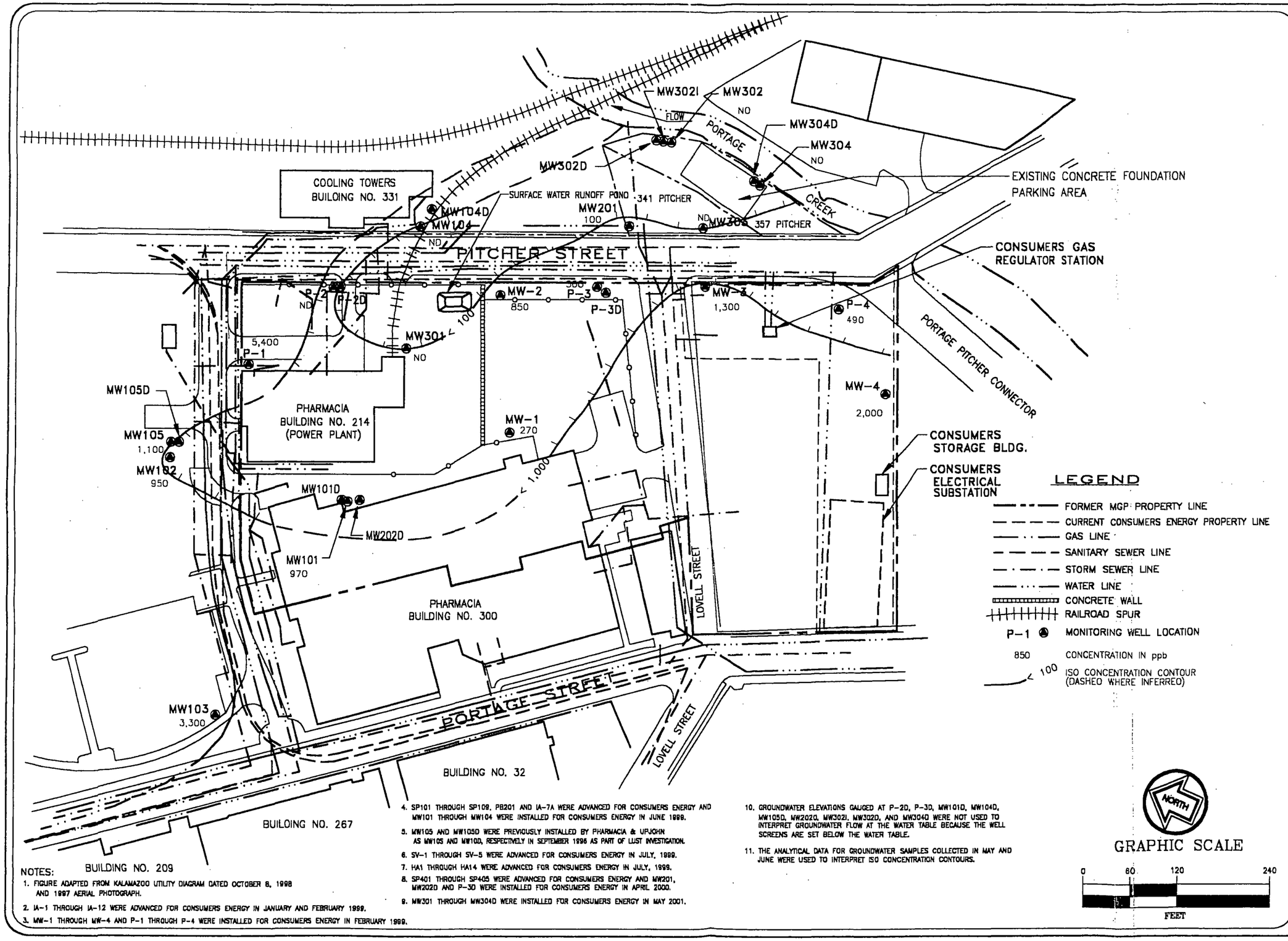


FILE NAME H:CECO\31823-14.DWG

KR059B030486

Figure No. 15

002274378



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
9. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
10. GROUNDWATER ELEVATIONS GAUGED AT P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D, AND MW304D WERE NOT USED TO INTERPRET GROUNDWATER FLOW AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.
11. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN MAY AND JUNE WERE USED TO INTERPRET ISO CONCENTRATION CONTOURS.

ISO CONCENTRATION DIAGRAM FOR NITRATE IN GROUNDWATER
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 9-27-01
SCALE: 1" = 120'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

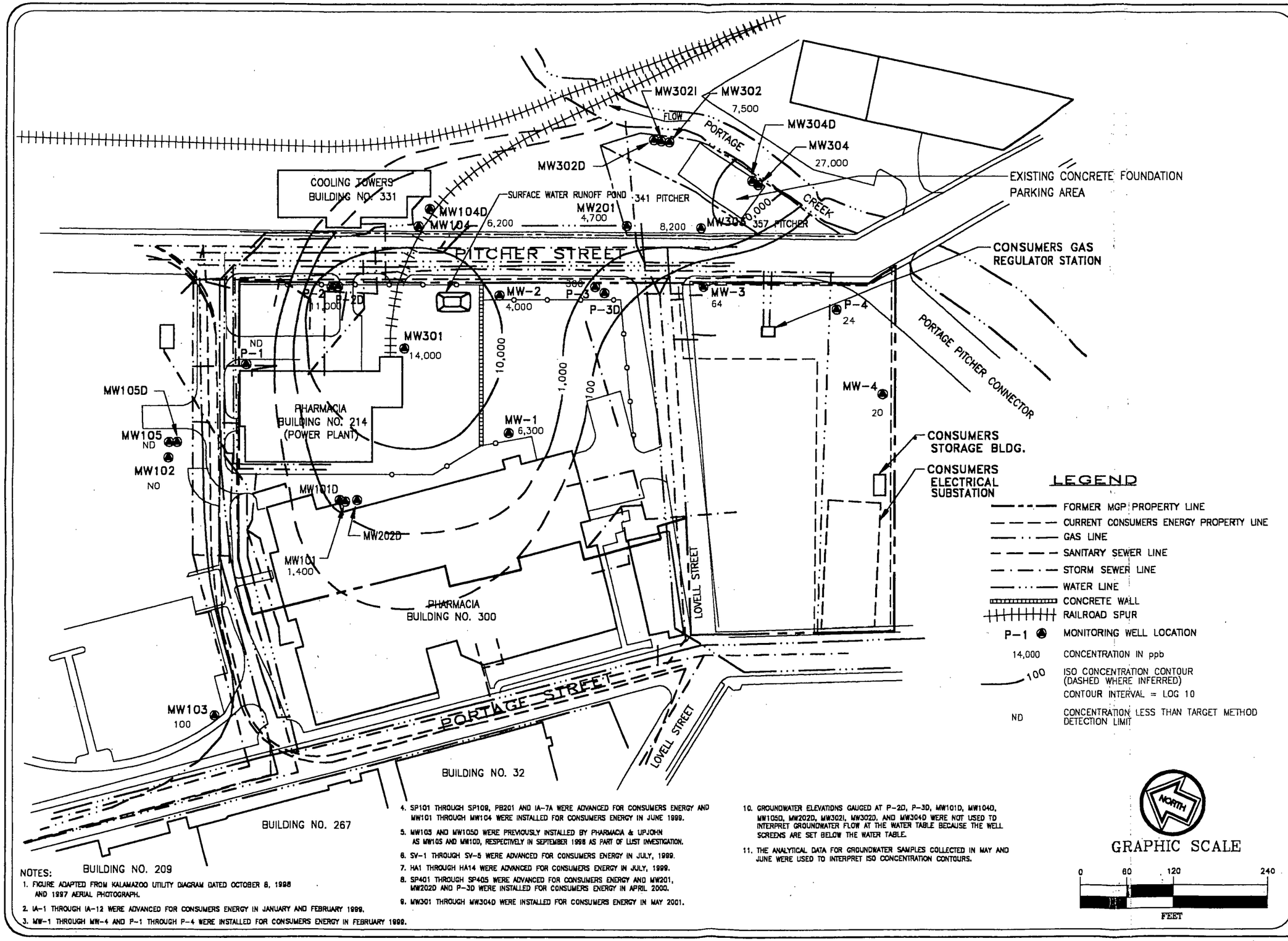
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-14.DWG

Figure No. 16

KR059B030487

002743379



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1998 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
9. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
10. GROUNDWATER ELEVATIONS GAUGED AT P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D, AND MW304D WERE NOT USED TO INTERPRET GROUNDWATER FLOW AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.
11. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN MAY AND JUNE WERE USED TO INTERPRET ISO CONCENTRATION CONTOURS.

ISO CONCENTRATION DIAGRAM FOR DISSOLVED IRON IN GROUNDWATER KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN

DATE: 9-27-01
SCALE: 1" = 120'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

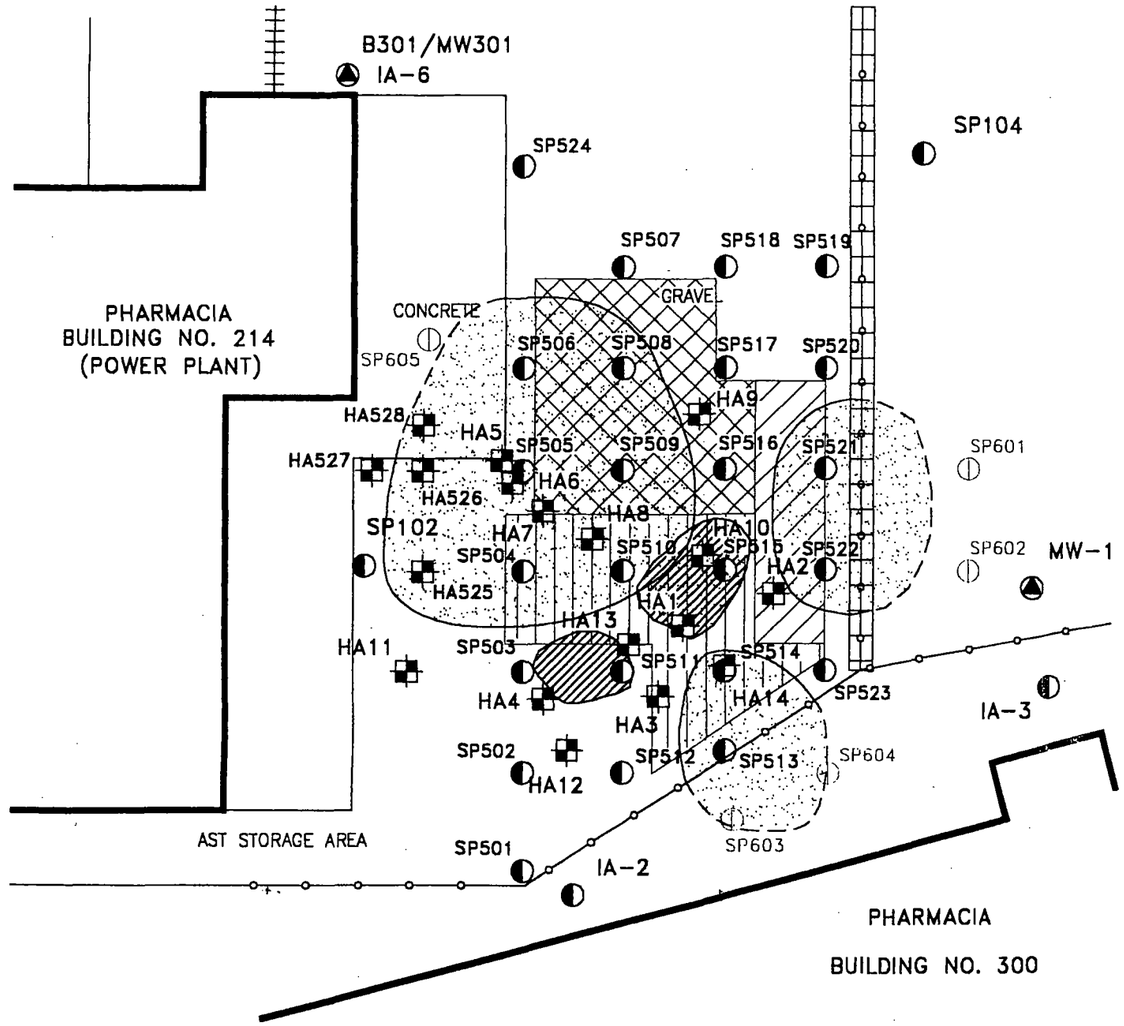
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-14.DWG

00274380

KR059B030488

Figure No. 17



LEGEND

- FENCE
- CONCRETE WALL
- RAILROAD SPUR
- MW-1 MONITORING WELL LOCATION
- IA-2 SOIL PROBE LOCATION
- HA1 HAND AUGER LOCATION
- APPROXIMATE AREA OF FORMER EXCAVATION CONDUCTED BY PHARMACIA IN SEPTEMBER 1999
- APPROXIMATE LIMITS OF COAL TAR IMPACT (DASHED WHERE INFERED)
- PROPOSED SOIL PROBE LOCATION
- APPROXIMATE EXCAVATION DEPTH = 6 FEET BG.
- APPROXIMATE EXCAVATION DEPTH = 5 FEET BG.
- APPROXIMATE EXCAVATION DEPTH = 8 FEET BG.

EXCAVATION DEPTHS AND LIMITS CONTINGENT UPON COMPLETION OF PROPOSED PROBES

GRAPHIC SCALE

0 15 30 60

FEET

NORTH

NOTES:

1. IA-2, IA-3 AND IA-6 WERE ADVANCED FOR CONSUMERS ENERGY COMPANY IN JANUARY AND FEBRUARY 1999.
2. MW1 WAS INSTALLED FOR CONSUMERS ENERGY COMPANY IN FEBRUARY 1999.
3. SP102 WAS ADVANCED FOR CONSUMERS ENERGY COMPANY IN JUNE 1999.
4. HA1 TO HA14 WERE ADVANCED FOR CONSUMERS ENERGY COMPANY IN JULY 1999.
5. SP501 TO SP524 AND HA525 TO HA526 WERE ADVANCED FOR CONSUMERS ENERGY COMPANY IN JUNE 2001.

PROPOSED SOIL PROBE LOCATIONS AND AREA OF LIMITED SOURCE AREA REMOVAL DIAGRAM
SOUTH SIDE OF POWER PLANT
KALAMAZOO, MICHIGAN

DATE: 9-28-01
SCALE: 1" = 30'
DRAFTER: ARR
JOB: KE 31823B-8

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-4A.DWG

KR059B030489

Figure No. 18

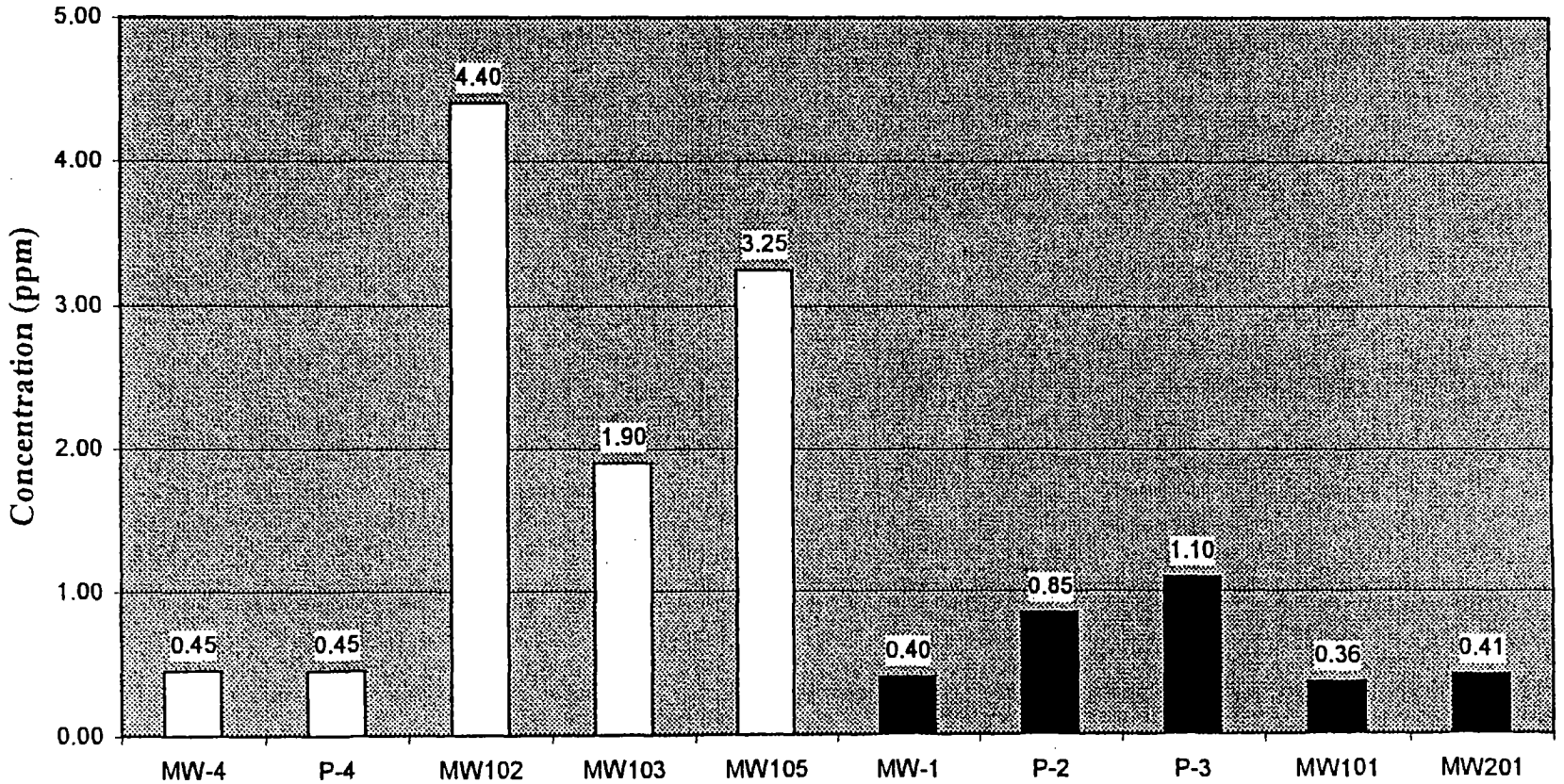
00274381

APPENDIX B

NATURAL ATTENUATION CHARTS

DISSOLVED OXYGEN

Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

Impacted Wells = MW-1, P-2, P-3, MW101 and MW201

KR059B030492

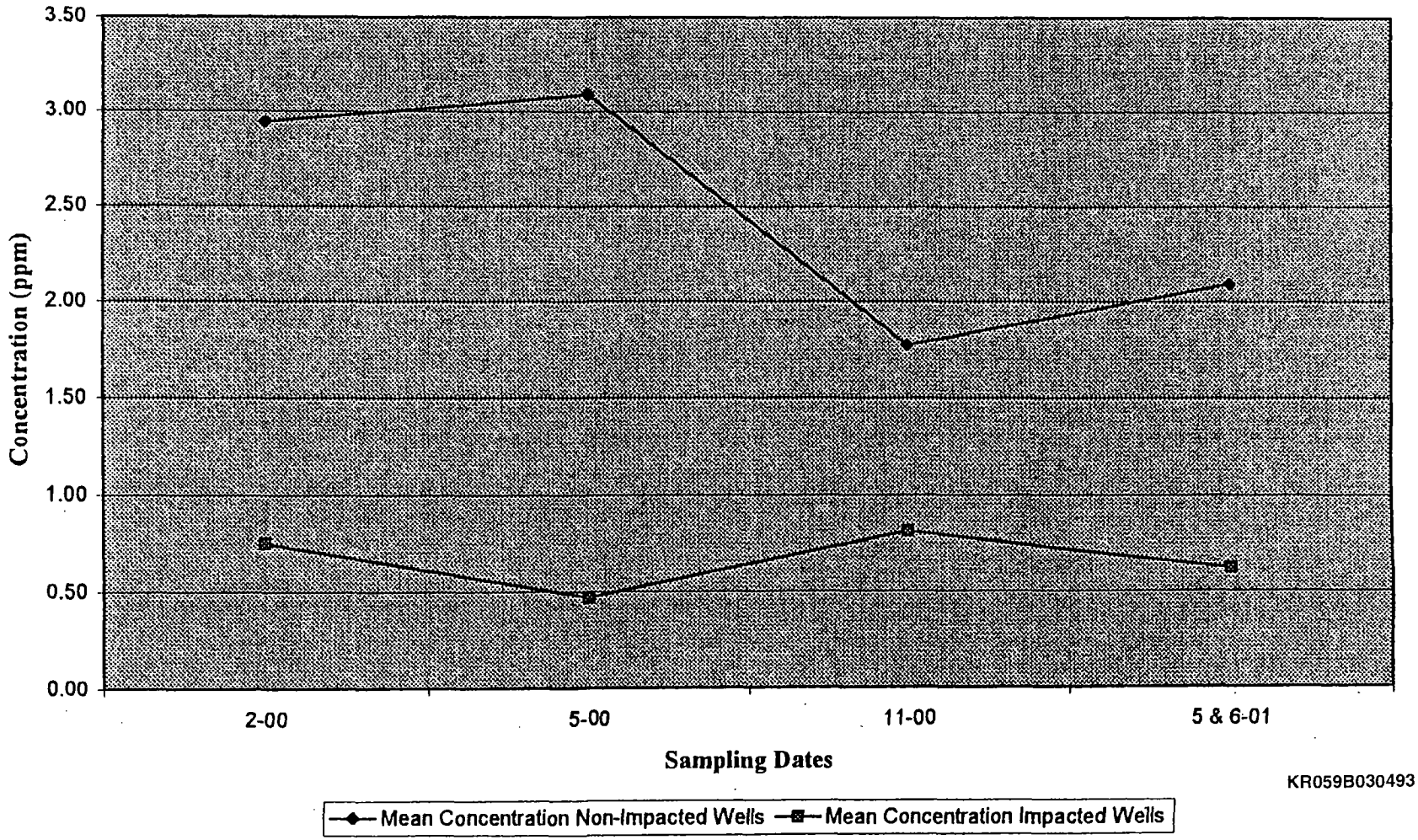
DISSOLVED OXYGEN KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 9-28-01 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

00274384

Chart No. 1

TREND PLOT - DISSOLVED OXYGEN

Non-Impacted Wells vs. Impacted Wells



KR059B030493

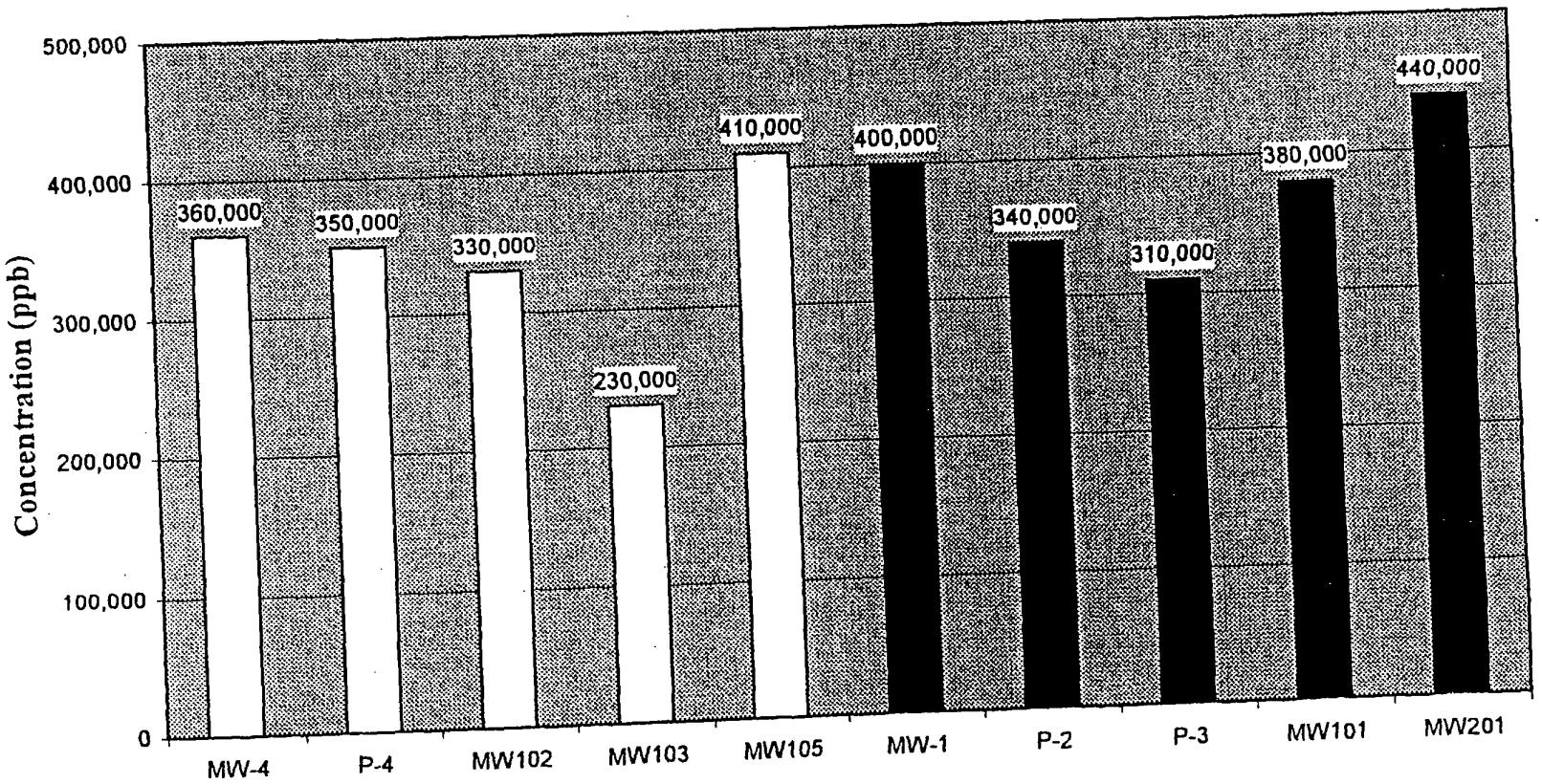
00274385

TREND PLOT - DISSOLVED OXYGEN KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 9-28-01 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 2

ALKALINITY

Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

Impacted Wells = MW-1, P-2, P-3, MW101 and MW201

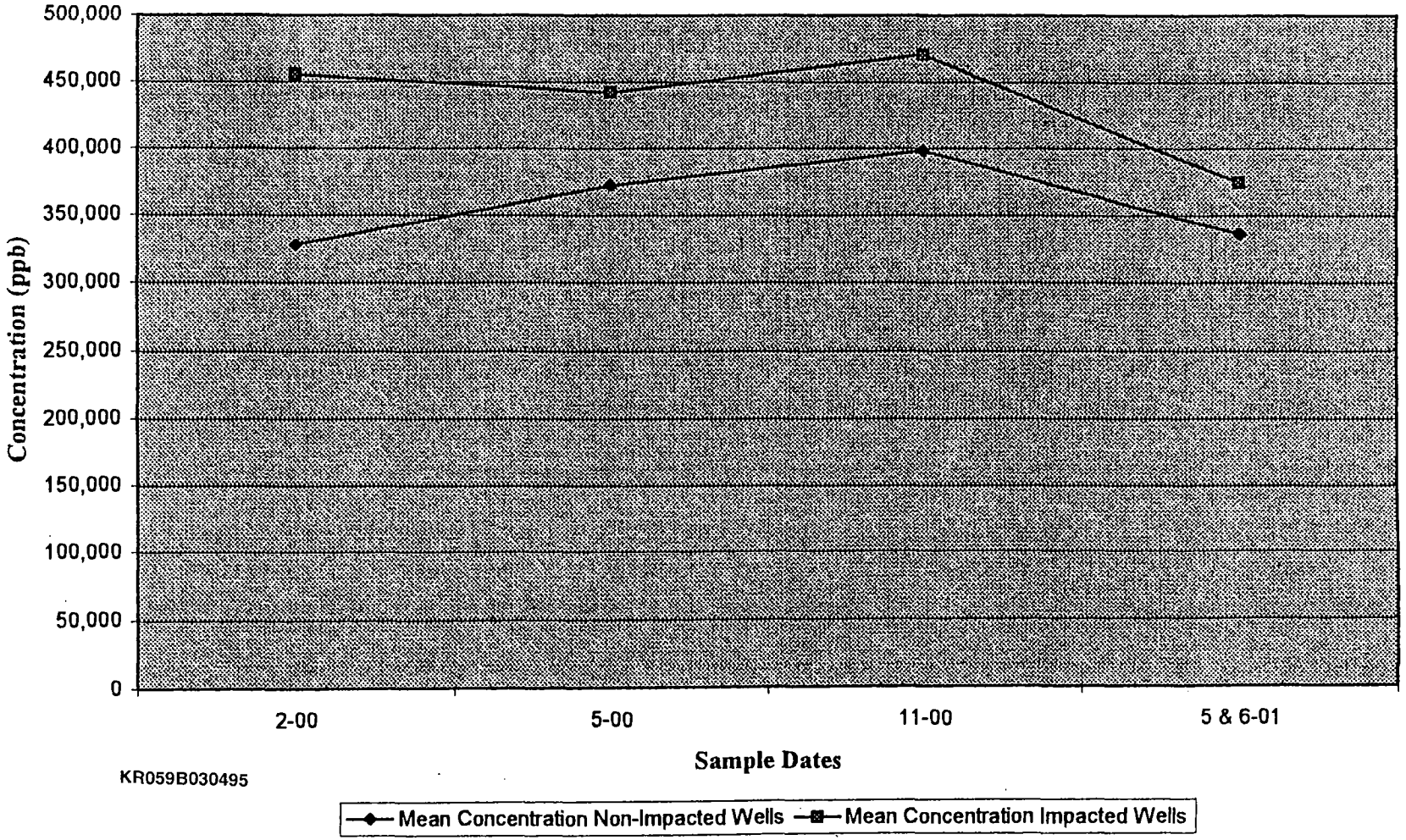
ALKALINITY KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 9-28-01 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	sme soil and materials engineers, inc

00274386

Chart No. 3

TREND PLOT - ALKALINITY

Non-Impacted Wells vs. Impacted Wells



KR059B030495

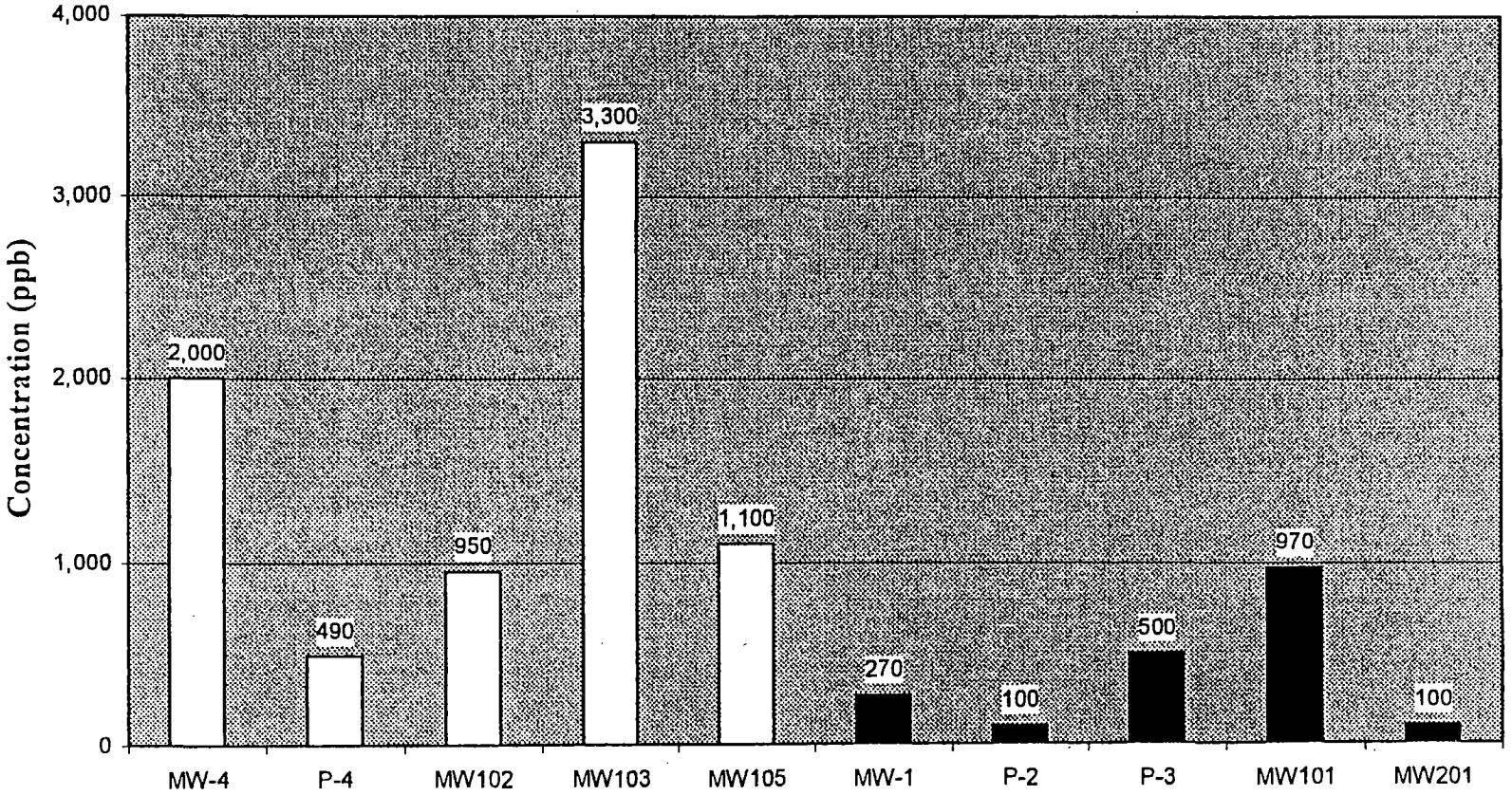
00274387

TREND PLOT - ALKALINITY KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 9-28-01 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 4

NITRATE

Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

KR059B030496

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

Impacted Wells = MW-1, P-2, P-3, MW101 and MW201

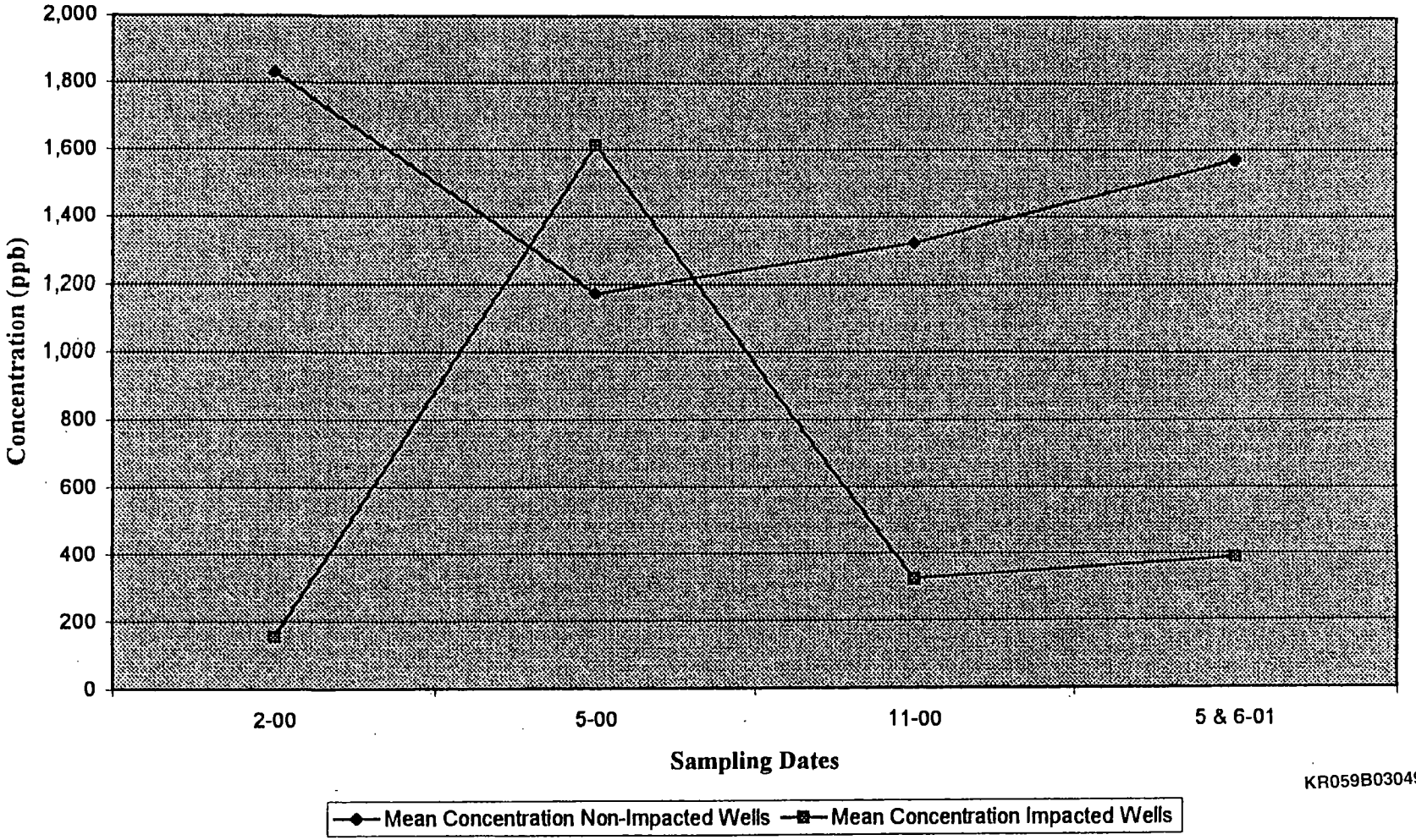
NITRATE KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 9-28-01 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

002743388

Chart No. 5

TREND PLOT - NITRATE

Non-Impacted Wells vs. Impacted Wells



KR059B030497

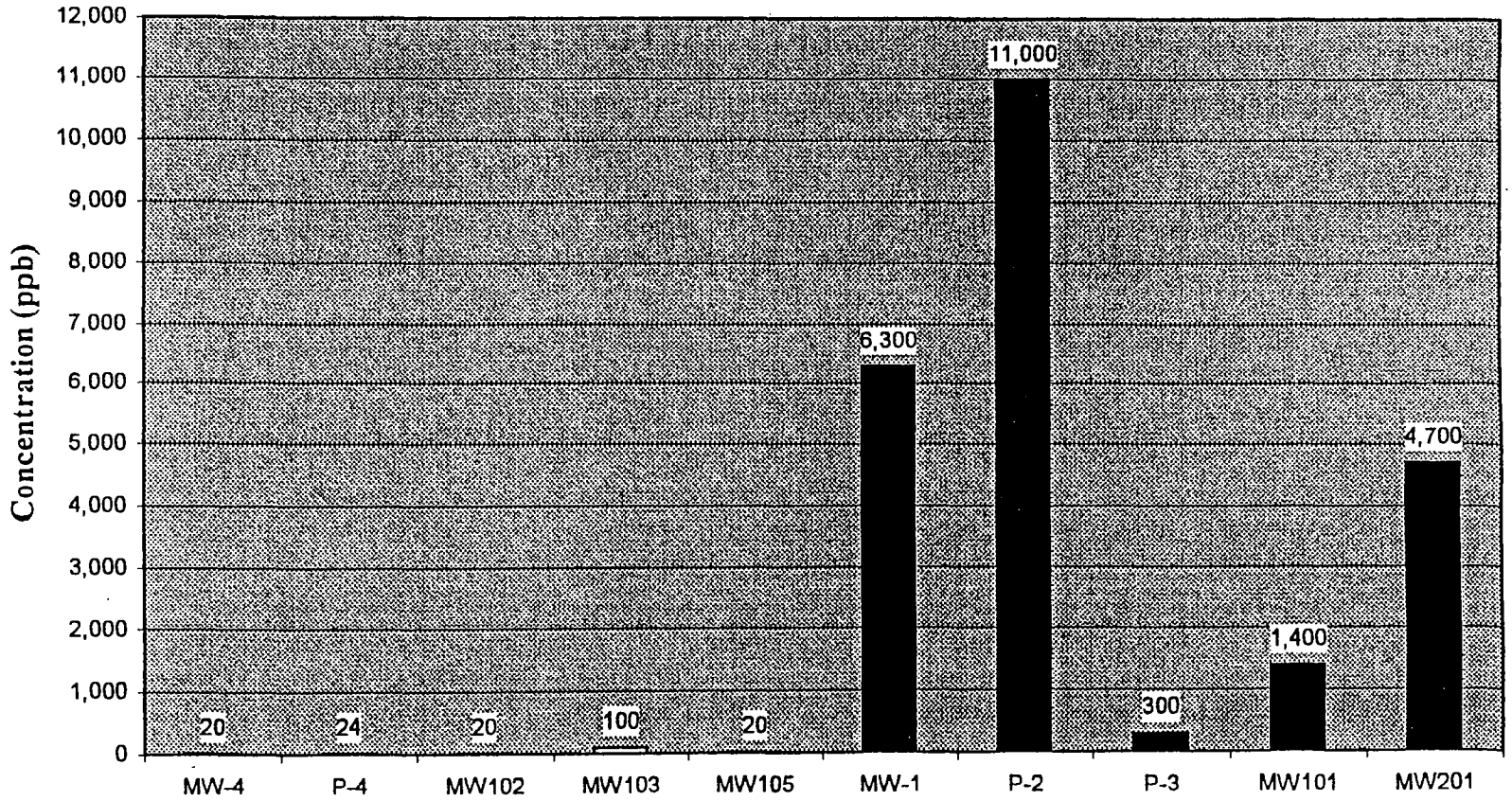
00274389

Chart No. 6

TREND PLOT - NITRATE KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 9-28-01 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

DISSOLVED IRON

Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

Impacted Wells = MW-1, P-2, P-3, MW101 and MW201

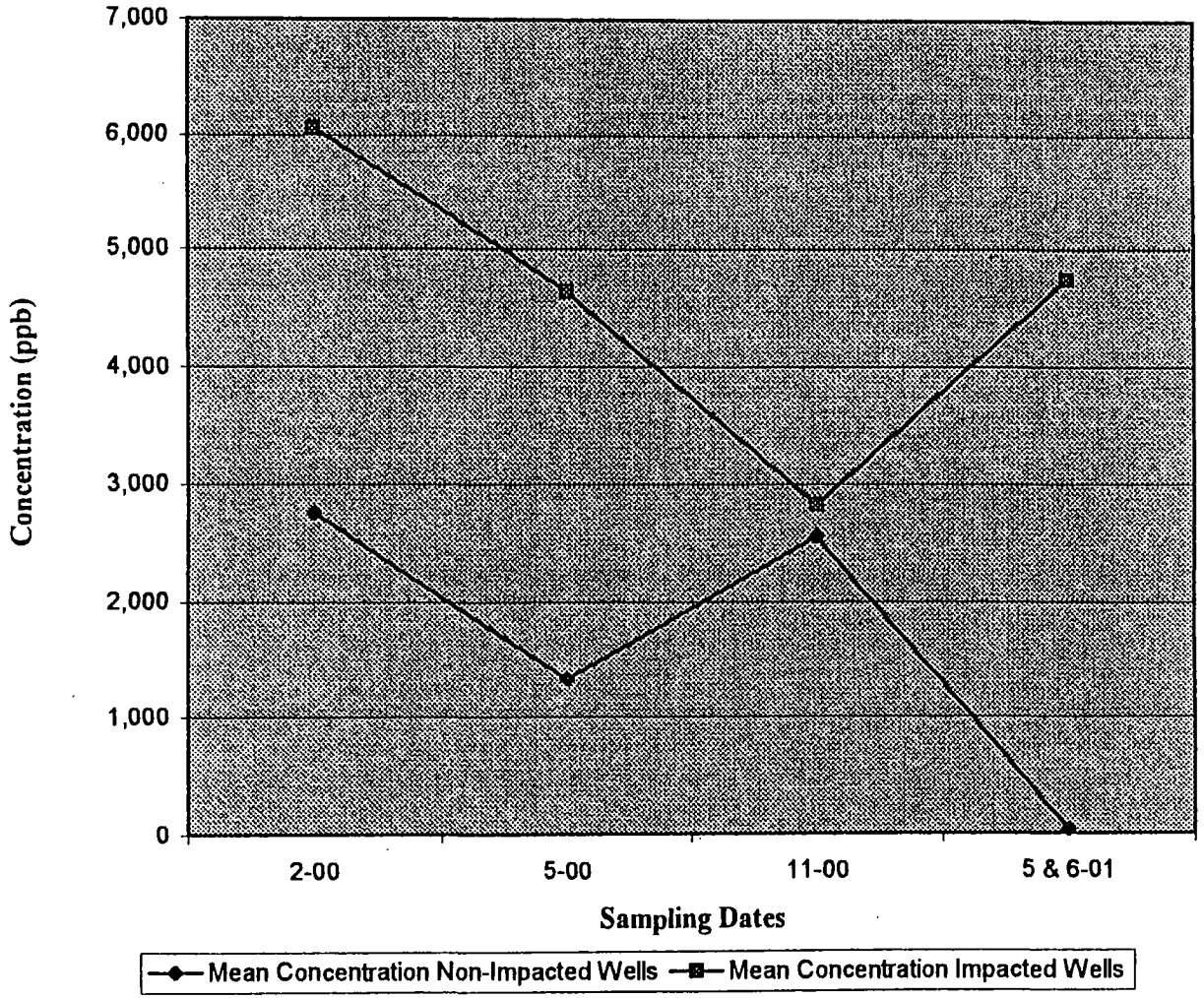
KR059B030498

00274390

Chart No. 7

DISSOLVED IRON KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 9-28-01 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	sme soil and materials engineers, inc

TREND PLOT - DISSOLVED IRON
Non-Impacted Wells vs. Impacted Wells



KR059B030499

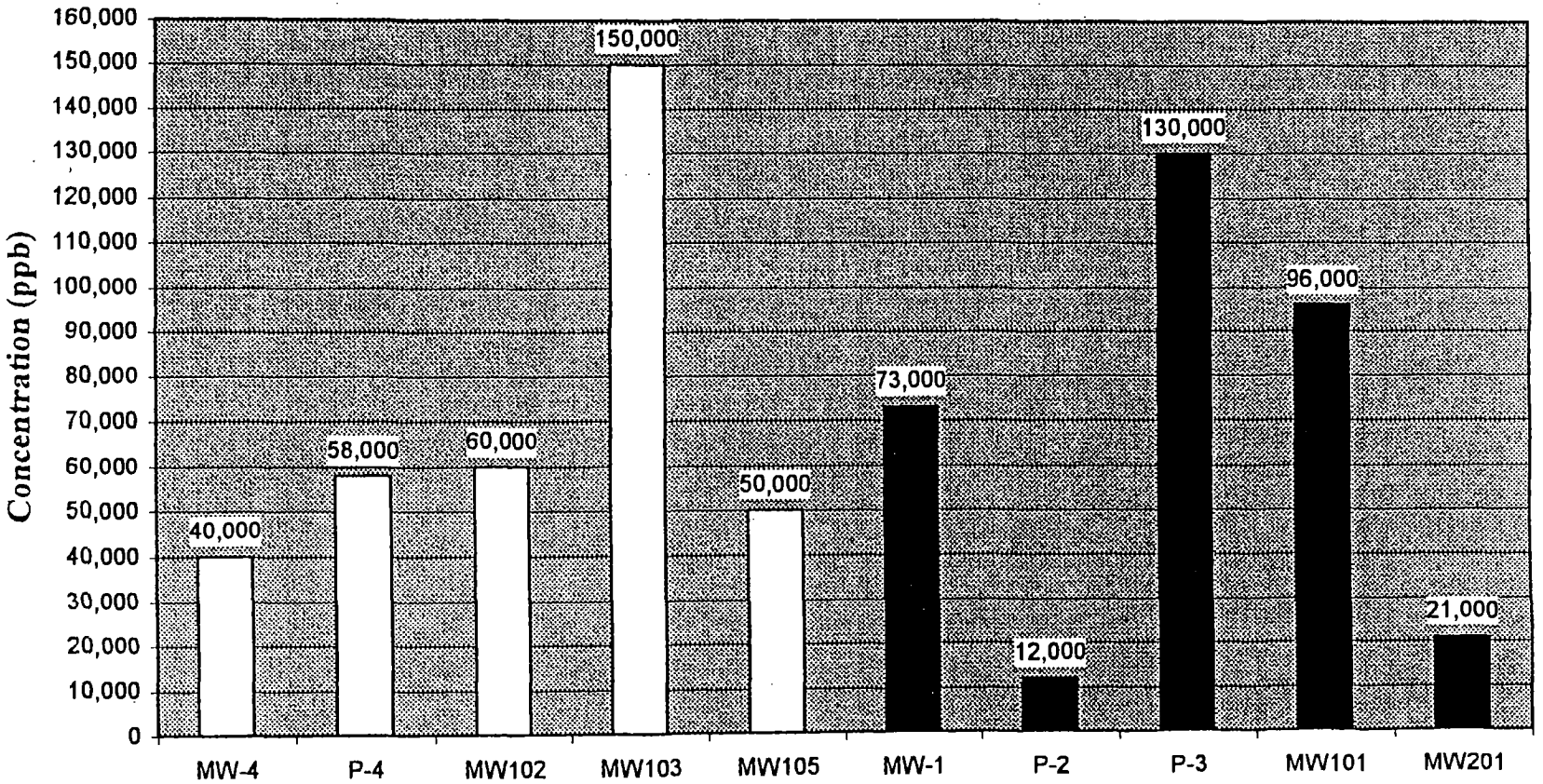
TREND PLOT - DISSOLVED IRON KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 9-28-01 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

00274391

Chart No. 8

SULFATE

Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

Impacted Wells = MW-1, P-2, P-3, MW101 and MW201

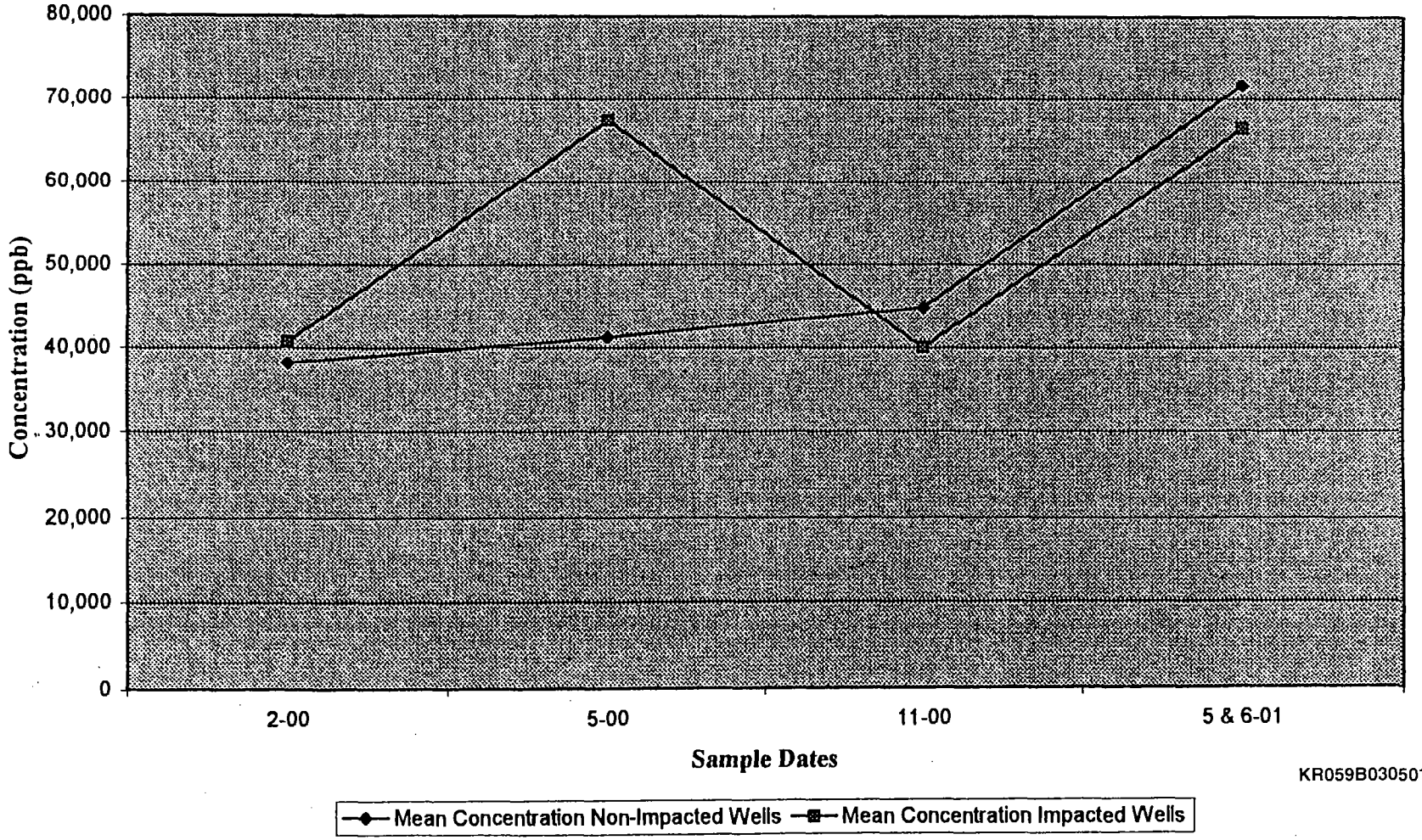
KR059B030500

00274392

SULFATE KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 9-28-01 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 9

TREND PLOT - SULFATE
Non-Impacted Wells vs. Impacted Wells



KR059B030501

TREND PLOT - SULFATE KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 9-28-01 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

00274393

Chart No. 10

APPENDIX C

SOIL PROBE AND MONITORING WELL LOGS

KR059B030503

00274395

SOIL AND MATERIALS ENGINEERS, INC

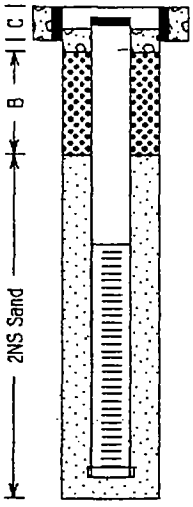
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/8/01
JOB NUMBER: KE31823

B301/MW301
SHEET: 1

DRILLER: STEARNS | RIG: HSA

WELL DIAGRAM



DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION – (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = 762.93		
		Fine to Medium Sand– Trace Gravel, Silt and Clay– Brown– Moist to Wet– Very Loose to Loose (SP/Fill)	S1	
5			S2	
		Fibrous Peat– Occasional Root Pieces and Sand Partings– Black (Pt)		
		Fine to Medium Sand– Trace Coarse Sand, Gravel and Silt– Gray– Wet (SP)	S3	
10		END OF BORING AT 10.5 FEET		
15				
20				
25				

Notes:

1. Soil boring advanced at location coinciding with IA–6.
2. TOC elevation = 762.54.
3. B = bentonite, C = concrete.

LEGEND

KR059B030504

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274396

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/9/01
JOB NUMBER: KE31823

B302
SHEET: 1

WELL DIAGRAM

DRILLER: STEARNS RIG: HSA

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE ELEVATION = 761.49

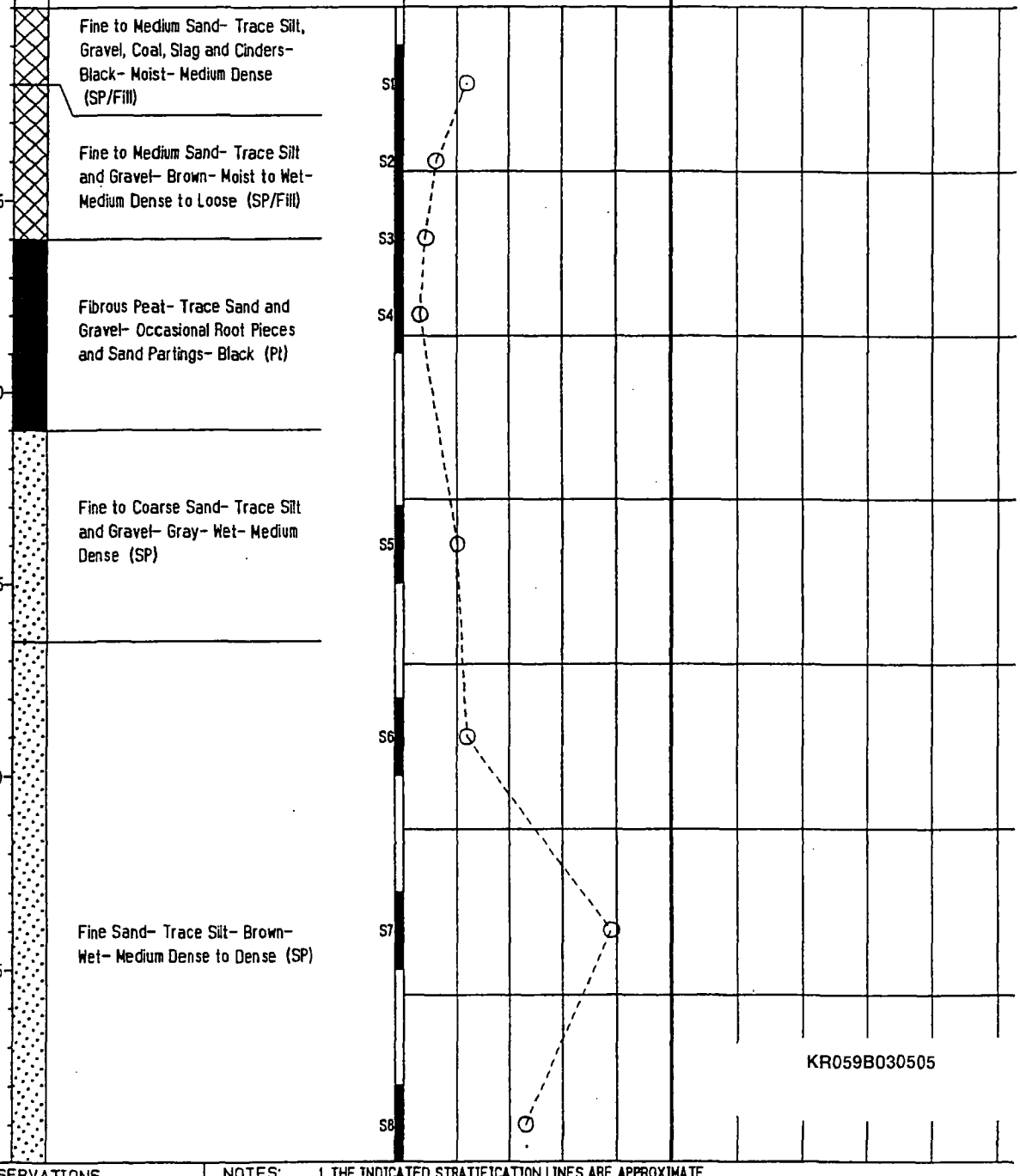
Fine to Medium Sand- Trace Silt, Gravel, Coal, Slag and Cinders- Black- Moist- Medium Dense (SP/Fill)

Fine to Medium Sand- Trace Silt and Gravel- Brown- Moist to Wet- Medium Dense to Loose (SP/Fill)

Fibrous Peat- Trace Sand and Gravel- Occasional Root Pieces and Sand Partings- Black (Pt)

Fine to Coarse Sand- Trace Silt and Gravel- Gray- Wet- Medium Dense (SP)

Fine Sand- Trace Silt- Brown- Wet- Medium Dense to Dense (SP)



KR059B030505

WATER LEVEL OBSERVATIONS

GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274397

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/9/01
JOB NUMBER: KE31823

B302
SHEET: 2

WELL DIAGRAM

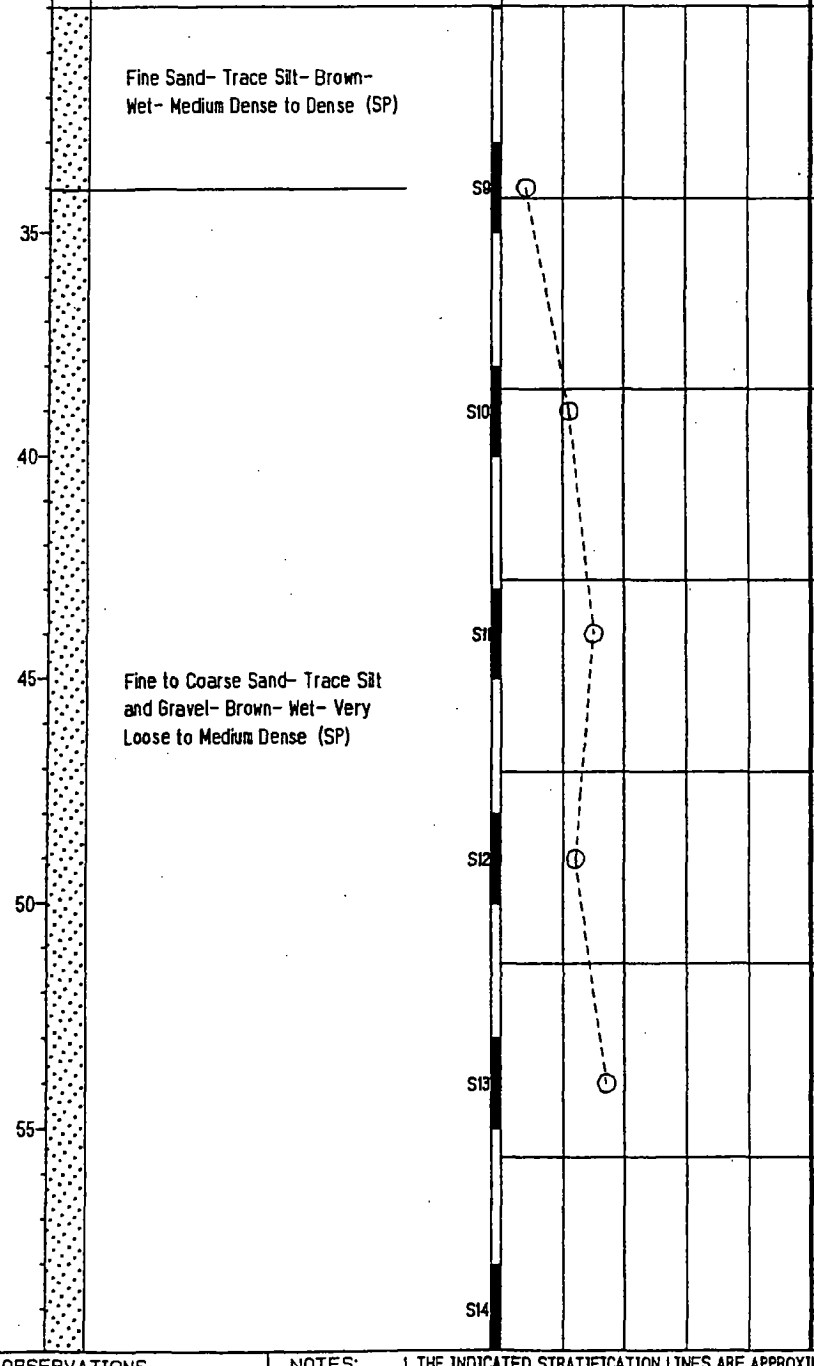
DRILLER: STEARNS | RIG: HSA

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE
ELEVATION = 761.49

Fine Sand- Trace Silt- Brown- Wet- Medium Dense to Dense (SP)

Fine to Coarse Sand- Trace Silt and Gravel- Brown- Wet- Very Loose to Medium Dense (SP)



KR059B030506

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274398

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/9/01
JOB NUMBER: KE31823

B302
SHEET: 3

WELL DIAGRAM

DEPTH (FEET)

SYMBOLIC PROFILE

DRILLER: STEARNS RIG: HSA

PROFILE DESCRIPTION

GROUND SURFACE ELEVATION = 781.49

SAMPLE TYPE, NUMBER & INTERVAL

STANDARD PENETRATION - (BLOWS/FOOT)

0 10 20 30 40 50

LEGEND

Fine to Coarse Sand- Trace Silt and Gravel- Brown- Wet- Very Loose to Medium Dense (SP)

END OF BORING AT 61 FEET

Notes:

1. Boring backfilled with cement grout.
2. Odors noted from 13 to 25 feet below grade.
3. Groundwater samples were collected using a screened auger at 4 to 9 feet, 20 to 25 feet, 35 to 40 feet and 50 to 55 feet below grade.

KR059B030507

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274399

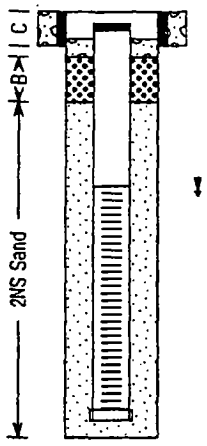
SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/17/01 B302/MW302
JOB NUMBER: KE31823 SHEET: 1

DRILLER: STEARNS RIG: HSA

WELL DIAGRAM

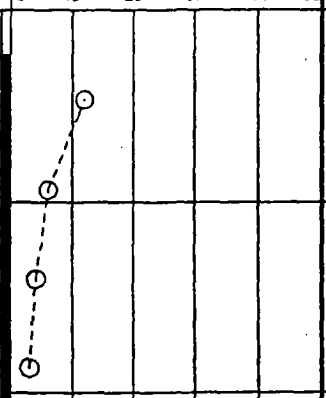


DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = 761.48	SAMPLE TYPE, NUMBER & INTERVAL
		Fine to Medium Sand- Trace Silt, Gravel, Coal, Slag and Cinders- Black- Moist- Medium Dense (SP/Fill)	S1
		Fine to Medium Sand- Trace Silt and Gravel- Brown- Moist to Wet- Medium Dense to Loose (SP/Fill)	S2, S3
5		Fibrous Peat- Trace Sand and Gravel- Occasional Root Pieces and Sand Partings- Black (Pt)	S4
10		END OF BORING AT 9 FEET	
15			
20			
25			

Notes:

1. Soil descriptions from B302. MW302 installed approximately 12 feet south of B302.
2. TOC elevation = 761.07.
3. B = bentonite, C = concrete.

STANDARD PENETRATION - (BLOWS/FOOT)



LEGEND

KR059B0305D8

WATER LEVEL OBSERVATIONS

GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274400

SOIL AND MATERIALS ENGINEERS, INC

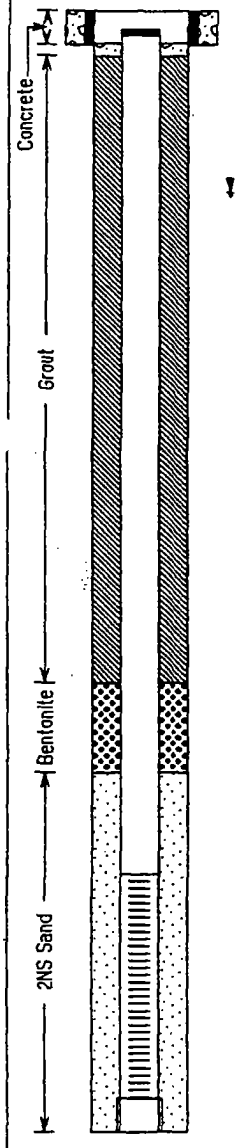
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/17/01
JOB NUMBER: KE31823

B302/MW302I
SHEET: 1

DRILLER: STEARNS RIG: HSA

WELL DIAGRAM

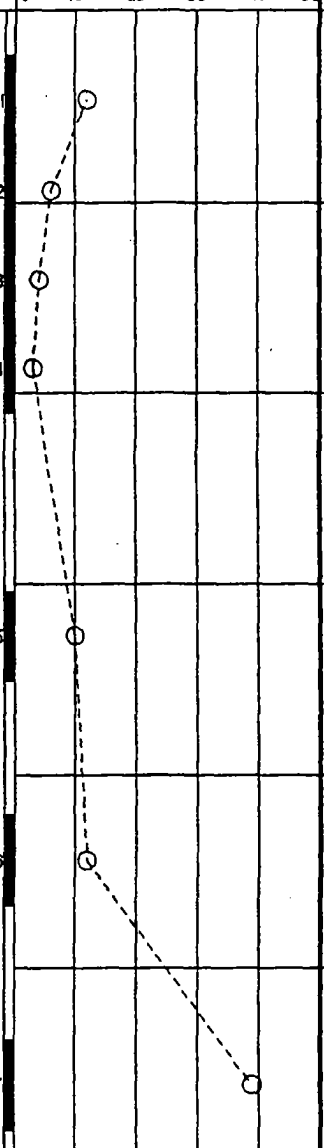


DEPTH (FEET)	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL
	GROUND SURFACE ELEVATION = 761.51	
	Fine to Medium Sand- Trace Silt, Gravel, Coal, Slag and Cinders- Black- Moist- Medium Dense (SP/Fill)	S1
	Fine to Medium Sand- Trace Silt and Gravel- Brown- Moist to Wet- Medium Dense to Loose (SP/Fill)	S2, S3
5		
	Fibrous Peat- Trace Sand and Gravel- Occasional Root Pieces and Sand Partings- Black (Pt)	S4
10		
	Fine to Coarse Sand- Trace Silt and Gravel- Gray- Wet- Medium Dense (SP)	S5
15		
	Fine Sand- Trace Silt- Brown- Wet- Medium Dense to Dense (SP)	S6, S7
20		
25	END OF BORING AT 25 FEET	

Notes:

1. Soil descriptions from B302. MW302I installed approximately 8 feet south of B302.
2. TOC elevation = 760.97.

STANDARD PENETRATION - (BLOWS/FOOT)



LEGEND

KR059B030509

WATER LEVEL OBSERVATIONS

GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274401

SOIL AND MATERIALS ENGINEERS, INC

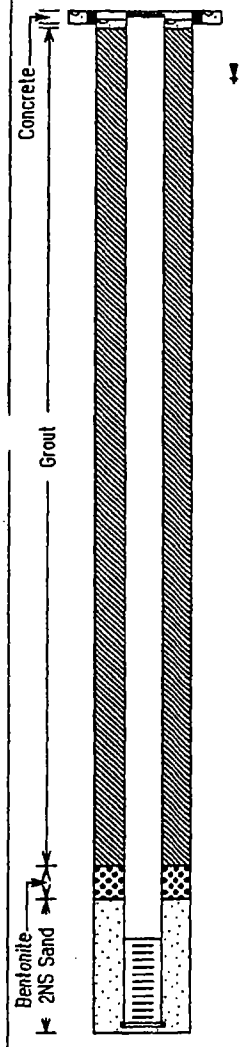
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/16/01
JOB NUMBER: KE31823

B302/MW302D
SHEET: 1

DRILLER: STEARNS | RIG: HSA

WELL DIAGRAM

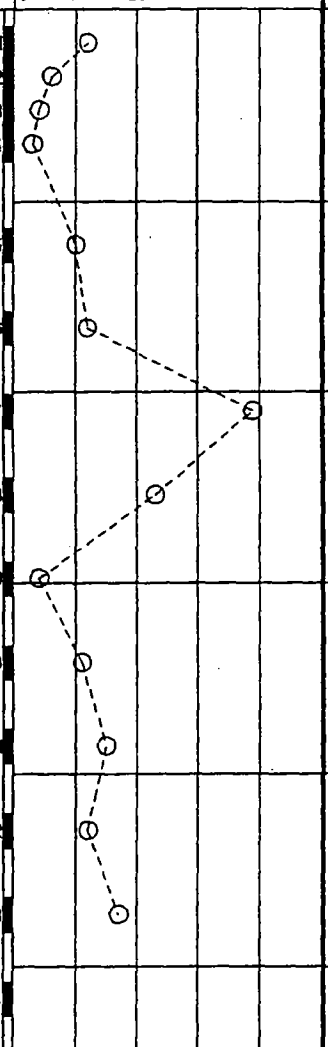


DEPTH (FEET)	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL
	GROUND SURFACE ELEVATION = 761.49	
0–5	Fine to Medium Sand- Trace Silt, Gravel, Coal, Slag and Cinders- Black- Moist- Medium Dense (SP/Fill)	S1, S2, S3, S4
5–10	Fine to Medium Sand- Trace Silt and Gravel- Brown- Moist to Wet- Medium Dense to Loose (SP/Fill)	S5, S6
10–15	Fibrous Peat- Trace Sand and Gravel- Occasional Root Pieces and Sand Partings- Black (Pt)	S7
15–20	Fine to Coarse Sand- Trace Silt and Gravel- Gray- Wet- Medium Dense (SP)	S8
20–35	Fine Sand- Trace Silt- Brown- Wet- Medium Dense to Dense (SP)	S9, S10, S11
35–60	Fine to Coarse Sand- Trace Silt and Gravel- Brown- Wet- Very Loose to Medium Dense (SP)	S12, S13, S14
60	END OF BORING AT 61 FEET	

Notes:

1. Soil description from B302. MW302D installed approximately 4 feet south of B302.
2. TOC elevation = 761.19.

STANDARD PENETRATION - (BLOWS/FOOT)



LEGEND

KR059B030510

WATER LEVEL OBSERVATIONS

GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274402

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/9/01
JOB NUMBER: KE31823

B303
SHEET: 1

WELL DIAGRAM

DRILLER: STEARNS | RIG: HSA

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT)

GROUND SURFACE ELEVATION = 761.25

0 10 20 30 40 50

LEGEND

Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist (SM/Topsoil)

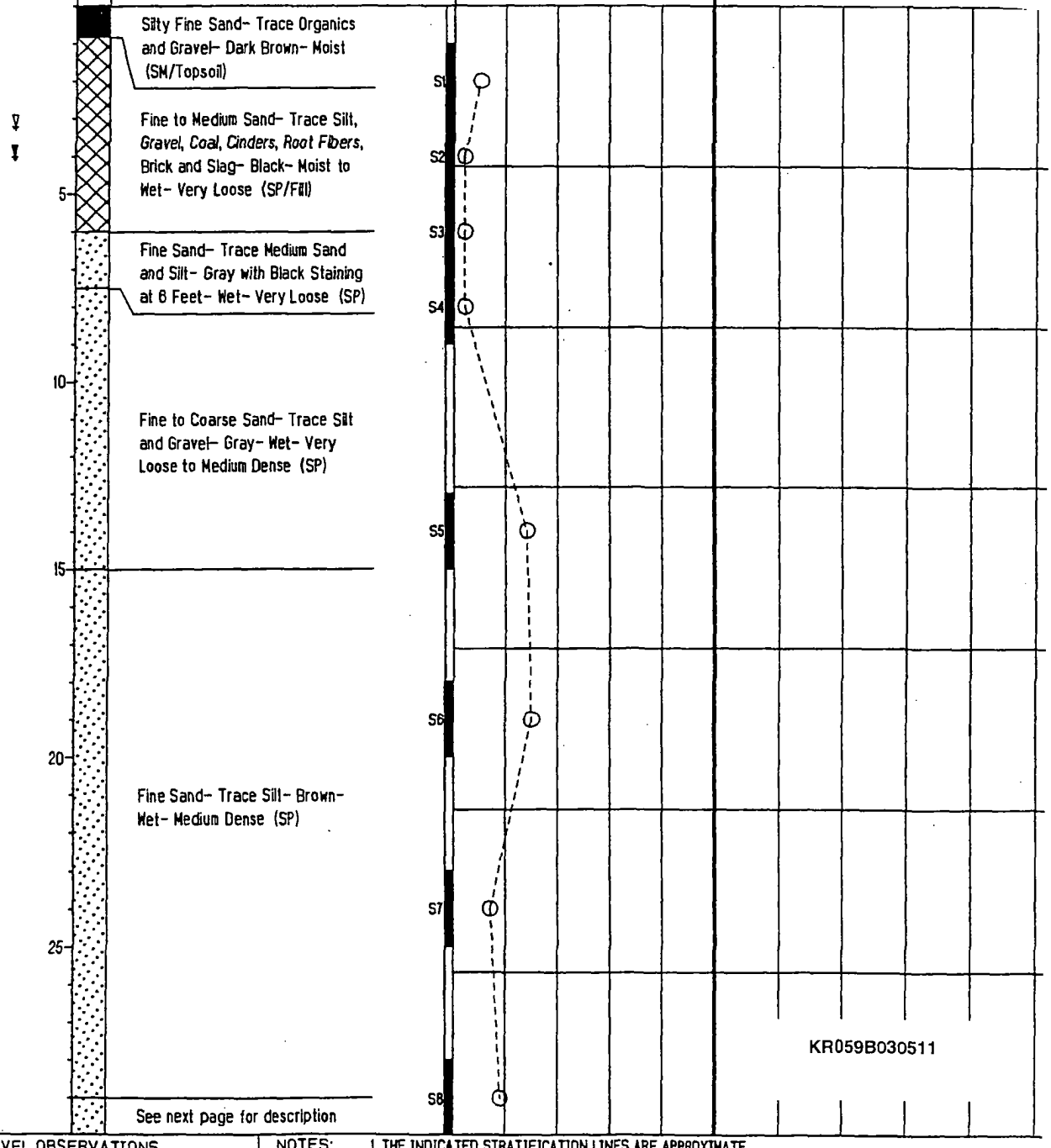
Fine to Medium Sand- Trace Silt, *Gravel, Coal, Cinders, Root Fibers,* Brick and Slag- Black- Moist to Wet- Very Loose (SP/Fill)

Fine Sand- Trace Medium Sand and Silt- Gray with Black Staining at 6 Feet- Wet- Very Loose (SP)

Fine to Coarse Sand- Trace Silt and Gravel- Gray- Wet- Very Loose to Medium Dense (SP)

Fine Sand- Trace Silt- Brown- Wet- Medium Dense (SP)

See next page for description



KR059B030511

WATER LEVEL OBSERVATIONS
- GROUNDWATER ENCOUNTERED DURING DRILLING
- GROUNDWATER 0 HOURS AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274403

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/9/01
JOB NUMBER: KE31823

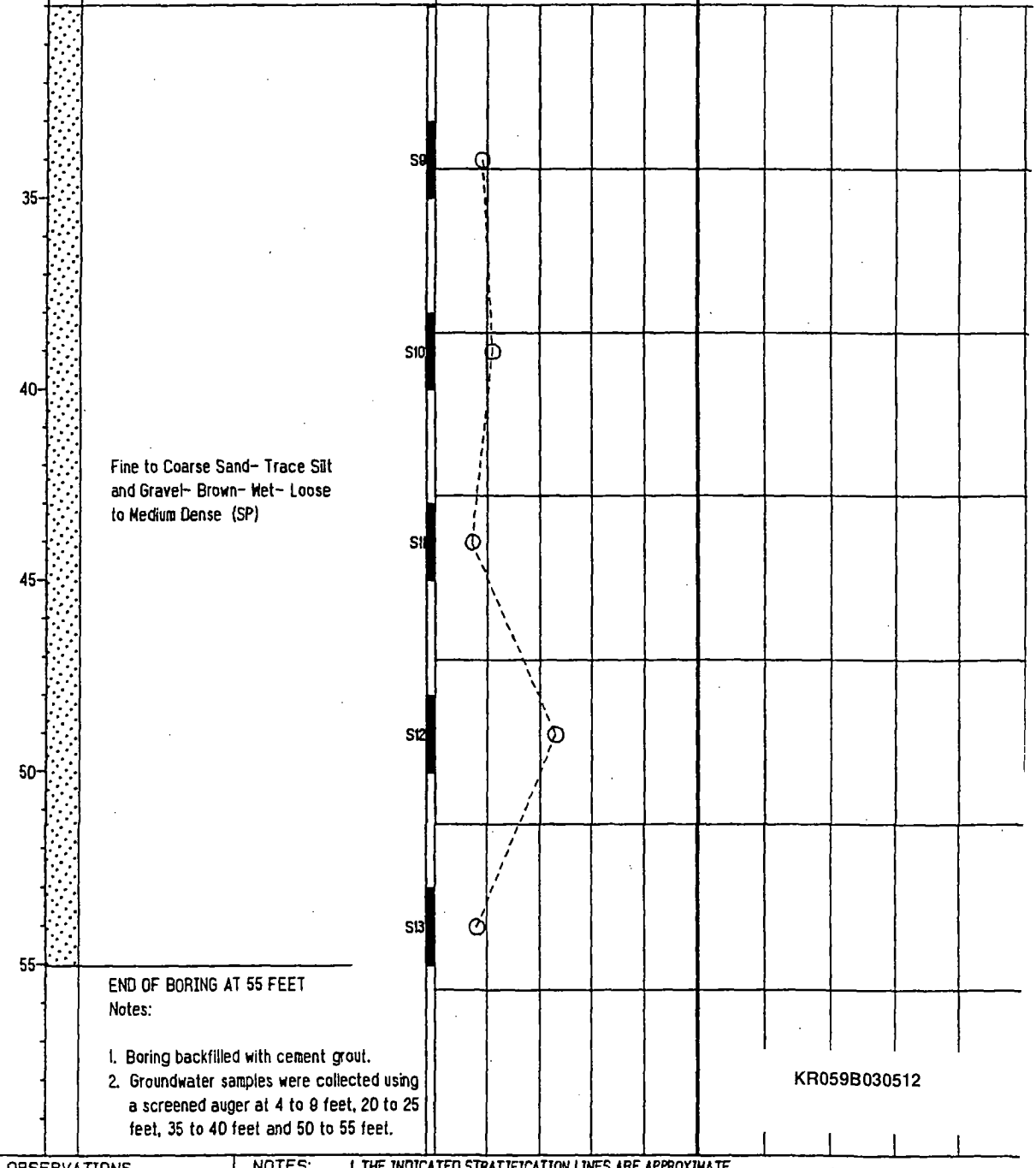
B303
SHEET: 2

WELL DIAGRAM

DRILLER: STEARNS | RIG: HSA

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE
ELEVATION = 761.25



Fine to Coarse Sand- Trace Silt and Gravel- Brown- Wet- Loose to Medium Dense (SP)

END OF BORING AT 55 FEET

Notes:

1. Boring backfilled with cement grout.
2. Groundwater samples were collected using a screened auger at 4 to 8 feet, 20 to 25 feet, 35 to 40 feet and 50 to 55 feet.

KR059B030512

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274404

SOIL AND MATERIALS ENGINEERS, INC

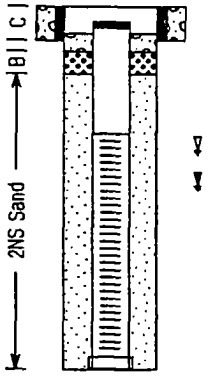
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/16/01
JOB NUMBER: KE31823

B303/MW303
SHEET: 1

DRILLER: STEARNS | RIG: HSA

WELL DIAGRAM



DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50

GROUND SURFACE ELEVATION = 761.25

Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist (SM/Topsoil)

Fine to Medium Sand- Trace Silt, Gravel, Coal, Cinders, Root Fibers, Brick and Slag- Black- Moist to Wet- Very Loose (SP/Fill)

Fine Sand- Trace Medium Sand and Silt- Gray with Black Staining at 6 Feet- Wet- Very Loose (SP)

Fine to Coarse Sand- Trace Silt and Gravel- Gray- Wet- Very Loose (SP)

END OF BORING AT 8 FEET

Notes:

1. Soil descriptions from B303. MW303 installed approximately 3 feet south of B303.
2. TOC elevation = 760.78.
3. B = bentonite, C = concrete.

S1 S2 S3 S4

5 10 15 20 25

LEGEND

KR059B030513

WATER LEVEL OBSERVATIONS
GROUNDWATER ENCOUNTERED DURING DRILLING
GROUNDWATER 0 HOURS AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274405

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/8/01
JOB NUMBER: KE31823

B304
SHEET: 1

WELL DIAGRAM

DRILLER: STEARNS RIG: HSA

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

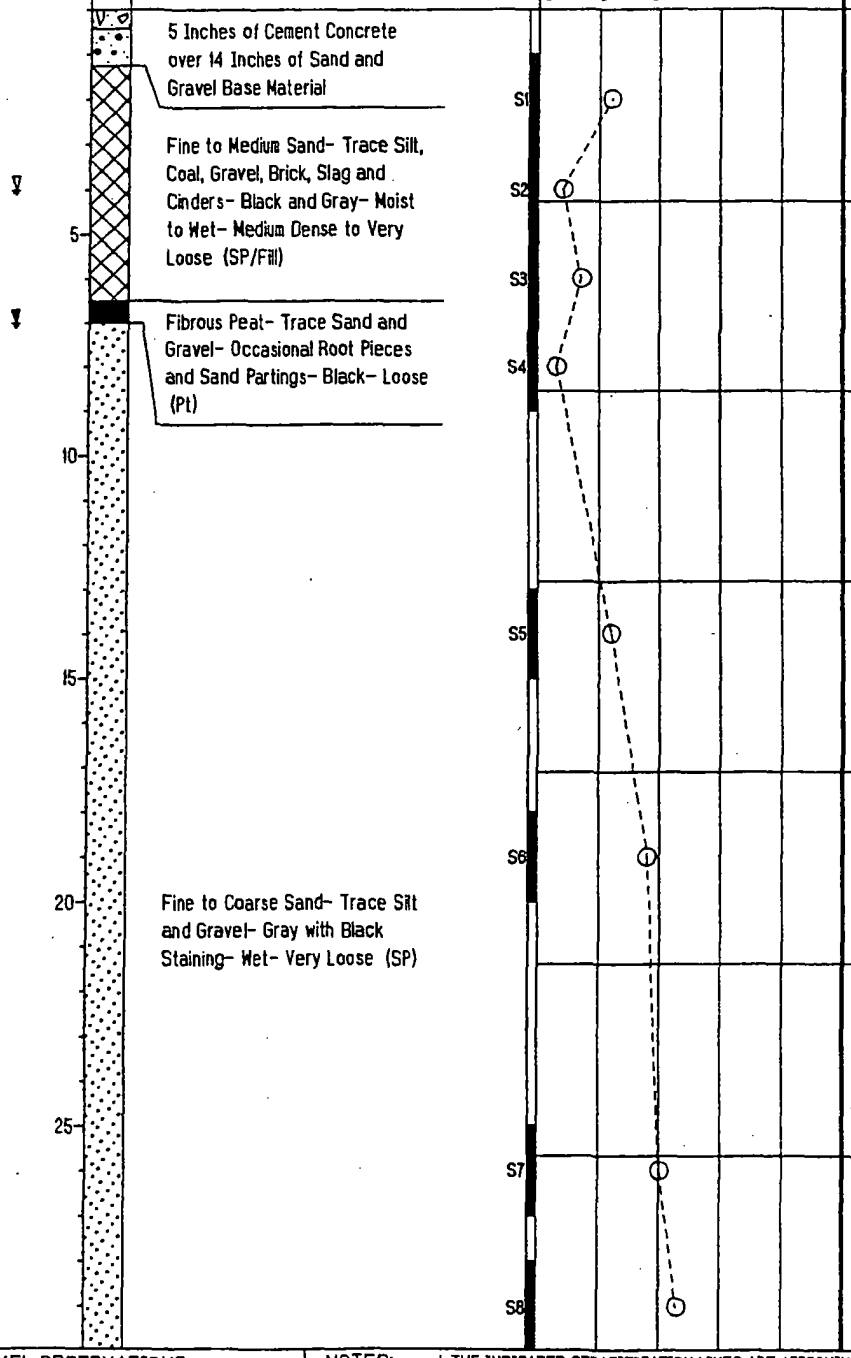
GROUND SURFACE ELEVATION = 761.96

5 Inches of Cement Concrete over 14 Inches of Sand and Gravel Base Material

Fine to Medium Sand- Trace Silt, Coal, Gravel, Brick, Slag and Cinders- Black and Gray- Moist to Wet- Medium Dense to Very Loose (SP/Fill)

Fibrous Peat- Trace Sand and Gravel- Occasional Root Pieces and Sand Partings- Black- Loose (Pt)

Fine to Coarse Sand- Trace Silt and Gravel- Gray with Black Staining- Wet- Very Loose (SP)



KR059B030514

WATER LEVEL OBSERVATIONS
GROUNDWATER ENCOUNTERED DURING DRILLING
GROUNDWATER 0 HOURS AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274406

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/8/01
JOB NUMBER: KE31823

B304
SHEET: 2

WELL DIAGRAM

DRILLER: STEARNS RIG: HSA

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE ELEVATION = 761.98

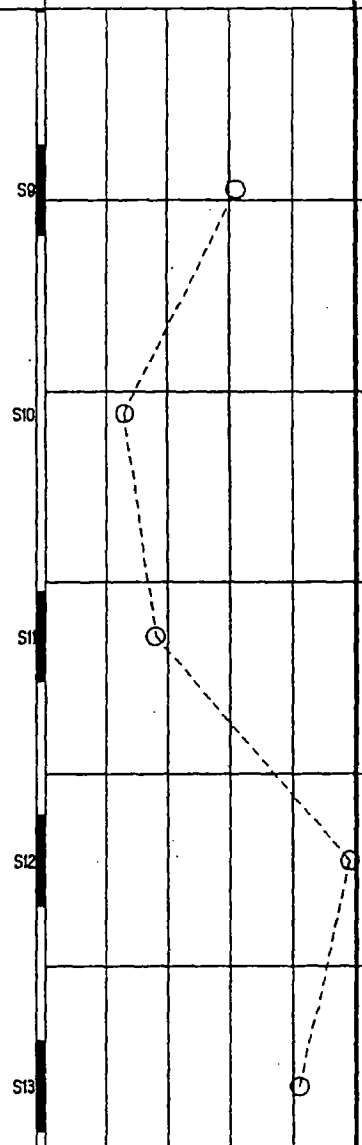
Fine to Coarse Sand- Trace Silt and Gravel- Gray with Black Staining- Wet- Very Loose (SP)

Fine Sand- Trace Silt- Brown- Wet- Medium Dense to Very Dense (SP)

Sandy Silt- Brown- Wet- Dense (ML)

END OF BORING AT 55 FEET

1. Boring backfilled with cement grout.
2. Odors noted from 3 to 10 feet below grade
3. Groundwater samples were collected using a screened auger from 4 to 9 feet, 20 to 25 feet, 35 to 40 feet and 50 to 55 feet.



KR059B030515

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274407

SOIL AND MATERIALS ENGINEERS, INC

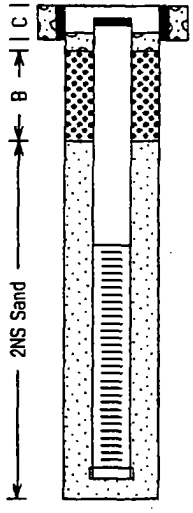
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PBG DATE: 5/16/01
JOB NUMBER: KE31823

B304/MW304
SHEET: 1

DRILLER: STEARNS | RIG: HSA

WELL DIAGRAM



DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE ELEVATION = 761.96

5 Inches of Cement Concrete over 14 Inches of Sand and Gravel Base Material

Fine to Medium Sand- Trace Silt, Coal, Gravel, Brick, Slag and Cinders- Black and Gray- Moist to Wet- Medium Dense to Very Loose (SP/Fill)

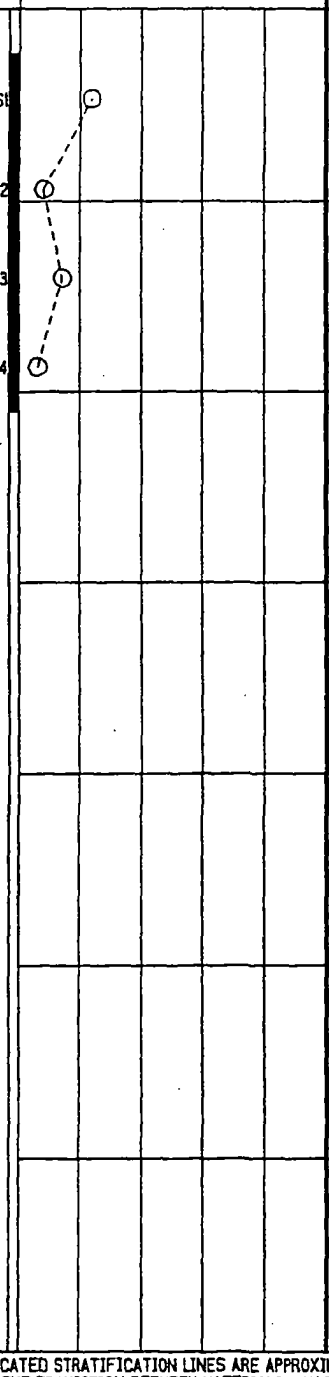
Fibrous Peat- Trace Sand and Gravel- Occasional Root Pieces and Sand Partings- Black- Loose (Pt)

Fine to Coarse Sand- Trace Silt and Gravel- Gray with Black Staining- Wet- Very Loose (SP)

END OF BORING AT 10 FEET

Notes:

1. Soil descriptions from B304. MW304 installed approximately 6 feet south of B304.
2. TOC elevation = 761.54.
3. B = bentonite, C = concrete.



KR059B030516

WATER LEVEL OBSERVATIONS
GROUNDWATER ENCOUNTERED DURING DRILLING
GROUNDWATER 0 HOURS AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274408

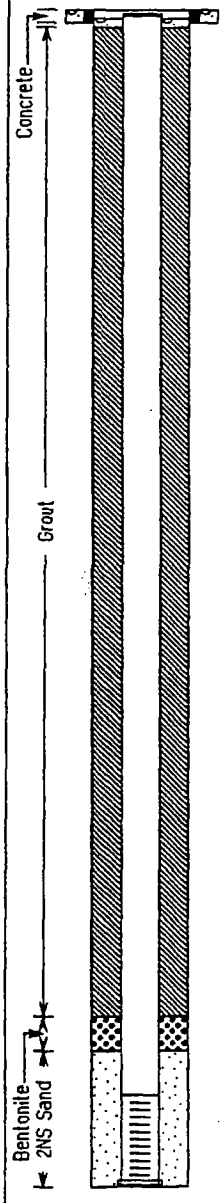
SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/17/01 B304/MW304D
JOB NUMBER: KE31823 SHEET: 1

DRILLER: STEARNS RIG: HSA

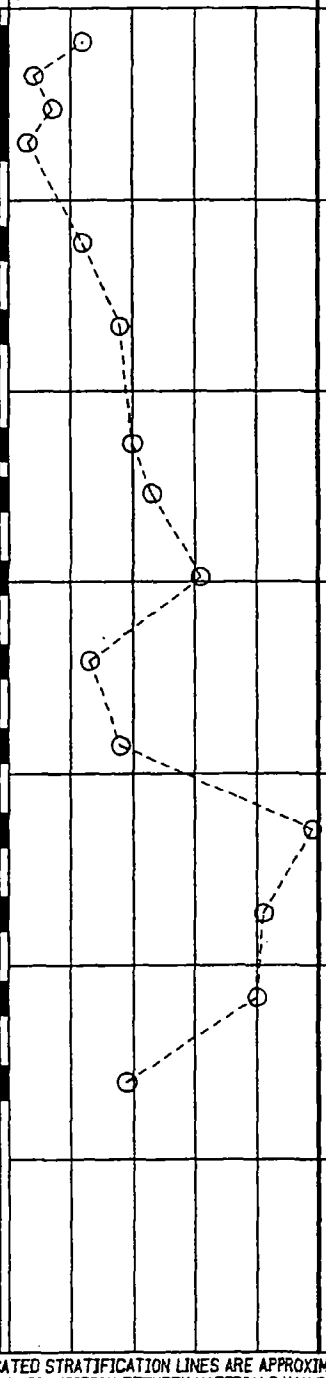
WELL DIAGRAM



DEPTH (FEET)	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL
	GROUND SURFACE ELEVATION = 761.96	
	5 Inches of Cement Concrete over 14 Inches of Sand and Gravel Base Material	S1, S2, S3, S4
5	Fine to Medium Sand- Trace Silt, Coal, Gravel, Brick, Slag and Cinders- Black and Gray- Moist to Wet- Medium Dense to Very Loose (SP/Fill)	S5
10, 15	Fibrous Peat- Trace Sand and Gravel- Occasional Root Pieces and Sand Partings- Black- Loose (Pt)	S6
20, 25	Fine to Coarse Sand- Trace Silt and Gravel- Gray to Brown at 17 Feet with Black Staining- Wet- Very Loose to Medium Dense (SP)	S7, S8
30, 35, 40, 45, 50	Fine Sand- Trace Silt- Brown- Wet- Medium Dense to Very Dense (SP)	S9, S10, S11, S12, S13
55, 60	Sandy Silt- Brown- Wet- Dense (ML)	S14
65	Fine to Coarse Sand- Trace Silt and Gravel- Gray- Wet- Medium Dense (SP)	S15
70, 75	END OF BORING AT 69 FEET	

Notes:
1. Soil description from B304. MW302D installed approximately 3 feet south of B304.
2. TOC elevation = 761.63.

STANDARD PENETRATION - (BLOWS/FOOT)



LEGEND

KR059B030517

WATER LEVEL OBSERVATIONS
GROUNDWATER ENCOUNTERED DURING DRILLING
GROUNDWATER 0 HOURS AFTER DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274409

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP501
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = NS		
		4 Inches of Coal	S1	
		Fine to Medium Sand- Trace Silt, Coal and Gravel- Brown and Black (SP/Fill)	S2	
5		Fine Sand- Trace to Some Silt- Occasional Silt Partings and Seams- Brown- Moist to Wet (SP-SM)	S3	
			S4	
		Fine to Coarse Sand- Trace Silt- Gray to Black- Wet (SP)		
10		END OF PROBE AT 8 FEET		
15				
20				
25				

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Odors noted from 7 to 8 feet below grade.

LEGEND

KR059B030518

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274410

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP502
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = NS	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND
		3 Inches of Coal	S1		
		Fine to Medium Sand- Trace Silt, Coal and Gravel- Black and Brown (SP/Fill)	S2		
5		Fine to Medium Sand- Trace Silt and Gravel- Brown- Moist to Wet (SP)	S3 S4		
		END OF PROBE AT 8 FEET Notes: 1. Soil samples were physically classified from grade to termination depth of the probe. 2. NS = not surveyed.			
10					
15					
20					
25					

KR059B030519

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274411

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP503
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = NS		
		12 Inches of Coal	S1	
		Fine to Medium Sand- Trace Silt, Coal, Limestone, Gravel and Brick- Brown- Moist to Wet (SP/Fill)	S2	
5			S3	
		Organic Silt- Trace Root Fibers and Peat- White and Gray- Wet (OL)	S4	
		Fine to Medium Sand- Trace Silt and Gravel- Gray, Brown and Black- Wet (SP)		
10		END OF PROBE AT 8 FEET		
15				
20				
25				

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Odors noted from 7 to 8 feet below grade.

LEGEND

KR059B030520

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274412

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP504
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = NS	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		Fine to Medium Sand- Trace Gravel, Coal and Silt- Coal Tar Layer Noted from 1.5 to 2.5 Feet- Black and Brown- Moist (SP/Fill)	S1	
		Fine to Medium Sand- Trace Silt and Gravel- Occasional Silt Seams- Black- Moist to Wet (SP)	S2 S3	
5		Fibrous Peat- Trace Sand and Root Fibers- Black (Pt)	S4	
		Fine to Coarse Sand- Trace Silt and Gravel- Gray- Wet (SP)		
10		END OF PROBE AT 8 FEET		
15				
20				
25				

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Odors noted from 2.5 to 8 feet below grade.

LEGEND

KR059B030521

WATER LEVEL OBSERVATIONS

! GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274413

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP505
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = NS	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		Fine to Medium Sand- Trace Slag, Gravel, Coal and Silt- Black and Brown- Moist (SP/Fill)	S1	
		Fine to Medium Sand- Trace Silt and Gravel- Coal Tar Layer Noted from 5 to 6 Feet- Black- Moist to Wet (SP/Fill)	S2	
5			S3	
		Fibrous Peat- Trace Sand and Root Fibers- Black (Pt)	S4	
		END OF PROBE AT 6 FEET Notes: 1. Soil samples were physically classified from grade to termination depth of the probe. 2. NS = not surveyed. 3. Odors noted from 2.5 to 6 feet below grade		
10				
15				
20				
25				

LEGEND

KR059B030522

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274414

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP506
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = NS	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND
		Fine to Medium Sand- Trace Slag, Gravel, Coal and Silt- Black and Brown- Moist (SP/Fill)	S1		
			S2		
5		Fine to Medium Sand- Trace Silt and Gravel- Coal Tar Layer Noted from 5 to 6 Feet- Black- Moist to Wet (SP/Fill)	S3		
			S4		
		Fine to Medium Sand- Trace Silt- Gray- Wet (SP)			
		Fibrous Peat- Trace Sand and Root Fibers- Black (Pt)			
10		END OF PROBE AT 8 FEET			
15					
20					
25					

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Odors noted from 2.5 to 6 feet below grade.

KR059B030523

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274415

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP507
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION (GROUND SURFACE ELEVATION = NS)	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		Fine to Medium Sand- Trace Slag, Gravel, Coal and Silt- Black and Brown- Moist (SP/Fill)	S1	
		Clayey Fine Sand- Trace to Some Silt- Trace Coal and Gravel- Brown- Moist (SC/Fill)	S2	
5		Fine to Medium Sand- Trace to Some Silt- Trace Gravel and Coal- Brown- Moist to Wet (SP-SM/Fill)	S3	
			S4	
		Fine to Medium Sand- Trace Brick, Coal, Slag, Root Fibers and Limestone- Black- Wet (SP/Fill)		
10		END OF PROBE AT 8 FEET		
15				
20				
25				

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Odors noted from 4.75 to 8 feet below grade.

LEGEND

KR059B030524

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274416

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP508
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50 | LEGEND

GROUND SURFACE ELEVATION = NS

Fine to Medium Sand- Trace Silt, Coal, Slag and Brick- Coal Tar Noted from 7 to 7.5 Feet- Black and Brown- Moist to Wet (SP/Fill)

S1
S2
S3
S4

5

END OF PROBE AT 8 FEET

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Odors noted from 3 to 8 feet below grade.

10
15
20
25

KR059B030525

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274417

SOIL AND MATERIALS ENGINEERS, IN(

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP509
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE ELEVATION = NS

0 10 20 30 40 50

2 Inches of Coal

S1

Fine to Medium Sand- Trace Silt, Coal and Gravel- Brown and Black (SP/Fill)

S2

Fine to Medium Sand- Trace Silt, Coal, Cinders, Slag, Brick, Clay and Root Fibers- Coal Tar Noted from 3.5 to 3.75 Feet- Black- Moist to Wet (SP/Fill)

S3

5

Clayey Fine Sand- Trace to Some Silt- Brown- Wet (SC/Fill)

S4

Fine to Medium Sand- Trace Silt, Gravel- Brick and Root Fibers- Coal Tar Noted from 6.25 to 6.5 Feet- Black and Gray (SP/Fill)

10

Fibrous Peat- Trace Sand and Root Fibers- Black (Pt)

END OF PROBE AT 8 FEET

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Odors noted from 1.5 to 7 feet below grade.

15

20

25

KR059B030526

WATER LEVEL OBSERVATIONS

GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274418

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP510
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION (GROUND SURFACE ELEVATION = NS)	SAMPLE TYPE, NUMBER & INTERVAL
		2 Inches of Coal	S1
		Fine to Medium Sand- Trace Gravel and Silt- Brown- Moist (SP/Fill)	S2
5		Fine to Medium Sand- Trace Silt, Gravel & Brick- Coal Tar noted from 1 to 4.5 feet- Black- Moist to Wet (SP/Fill)	S3
		Clayey Fine Sand- Some Silt- Black and Gray- Wet (SC)	S4
		Fibrous Peat- Trace Sand and Root Fibers- Black (Pt)	
10		END OF PROBE AT 8 FEET	
15			
20			
25			

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Odors noted from 1 to 8 feet below grade.

STANDARD PENETRATION - (BLOWS/FOOT)

0 10 20 30 40 50

LEGEND

KR059B030527

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274419

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP511
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = NS	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND
		Fine to Medium Sand- Trace Brick, Coal and Slag- Brown and Black- Moist (SP/Fill)	S1		
			S2		
		Fine to Medium Sand- Trace Silt and Gravel- Brown- Moist to Wet (SP/Fill)	S3		
5		Fine to Medium Sand- Trace Silt, Clay, Roots and Peat- Gray and Black- Wet (SP/Fill)	S4		
		END OF PROBE AT 8 FEET			
10					
15					
20					
25					

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.

KR059B030528

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE

00274420

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP512
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE ELEVATION = NS

0 10 20 30 40 50

Fine to Medium Sand- Trace Brick, Coal and Slag- Brown and Black- Moist (SP/Fill)

S1

S2

Clayey Fine Sand- Occasional Silt Seams and Partings- Brown- Moist to Wet (SC)

5

S3

S4

Fine to Medium Sand- Trace Silt- Brown with Black Staining (SP)

END OF PROBE AT 8 FEET

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Odors noted from 7 to 8 feet below grade.

10

15

20

25

KR059B030529

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE

00274421

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP513
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = NS	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND
		Fine to Medium Sand- Trace Silt, Gravel, Brick, Coal and Peat- Coal Tar Noted from 4 to 4.5 Feet- Brown and Black (SP/Fill)	S1 S2		
5		Fibrous Peat- Trace Sand and Root Fibers- Black (Pt)	S3		
		Fine to Coarse Sand- Trace Silt and Gravel- Black- Wet (SP)	S4		
10		END OF PROBE AT 8 FEET Notes: 1. Soil samples were physically classified from grade to termination depth of the probe. 2. NS = not surveyed. 3. Odors noted from 6 to 8 feet below grade.			
15					
20					
25					

KR059B030530

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274422

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP514
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = NS		
		2 Inches of Coal	S1	
		Fine to Medium Sand- Trace Silt, Coal, Slag, Brick, Limestone and Cinders- Coal Tar Noted from 2.5 to 3 Feet- Brown and Black- Moist to Wet (SP/Fill)	S2	
5			S3	
		Silty Fine Sand- Trace Clay- Black- Wet (SM)	S4	
		Fibrous Peat- Trace Silt and Gravel- Black- Wet (SP)		
10		END OF PROBE AT 8 FEET		
15				
20				
25				

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Odors noted from 2.5 to 7.75 feet below grade.

LEGEND

KR059B030531

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274423

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP515
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = NS	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND
		Fine to Medium Sand- Trace Silt, Coal, Slag, Cinders, Brick and Limestone- Brown and Black- Moist to Wet (SP/Fill)	S1 S2		
5			S3		
		Clayey Fine Sand- Some Silt- Occasional Fine Sand Layers- Black- Wet (SC)	S4		
		Fine Sand- Trace Silt- Black- Wet (SP)			
10		END OF PROBE AT 8 FEET			
15					
20					
25					

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Odors noted from 6 to 8 feet below grade.

KR059B030532

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274424

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP516
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = NS		
		Fine to Medium Sand- Trace Silt, Coal, Slag, Cinders, Brick and Limestone- Brown and Black- Moist (SP/FILL)	S1, S2	
5		Silty Fine Sand- Trace Gravel- Black and Gray- Moist to Wet (SM)	S3, S4	
		END OF PROBE AT 8 FEET		
10				
15				
20				
25				

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Odors noted from 3.75 to 8 feet below grade.

LEGEND

KR059B030533

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274425

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP517
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = NS	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		Fine to Medium Sand- Trace Silt, Coal, Slag, Cinders, Brick and Limestone- Brown and Black- Moist (SP/Fill)	S1 S2	
5		Silty Fine Sand- Trace Gravel- Occasional Fine to Coarse Sand Layers- Black and Gray- Moist to Wet (SM)	S3 S4	
		Fibrous Peat- Trace Sand and Root Fibers- Black (Pt)		
10		Fine to Medium Sand- Trace Silt- Gray- Wet (SP)		
15		END OF PROBE AT 8 FEET		
20				
25				

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Odors noted from 6.5 to 7 feet below grade.

LEGEND

KR059B030534

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274426

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP518
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = NS	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND
		Fine to Medium Sand- Trace Silt, Coal, Slag, Cinders, Brick and Limestone- Brown and Black- Moist (SP/FILL)	S1 S2 S3 S4		
5					
		END OF PROBE AT 8 FEET Notes: 1. Soil samples were physically classified from grade to termination depth of the probe. 2. NS = not surveyed. 3. Odors noted from 7 to 8 feet below grade.			
10					
15					
20					
25					

KR059B030535

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE

00274427

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP519
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = NS		
		Fine Sand- Trace Silt- Orange- Moist (SP/Fill)	S1	
			S2	
5		Fine to Medium Sand- Trace Silt, Coal, Slag, Brick, Limestone and Cinders- Brown and Black- Moist to Wet (SP/Fill)	S3	
			S4	
10		END OF PROBE AT 8 FEET		
15				
20				
25				

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.

LEGEND

KR059B030536

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU. THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274428

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP520
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE ELEVATION = NS

0 10 20 30 40 50

Fine to Medium Sand- Trace Silt and Gravel- Brown- Moist (SP/Fill) — S1

Fine Sand- Trace Silt- Orange- Moist (SP/Fill) — S2

Fine to Medium Sand- Trace Silt, Coal, Slag, Brick, Limestone and Cinders- Brown and Black- Moist to Wet (SP/Fill) — S3

Sandy Peat- Trace Wood Fragments, Roots and Fine Sand Layers- Black and Gray (Pt) — S4

END OF PROBE AT 8 FEET

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.

5 10 15 20 25

KR059B030537

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274429

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP521
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = NS	SAMPLE TYPE, NUMBER & INTERVAL
		Fine to Medium Sand- Trace Silt and Gravel- Brown- Moist (SP/Fill)	S1
		Fine to Medium Sand- Trace Silt, Gravel, Coal and Cinders- Coal Tar Noted from 5.5 to 6 Feet- Moist to Wet (SP/Fill)	S2
5			S3
		Fine Sand- Trace to Some Silt and Root Fibers- Black- Wet (SP)	S4
		Fibrous Peat- Trace Sand and Root Fibers- Black (Pt)	
10		END OF PROBE AT 8 FEET	
15			
20			
25			

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.

STANDARD PENETRATION - (BLOWS/FOOT)

0 10 20 30 40 50

LEGEND

KR059B030538

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274430

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP522
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION (GROUND SURFACE ELEVATION = NS)	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION – (BLOWS/FOOT) 0 10 20 30 40 50
		Fine Sand– Trace Silt– Orange– Moist (SP/Fill)	S1	
		Fine to Medium Sand– Trace Silt, Coal, Slag, Brick, Limestong and Cinders– Coal Tar Noted from 2.5 to 3 Feet– Brown and Black– Moist to Wet (SP/Fill)	S2	
▼ 5			S3	
		END OF PROBE AT 5.5 FEET		
10				
15				
20				
25				

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Odors noted from 3 to 5 feet below grade.
4. Refusal noted at 5.5 feet.

LEGEND

KR059B030539

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274431

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP523
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = NS	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		Fine Sand- Trace Silt and Gravel- Orange and Brown- Moist (SP/Fill)	S1	
			S2	
5		Fine to Medium Sand- Trace Silt, Coal, Slag, Brick, Limestone and Cinders- Brown and Black- Moist to Wet (SP)	S3	
			S4	
		Silty Fine Sand- Trace Clay and Gravel- Black- Wet (SM)		
		END OF PROBE AT 8 FEET		
10				
15				
20				
25				

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.

LEGEND

KR059B030540

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274432

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 5/23/01
JOB NUMBER: KE31823

PROBE SP524
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE ELEVATION = NS

0 10 20 30 40 50

Fine to Medium Sand- Trace Silt, Coal, Slag, Brick, Limestone and Cinders- Brown and Black- Moist to Wet (SP/Fill) — S1

Clayey Fine Sand- Some Silt- Occasional Fine Sand Layers- Brown (SC) — S2

5

Fine to Medium Sand- Trace Silt (SP) — S3, S4

END OF PROBE AT 8 FEET

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.

10

15

20

25

KR059B030541

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. PROBE BACKFILLED WITH NATURAL SOILS AND BENTONITE.

00274433

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 6/8/0 HAND AUGER HA525
JOB NUMBER: KE31823 SHEET: 1

WELL DIAGRAM

DRILLER: SME/DO | RIG: HA

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50

GROUND SURFACE ELEVATION = NS

Fine to Medium Sand- Trace Coal, Gravel and Silt- Black- Moist (SP/Fill)

S1

Fine to Medium Sand- Trace Silt and Gravel- Coal Tar Noted from 5 to 6 Feet- Brown- Moist to Wet (SP/Fill)

S2

5

S3

END OF PROBE AT 6 FEET

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. Odors noted from 4 to 6 feet below grade.
3. NS = not surveyed.

LEGEND

KR059B030542

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274434

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY

A/E:
BY: NBL/PGB DATE: 6/8/0 HAND AUGER HA526
JOB NUMBER: KE31823 SHEET: 1

WELL DIAGRAM

DRILLER: SME/DO RIG: HA

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50 | LEGEND

GROUND SURFACE ELEVATION = NS

Fine to Medium Sand- Trace Coal, Gravel and Silt- Black- Moist (SP/Fill)

S1

Fine to Medium Sand- Trace Silt and Gravel- Coal Tar Noted from 5 to 6 Feet- Brown- Moist to Wet (SP/Fill)

S2

5

S3

END OF PROBE AT 6 FEET

Notes:

1. Soil samples were physically classified from grade to termination depth of the probe.
2. Odors noted from 4 to 6 feet below grade.
3. NS = not surveyed.

KR059B030543

WATER LEVEL OBSERVATIONS

GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00274435

APPENDIX D

TABULATED WATER LEVEL AND ANALYTICAL DATA

TA. 1

KALAMAZOO MGP

GROUNDWATER ELEVATION SUMMARY

SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	2/8/1999 Depth to Water from TOC (ft.)	2/8/1999 Static Groundwater Elevation (ft.)	2/25/1999 Depth to Water from TOC (ft.)	2/25/1999 Static Groundwater Elevation (ft.)	6/22/1999 (See 5) Depth to Water from TOC (ft.)	6/22/1999 (See 5) Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	8.47	758.04	8.77	757.74	9.13	757.38
MW-2	763.00	762.56	759.6 - 754.6	4.89	757.67	5.27	757.29	5.66	756.90
MW-3	761.43	760.86	758.2 - 753.2	3.63	757.23	3.82	757.04	4.32	756.54
MW-4	761.70	760.99	759.2 - 754.2	2.68	758.31	3.02	757.97	3.45	757.54
P-1	768.91	768.38	762.4 - 757.4	NI	NI	10.44	757.94	10.50	757.88
P-2	766.95	766.35	759.4 - 754.4	8.17	758.18	8.38	757.97	8.87	757.48
P-2D	766.84	766.61	731.7 - 726.7	NI	NI	NI	NI	9.61	757.00
P-3	761.87	761.35	758.6 - 753.6	3.82	757.53	4.16	757.19	4.61	756.74
P-4	761.95	761.51	758.7 - 753.7	3.39	758.12	3.95	757.56	4.46	757.05
MW101	771.74	771.41	759.6 - 754.6	NI	NI	NI	NI	13.28	758.13
MW101D	771.59	770.91	736.5 - 731.5	NI	NI	NI	NI	13.19	757.72
MW102	770.02	769.88	760.1 - 755.1	NI	NI	NI	NI	11.32	758.56
MW103	771.99	771.52	761.3 - 756.3	NI	NI	NI	NI	11.42	760.10
MW104	763.07	762.74	758.4 - 753.4	NI	NI	NI	NI	6.04	756.70
MW104D	762.92	762.66	732.8 - 727.8	NI	NI	NI	NI	5.81	756.85
MW105	770.61	770.31	760.1 - 755.1	NG	NG	NG	NG	11.77 (5)	758.54
MW105D	770.61	770.20	731.9 - 726.9	NG	NG	NG	NG	12.85 (5)	757.35

Notes:

(1) TOC = Top of Casing.

(2) ft. MSL = feet above mean sea level.

(3) NI = Monitoring well not installed at time of gauging event.

(4) NG = Groundwater elevation not gauged.

(5) Groundwater elevations for MW105 and MW105D were gauged on June 23, 1999.

00274438

TA. 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	2/15/2000 Depth to Water from TOC (ft.)	2/15/2000 Static Groundwater Elevation (ft.)	5/22/2000 Depth to Water from TOC (ft.)	5/22/2000 Static Groundwater Elevation (ft.)	11/6/2000 Depth to Water from TOC (ft.)	11/6/2000 Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	9.58	756.93	7.92	758.59	9.17	757.34
MW-2	763.00	762.56	759.6 - 754.6	6.04	756.52	4.24	758.32	5.44	757.12
MW-3	761.43	760.86	758.2 - 753.2	4.62	756.24	3.23	757.63	4.35	756.51
MW-4	761.70	760.99	759.2 - 754.2	3.78 (4)	757.21	2.52	758.47	3.38	757.61
P-1	768.91	768.38	762.4 - 757.4	DRY	DRY	9.27	759.11	10.57	757.81
P-2	766.95	766.35	759.4 - 754.4	8.94	757.41	7.54	758.81	8.35	758.00
P-2D	766.84	766.61	731.7 - 726.7	10.00	756.61	8.29	758.32	9.59	757.02
P-3	761.87	761.35	758.6 - 753.6	4.82	756.53	3.33	758.02	3.95	757.40
P-3D	762.58	762.16	727.6 - 722.6	NI	NI	3.49	758.67	----	----
P-3D (5)	761.81	761.39	727.6 - 722.6	----	----	----	----	4.52	756.87
P-4	761.95	761.51	758.7 - 753.7	4.42 (4)	757.09	3.30	758.21	4.45	757.06
MW101	771.74	771.41	759.6 - 754.6	13.80	757.61	12.24	759.17	13.16	758.25
MW101D	771.59	770.91	736.5 - 731.5	13.63	757.28	12.01	758.90	13.35	757.56
MW102	770.02	769.88	760.1 - 755.1	11.93	757.95	10.10	759.78	11.44	758.44
MW103	771.99	771.52	761.3 - 756.3	12.12	759.40	10.46	761.06	11.63	759.89
MW104	763.07	762.74	758.4 - 753.4	6.34	756.40	4.65	758.09	6.01	756.73
MW104D	762.92	762.66	732.8 - 727.8	6.18	756.48	4.46	758.20	5.80	756.86
MW105	770.61	770.31	760.1 - 755.1	12.42	757.89	10.62	759.69	11.92	758.39
MW105D	770.61	770.20	731.9 - 726.9	13.28	756.92	11.58	758.62	12.89	757.31
MW201	761.78	761.31	759.8 - 754.8	NI	NI	3.12	758.19	4.28	757.03
MW202D	771.89	771.53	716.1 - 711.1	NI	NI	13.07	758.46	14.35	757.18

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) Groundwater elevations for MW-4 and P-4 were gauged on February 22, 2000.
(5) Top of casing elevations for P3 and P3D were resurveyed as a result of surface modifications to facilitate landscaping.

00274439

KR059B030547

TAB[illegible] 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	5/29/2001 Depth to Water from TOC (ft.)	5/29/2001 Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	7.92	758.59
MW-2	763.00	762.56	759.6 - 754.6	4.00	758.56
MW-3	761.43	760.86	758.2 - 753.2	2.99	757.87
MW-4 (3)	763.08	762.42	759.2 - 754.2	3.64	758.78
P-1	768.91	768.38	762.4 - 757.4	9.38	759.00
P-2	766.95	766.35	759.4 - 754.4	7.61	758.74
P-2D	766.84	766.61	731.7 - 726.7	8.16	758.45
P-3	761.87	761.35	758.6 - 753.6	2.88	758.47
P-3D	761.81	761.39	727.6 - 722.6	3.06	758.33
P-4	761.95	761.51	758.7 - 753.7	2.93	758.58
MW101	771.74	771.41	759.6 - 754.6	12.26	759.15
MW101D	771.59	770.91	736.5 - 731.5	11.94	758.97
MW102	770.02	769.88	760.1 - 755.1	10.36	759.52
MW103	771.99	771.52	761.3 - 756.3	10.76	760.76
MW104	763.07	762.74	758.4 - 753.4	4.64	758.10
MW104D	762.92	762.66	732.8 - 727.8	4.34	758.32
MW105	770.61	770.31	760.1 - 755.1	10.84	759.47
MW105D	770.61	770.20	731.9 - 726.9	11.51	758.69
MW201	761.78	761.31	759.8 - 754.8	3.05	758.26
MW202D	771.89	771.53	716.1 - 711.1	12.96	758.57
MW301	762.93	762.54	757.4 - 752.4	4.02	758.52
MW302	761.48	761.07	757.4 - 752.4	3.48	757.59
MW302I	761.51	760.97	741.2 - 736.2	3.41	757.56
MW302D	761.49	761.19	705.9 - 700.9	2.95	758.24
MW303	761.25	760.78	758.2 - 753.2	3.18	757.60
MW304	761.96	761.54	756.4 - 751.4	4.00	757.54
MW304D	761.96	761.63	697.1 - 692.1	3.42	758.21
N. Side of Bridge / West Abutment	---	759.41	----	3.00	756.41

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) Top of casing and ground level elevations for MW-4 were resurveyed as a result of surface modifications to facilitate landscaping.

00274440

KR059B030548

KR059B030549

TABLE 2
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULTS
BTEX AND PAHs

SME Project No. KE31823

Constituent	Commercial II Drinking Water Protection Criteria	Groundwater Contact Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	
					Sample Number	B304
					Sample ID	S3
					Depth (feet)	5-7
					Date Collected	5/8/01
BTEX						
Benzene	**100**	220,000	4,000	8,400	400,000	**1,900**
Toluene	16,000	250,000	2,800	250,000	250,000	2,400
Ethylbenzene	**1,500**	140,000	**360**	140,000	140,000	**17,000**
Xylenes	**5,600**	150,000	**700**	150,000	150,000	**69,000**
PAHs						
Naphthalene	**100,000**	2,100,000	**870**	470,000	80,000,000	**130,000**
2-Methylnaphthalene	170,000	5,500,000	ID	ID	40,000,000	21,000
Acenaphthylene	17,000	440,000	ID	3,000,000	8,000,000	ND
Acenaphthene	880,000	970,000	4,400	350,000,000	200,000,000	ND
Fluorene	890,000	890,000	5,300	1,000,000,000	130,000,000	ND
Phenanthrene	160,000	1,100,000	2,300	3,300,000	8,000,000	ND
Anthracene	41,000	41,000	ID	1,000,000,000	1,000,000,000	ND
Fluoranthene	730,000	730,000	5,500	1,000,000,000	180,000,000	ND
Pyrene	480,000	480,000	ID	1,000,000,000	110,000,000	ND
Benzo(a)anthracene	NLL	NLL	NLL	NLV	100,000	ND
Chrysene	NLL	NLL	NLL	ID	10,000,000	ND
Benzo(b)fluoranthene	NLL	NLL	NLL	NLV	100,000	ND
Benzo(k)fluoranthene	NLL	NLL	NLL	NLV	1,000,000	ND
Benzo(a)pyrene	NLL	NLL	NLL	NLV	10,000	ND
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLL	NLV	100,000	ND
Dibenzo(a,h)anthracene	NLL	NLL	NLL	ID	10,000	ND
Benzo(g,h,i)perylene	NLL	NLL	NLL	NLV	9,100,000	ND

NOTES:

(1) Concentrations reported in ppb (parts per billion or ug/kg).

(2) Analytical results were compared to the MDEQ Part 201 Generic Commercial II Cleanup Criteria, dated June 2000.

(3) ND = Analytical result was less than the target detection limit.

(4) NLL = Chemical is not likely to leach under most soil conditions.

(5) NLV= Chemical is not likely to volatilize under most conditions.

(6) ID = Inadequate data to develop criterion.

(7) Shading and bolding indicates which cleanup criteria are exceeded and the corresponding analytical result.

(8) The above data was compared to criteria for ambient air inhalation and the data did not exceed these criteria.

00274441

TABLE 3
KALAMAZOO MGP
SUBSURFACE SOIL ANALYTICAL RESULT
METALS AND CYANIDE
SME Project No. KE31823
Page 1 of 1

					Sample Number	B304
					Sample ID	S3
					Depth (feet)	5-7
					Date Collected	5/8/01
Constituent	Commercial II Drinking Water Protection Criteria	Groundwater Contact Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria	
Arsenic	23,000	2,000,000	70,000	NLV	61,000	7,800
Barium	1,300,000	1,000,000,000	100,000	NLV	250,000,000	62,000
Cadmium	6,000	230,000,000	3,000	NLV	4,100,000	80
Chromium (total)	30,000 (7)	140,000,000 (7)	18,000 (6) (7)	NLV	17,000,000	17,000
Copper	5,800,000	1,000,000,000	120,000	NLV	140,000,000	30,000
Lead	700,000	ID	2,500,000	NLV	900,000	110,000
Mercury	1,700	47,000	**130**	NLV	1,000,000	**210**
Selenium	4,000	78,000,000	**410 (6)**	NLV	18,000,000	**1,400**
Silver	13,000	200,000,000	1,000 (6)	NLV	17,000,000	ND
Zinc	5,000,000	1,000,000,000	270,000	NLV	1,000,000,000	57,000
Cyanide (amenable)	4,000	250,000	400	NLV	250,000	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) Analytical results were compared to the MDEQ Part 201 Generic Commercial II Cleanup Criteria dated June 2000.
(3) ND = Analytical result was less than the target detection limit.
(4) NLV = Chemical is not likely to volatilize under most conditions.
(5) ID = Inadequate data to develop criterion.
(6) Cleanup criteria defaults to Statewide Default Background Concentration.
(7) Hexavalent chromium used for comparison.
(8) Shading and bolding indicates which cleanup criteria are exceeded and the corresponding analytical result.
(9) The above data was compared to criteria for ambient air inhalation and the data did not exceed these criteria.

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TABLE 4
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS - VERTICAL GROUNDWATER SAMPLING
BTEX AND NAPHTHALENE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria				
Sample Location					B302	B302	B302	B302
Sample ID					GW	GW	GW	GW
Screen Depth (feet)					4-9	20-25	35-40	50-55
Date Collected					5/9/2001	5/9/2001	5/9/2001	5/9/2001
BTEX								
Benzene	5	200	36,000	11,000	1	400	610	40
Toluene	790	140	530,000	530,000	1	4	5	1
Ethylbenzene	74	18	170,000	170,000	10	16	13	3
Xylenes	280	35	190,000	190,000	17	30	37	7
PAHs								
Naphthalene	1,500	13	31,000	31,000	ND	70	31	5

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) Analytical results were compared to the MDEQ Part 201 Generic Commercial II Cleanup Criterian, dated June, 2000.
(3) ND= Analytical result was less than target detection limit.
(4) Vertical groundwater samples were not analyzed for other PAHs, the Michigan 10 Metals and cyanide.
(5) Shading and bolding indicates which cleanup criteria are exceeded and the corresponding analytical result.
(6) The above data was also compared to criteria for flammability/explosivity and acute inhalation and the data did not exceed these criteria.

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ABLE 4
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS - VERTICAL GROUNDWATER SAMPLING
BTEX AND NAPHTHALENE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria	B303 GW 4-9 5/9/2001	B303 GW 20-25 5/9/2001	B303 GW 35-40 5/10/2001	B303 GW 50-55 5/10/2001
Sample Location / Sample ID / Screen Depth (feet) / Date Collected								
BTEX								
Benzene	5	200	36,000	11,000	**43**	5	3	2
Toluene	790	140	530,000	530,000	3	ND	1	1
Ethylbenzene	74	18	170,000	170,000	11	3	3	3
Xylenes	280	35	190,000	190,000	20	8	6	5
PAHs								
Naphthalene	1,500	13	31,000	31,000	5	ND	ND	ND

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) Analytical results were compared to the MDEQ Part 201 Generic Commercial II Cleanup Criterian, dated June, 2000.
(3) ND= Analytical result was less than target detection limit.
(4) Vertical groundwater samples were not analyzed for other PAHs, the Michigan 10 Metals and cyanide.
(5) Shading and bolding indicates which cleanup criteria are exceeded and the corresponding analytical result.
(6) The above data was also compared to criteria for flammability/explosivity and acute inhalation and the data did not exceed these criteria.

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TABLE 4
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS - VERTICAL GROUNDWATER SAMPLING
BTEX AND NAPHTHALENE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria				
Sample Location					B304	B304	B304	B304
Sample ID					GW	GW	GW	GW
Screen Depth (feet)					7-10	20-25	35-40	50-55
Date Collected					5/8/2001	5/8/2001	5/8/2001	5/8/2001
BTEX								
Benzene	5	**200**	36,000	11,000	**210**	**34**	3	2
Toluene	790	140	530,000	530,000	40	5	1	1
Ethylbenzene	74	18	170,000	170,000	**290**	**150**	**40**	18
Xylenes	280	35	190,000	190,000	**436**	**230**	**67**	29
PAHs								
Naphthalene	1,500	**13**	31,000	31,000	**210**	**290**	**50**	**15**

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) Analytical results were compared to the MDEQ Part 201 Generic Commercial II Cleanup Criterian, dated June, 2000.
(3) ND= Analytical result was less than target detection limit.
(4) Vertical groundwater samples were not analyzed for other PAHs, the Michigan 10 Metals and cyanide.
(5) Shading and bolding indicates which cleanup criteria are exceeded and the corresponding analytical result.
(6) The above data was also compared to criteria for flammability/explosivity and acute inhalation and the data did not exceed these criteria.

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	CSI Criteria	MW-1 7-12 2/8/1999	MW-1 7-12 6/22/1999	MW-1 7-12 2/15/2000	MW-1 7-12 5/22/2000	MW-1 7-12 11/7/2000	MW-1 7-12 5/31/2001
Sample Location / Screen Depth (feet) / Date Collected								
BTEX								
Benzene	5	200	13	10	16	12	ND	ND
Toluene	790	140	540	520	950	1,700	220	150
Ethylbenzene	74	18	910	880	900	1,400	1,300	1,700
Xylenes	280	35	1,730	920	1,540	2,600	1,100	1,650
PAHs*								
Naphthalene	1,500	13	120	50	27	260	200	250
2-Methylnaphthalene	750	ID	21	7	ND	ND	ND	17
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND
INORGANICS*								
Arsenic	50	150	ND	8	13	ND	6	7
Barium	2,000	1,200	ND	190	130	160	220	290
Chromium	100	11**	ND	ND	ND	ND	7	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (ph Units)	NL	NL	NE	NE	7.26	7.1	--	7.11
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,920	1,960	3,590	1,482
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.65	0.35	0.38	0.4
Iron	300	NA	NE	NE	8,900	4,700	4,300	6,300
Nitrate	10,000	NA	NE	NE	ND	160	ND	270
Sulfate	250,000	NA	NE	NE	33,000	110,000	61,000	73,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	470,000	420,000	400,000

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TABLE
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-2 3-8 2/8/1999	MW-2 3-8 6/22/1999	MW-2 3-8 2/15/2000	MW-2 3-8 5/22/2000	MW-2 3-8 11/6/2000	MW-2 3-8 5/31/2001
Sample Location Screen Depth (feet) Date Collected								
BTEX								
Benzene	5	200	1	ND	ND	ND	ND	ND
Toluene	790	140	4	ND	ND	ND	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND	ND	ND
Xylenes	280	35	7	ND	ND	ND	ND	ND
PAHs								
Naphthalene	1,500	13	6	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND
INORGANICS								
Arsenic	50	150	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	1.6	ND
Zinc	5,000	270	ND	ND	100	30	60	46
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	NE	5.5	6.59	6.50	6.43
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	3,050	860	2,110	1,267
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.84	0.51	0.40	0.52
Iron	300	NA	NE	NE	21,000	350	6,300	4,000
Nitrate	10,000	NA	NE	NE	140	1,100	600	850
Sulfate	250,000	NA	NE	NE	1,500,000	410,000	920,000	510,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	26,000	130,000	91,000	110,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-3 3-8 2/8/1999	MW-3 3-8 6/22/1999	MW-3 3-8 2/15/2000	MW-3 3-8 5/24/2000	MW-3 3-8 11/6/2000	MW-3 3-8 5/30/2001
Sample Location Screen Depth (feet) Date Collected								
BTEX								
Benzene	5	200	3	ND	ND	ND	ND	280
Toluene	790	140	1	ND	ND	ND	ND	13
Ethylbenzene	74	18	1	ND	ND	ND	ND	330
Xylenes	280	85	3	ND	ND	ND	ND	810
PAHs								
Naphthalene	1,500	13	ND	ND	ND	ND	ND	61
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND
INORGANICS								
Arsenic	50	150	13	8	8	ND	7	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	NE	7.27	7.7	7.22	7.71
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,290	1,380	860	473
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.53	0.7	0.48	0.85
Iron	300	NA	NE	NE	110	ND	410	64
Nitrate	10,000	NA	NE	NE	ND	ND	ND	1,300
Sulfate	250,000	NA	NE	NE	33,000	26,000	25,000	17,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	260,000	230,000	290,000	190,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-4 3-8 2/8/1999	MW-4 3-8 6/22/1999	MW-4 3-8 2/22/2000	MW-4 3-8 5/24/2000	MW-4 3-8 11/6/2000	MW-4 3-8 5/30/2001
BTEX								
Benzene	5	200	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND
Xylenes	280	35	2	ND	ND	ND	ND	ND
PAHs *								
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND
INORGANICS *								
Arsenic	50	150	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	ND	6	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	15
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	NE	NE	7.09	7.02	7.04
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	850	1,370	800
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.39	0.67	0.45
Iron	300	NA	NE	NE	8,700	6,900	8,900	20
Nitrate	10,000	NA	NE	NE	ND	230	ND	2,000
Sulfate	250,000	NA	NE	NE	6,900	22,000	27,000	40,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	360,000	410,000	420,000	360,000

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TABLE 3
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-1 7-12 See (12)	P-1 7-12 6/22/1999	P-1 7-12 2/16/2000	P-1 7-12 5/22/2000	P-1 7-12 11/6/2000	P-1 7-12 See (13)
Sample Location / Screen Depth (feet) / Date Collected								
BTEX								
Benzene	5	200	ND	ND	NS	ND	NS	ND
Toluene	790	140	ND	ND	NS	ND	NS	ND
Ethylbenzene	74	18	ND	ND	NS	ND	NS	ND
Xylenes	280	35	ND	ND	NS	ND	NS	ND
PAHs*								
Naphthalene	1,500	13	ND	NE	NS	ND	NS	ND
2-Methylnaphthalene	750	ID	ND	NE	NS	ND	NS	ND
Acenaphthylene	150	ID	ND	NE	NS	ND	NS	ND
Acenaphthene	3,800	19	ND	NE	NS	ND	NS	ND
Fluorene	2,000	12	ND	NE	NS	ND	NS	ND
Phenanthrene	150	5	ND	NE	NS	ND	NS	ND
Anthracene	43	ID	ND	NE	NS	ND	NS	ND
Fluoranthene	210	1.6	ND	NE	NS	ND	NS	ND
Pyrene	140	ID	ND	NE	NS	ND	NS	ND
INORGANICS*								
Arsenic	50	150	ND	NE	NS	ND	NS	ND
Barium	2,000	1,200	ND	NE	NS	100	NS	140
Chromium (Total)	100	11 **	ND	NE	NS	8	NS	6
Selenium	50	5	6	NE	NS	ND	NS	ND
Zinc	5,000	270	ND	NE	NS	ND	NS	ND
Cyanide (available)	200	20	NE	NE	NS	ND	NS	ND
Cyanide (amenable)	200	20	ND	NE	NS	NE	NS	NE
Cyanide (free)	200	20	NE	NE	NS	ND	NS	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	NE	NS	NE	NS	NE
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NS	NE	NS	NE
Dissolved Oxygen (ppm)	NA	7	NE	NE	NS	NE	NS	NE
Iron	300	NA	NE	NE	NS	380	NS	ND
Nitrate	10,000	NA	NE	NE	NS	7,200	NS	5,400
Sulfate	250,000	NA	NE	NE	NS	84,000	NS	57,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	NS	320,000	NS	300,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-2 8-13 2/8/1999	P-2 8-13 6/23/1999	P-2 8-13 2/16/2000	P-2 8-13 5/23/2000	P-2 8-13 11/8/2000	P-2 8-13 6/4/2001
BTEX								
Benzene	5	200	480	140	410	180	290	330
Toluene	790	140	280	160	86	40	54	83
Ethylbenzene	74	181	320	130	220	80	200	160
Xylenes	280	35	590	610	690	450	550	670
PAHs								
Naphthalene	1,500	13	2,900	200	410	ND	680	790
2-Methylnaphthalene	750	ID	59	15	21	ND	16	27
Acenaphthylene	150	ID	ND	8	5	ND	ND	ND
Acenaphthene	3,800	10	65	38	30	13	58	71
Fluorene	2,000	12	82	23	18	6	32	40
Phenanthrene	150	15	40	24	5	ND	66	81
Anthracene	43	ID	ND	8	5	ND	8	11
Fluoranthene	210	16	ND	10	7	11	13	17
Pyrene	140	ID	ND	5	ND	10	15	10
INORGANICS								
Arsenic	50	150	8	8	9	8	13	11
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND
Cadmium	5	40	ND	ND	ND	ND	4.9	ND
Chromium (Total)	100	116	ND	ND	ND	5	13	ND
Lead	4	29	ND	ND	ND	ND	9	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	31	ND	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	NE	7.09	7.61	--	6.98
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	920	1,570	1,660	628
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.82	0.43	0.91	0.85
Iron	300	NA	NE	NE	440	12,000	940	11,000
Nitrate	10,000	NA	NE	NE	ND	ND	ND	ND
Sulfate	250,000	NA	NE	NE	32,000	47,000	14,000	12,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	530,000	360,000	550,000	340,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-2D 35-40 6/23/1999	P-2D 35-40 2/16/2000	P-2D 35-40 5/23/2000	P-2D 35-40 11/8/2000	P-2D 35-40 6/4/2001
BTEX							
Benzene	5	200	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND
PAHs*							
Naphthalene	1,500	13	ND	ND	ND	6	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND
Phenanthrene	150	5	5	ND	ND	ND	ND
Anthracene	43	ID	6	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS*							
Arsenic	50	150	ND	8	5	6	9
Barium	2,000	1,200	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	21	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	7.34	7.02	--	7.01
Specific Conductivity (umhos/cm)	NL	NL	NE	990	1,170	2,100	858
Dissolved Oxygen (ppm)	NA	7	NE	3.04	2.64	1.62	2.01
Iron	300	NA	NE	3,400	3,100	3,200	3,400
Nitrate	10,000	NA	NE	ND	ND	ND	ND
Sulfate	250,000	NA	NE	86,000	93,000	110,000	100,000
Alkalinity (as CaCO3)	NL	NL	NE	300,000	300,000	310,000	300,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-3 3-8 2/8/1999	P-3 3-8 6/22/1999	P-3 3-8 2/15/2000	P-3 3-8 5/22/2000	P-3 3-8 11/6/2000	P-3 3-8 5/30/2001
Sample Location / Screen Depth (feet) / Date Collected								
BTEX								
Benzene	5	200	3	90	59	ND	25	ND
Toluene	790	140	5	21	5	ND	2	ND
Ethylbenzene	74	18	13	330	260	ND	67	ND
Xylenes	280	35	31	298	129	ND	65	ND
PAHs *								
Naphthalene	1,500	13	24	24	180	ND	71	ND
2-Methylnaphthalene	750	ID	ND	5	10	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	5	ND	ND	ND
Acenaphthene	3,800	19	ND	9	14	ND	ND	ND
Fluorene	2,000	12	ND	10	12	ND	ND	ND
Phenanthrene	150	5	ND	16	6	ND	ND	ND
Anthracene	43	ID	ND	5	6	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	5	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND
INORGANICS *								
Arsenic	50	150	ND	ND	6	ND	ND	ND
Barium	2,000	1,200	ND	150	290	ND	190	200
Cadmium	5	4	ND	ND	ND	0.5	4.7	0.8
Chromium (total)	100	11**	ND	ND	ND	ND	12	ND
Lead	4	29	ND	ND	ND	ND	4	ND
Selenium	50	4	29	ND	ND	77	11	ND
Zinc	5,000	270	ND	ND	ND	190	260	300
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	29	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	NE	7.26	7.18	7.05	7.25
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	4,320	1,790	4,770	1,692
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.95	0.61	1.98	1.1
Iron	300	NA	NE	NE	9,400	210	1,000	300
Nitrate	10,000	NA	NE	NE	ND	3,200	600	500
Sulfate	250,000	NA	NE	NE	35,000	76,000	80,000	130,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	400,000	440,000	310,000

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TAB

KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-3D 35-40 5/22/2000	P-3D 35-40 11/6/2000	P-3D 35-40 5/31/2001
BTEX					
Benzene	5	200	110	110	180
Toluene	790	140	2	2	2
Ethylbenzene	74	18	1	2	2
Xylenes	280	35	10	9	7
PAHs					
Naphthalene	1,500	13	22	28	58
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	27	30	35
Barium	2,000	1,200	190	200	200
Selenium	50	5	ND	ND	ND
Zinc	5,000	270	30	ND	ND
Cyanide (available)	200	20	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	8.26	7.36	7.34
Specific Conductivity (umhos/cm)	NL	NL	1,630	1,740	1,021
Dissolved Oxygen (ppm)	NA	7	1.5	0.40	0.73
Iron	300	NA	6,000	6,300	6,100
Nitrate	10,000	NA	ND	ND	ND
Sulfate	250,000	NA	ND	ND	ND
Alkalinity (as CaCO3)	NL	NL	320,000	320,000	330,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-4 3-8 2/8/1999	P-4 3-8 6/22/1999	P-4 3-8 2/22/00	P-4 3-8 5/24/2000	P-4 3-8 11/6/2000	P-4 3-8 5/30/2001
BTEX*								
Benzene	5	200	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	1	ND	ND	ND
Xylenes	280	35	ND	ND	7	ND	ND	ND
PAHs*								
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND
INORGANICS*								
Arsenic	50	150	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	ND	9	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	NE	NE	7.59	7.11	7.09
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	1,770	1,990	1,619
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.15	0.28	0.45
Iron	300	NA	NE	NE	4,800	ND	3,600	24
Nitrate	10,000	NA	NE	NE	240	430	ND	490
Sulfate	250,000	NA	NE	NE	21,000	37,000	22,000	58,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	340,000	390,000	440,000	350,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW101 12-17 6/23/1999	MW101 12-17 2/16/2000	MW101 12-17 5/23/2000	MW101 12-17 11/7/2000	MW101 12-17 5/31/2001
Sample Location / Screen Depth (feet) / Date Collected							
BTEX							
Benzene	5	200	62	80	39	110	62
Toluene	790	40	4,100	16,400	4,300	9,900	5,700
Ethylbenzene	274	18	760	1,400	590	1,600	2,700
Xylenes	280	35	5,600	8,000	6,600	18,000	20,700
PAHs*							
Naphthalene	1,500	12	2,800	1,100	680	3,100	2,700
2-Methylnaphthalene	750	ID	55	31	35	150	110
Acenaphthylene	150	ID	75	33	ND	88	30
Acenaphthene	3,800	19	ND	6	21	ND	51
Fluorene	2,000	12	25	11	ND	ND	ND
Phenanthrene	150	5	24	7	ND	ND	ND
Anthracene	43	ID	ND	7	ND	ND	ND
Fluoranthene	210	16	ND	ND	ND	ND	11
Pyrene	140	ID	ND	ND	ND	ND	17
INORGANICS*							
Arsenic	50	150	7	9	6	6	5
Barium	2,000	1,200	760	230	230	190	230
Cadmium	5	4	ND	ND	0.5	ND	ND
Chromium (total)	100	11**	ND	ND	ND	7	ND
Selenium	50	5	ND	ND	15	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	7.34	7.44	--	7.28
Specific Conductivity (umhos/cm)	NL	NL	NE	1,420	3,040	2,350	2,890
Dissolved Oxygen (ppm)	NCA	7	NE	0.58	0.62	0.42	0.36
Iron	300	NA	NE	5,500	1,700	1,700	1,400
Nitrate	10,000	NA	NE	310	4,500	710	970
Sulfate	250,000	NA	NE	63,000	70,000	44,000	96,000
Alkalinity (as CaCO3)	NL	NL	NE	470,000	490,000	490,000	380,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW101D 35-40 6/23/1999	MW101D 35-40 2/16/2000	MW101D 35-40 5/23/2000	MW101D 35-40 11/7/2000	MW101D 35-40 6/1/2001
Sample Location / Screen Depth (feet) / Date Collected							
BTEX							
Benzene	5	200	2	ND	ND	ND	ND
Toluene	790	140	12	5	ND	15	ND
Ethylbenzene	74	18	170	1,450	390	410	590
Xylenes	280	35	872	4,480	5,200	4,700	6,800
PAHs							
Naphthalene	1,500	13	3,100	4,500	4,600	5,100	9,800
2-Methylnaphthalene	750	ID	210	120	400	530	710
Acenaphthylene	150	ID	190	150	250	370	400
Acenaphthene	3,800	19	165	5	ND	ND	ND
Fluorene	2,000	12	26	25	29	52	ND
Phenanthrene	150	5	ND	5	ND	ND	ND
Anthracene	43	ID	ND	5	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS							
Arsenic	50	150	16	23	23	23	27
Barium	2,000	1,200	420	450	430	390	330
Selenium	50	5	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	1.4	ND
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	7.34	8.04	--	7.42
Specific Conductivity (umhos/cm)	NL	NL	NE	1,970	2,510	3,090	1,217
Dissolved Oxygen (ppm)	NA	7	NE	2.59	1.27	0.65	0.68
Iron	300	NA	NE	3,300	3,000	2,300	2,000
Nitrate	10,000	NA	NE	ND	ND	ND	ND
Sulfate	250,000	NA	NE	15,000	15,000	15,000	11,000
Alkalinity (as CaCO3)	NL	NL	NE	330,000	410,000	340,000	360,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW102 10-15 6/22/1999	MW102 10-15 2/16/2000	MW102 10-15 5/22/2000	MW102 10-15 11/7/2000	MW102 10-15 6/4/2001
Sample Location / Screen Depth (feet) / Date Collected							
BTEX							
Benzene	5	200	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND
PAHs*							
Naphthalene	1,500	13	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	9	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS*							
Arsenic	50	150	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	5	ND
Selenium	50	5	ND	6	ND	9	ND
Zinc	5,000	270	ND	250	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	7.46	7.76	7.10	7.11
Specific Conductivity (umhos/cm)	NL	NL	NE	590	1,590	1,090	649
Dissolved Oxygen (ppm)	NA	7	NE	3.67	7.85	3.97	4.4
Iron	300	NA	NE	ND	ND	ND	ND
Nitrate	10,000	NA	NE	3,100	1,300	2,100	950
Sulfate	250,000	NA	NE	54,000	38,000	68,000	60,000
Alkalinity (as CaCO3)	NL	NL	NE	240,000	280,000	290,000	330,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW103 11-16 6/22/1999	MW103 11-16 2/16/2000	MW103 11-16 5/22/2000	MW103 11-16 11/7/2000	MW103 11-16 5/31/2001
Sample Location / Screen Depth (feet) / Date Collected							
BTEX							
Benzene	5	200	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND
Ethylbenzene	74	18	2	ND	ND	ND	ND
Xylenes	280	35	2	ND	ND	ND	ND
PAHs							
Naphthalene	1,500	13	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS							
Arsenic	50	150	ND	5	11	14	ND
Barium	2,000	1,200	ND	ND	160	ND	480
Chromium (total)	100	11**	ND	ND	ND	9	ND
Selenium	50	5	ND	ND	36	ND	ND
Silver	98	0.2	ND	ND	ND	ND	0.6
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	7.84	8.65	7.64	7.37
Specific Conductivity (umhos/cm)	NL	NL	NE	2,370	6,370	2,390	4,680
Dissolved Oxygen (ppm)	NA	7	NE	1.38	1.5	1.85	1.9
Iron	300	NA	NE	ND	370	ND	100
Nitrate	10,000	NA	NE	410	2,500	1,400	3,300
Sulfate	250,000	NA	NE	19,000	58,000	27,000	150,000
Alkalinity (as CaCO3)	NL	NL	NE	430,000	410,000	490,000	230,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW104 5-10 6/23/1999	MW104 5-10 2/15/2000	MW104 5-10 5/24/2000	MW104 5-10 11/6/2000	MW104 5-10 5/31/2001
Sample Location Screen Depth (feet) Date Collected							
BTEX*							
Benzene	5	200	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND
PAHs*							
Naphthalene	1,500	13	ND	ND	ND	10	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS*							
Arsenic	50	150	5	ND	ND	ND	ND
Barium	2,000	1,200	340	190	420	220	310
Cadmium	5	4	ND	ND	0.8	ND	ND
Chromium (total)	100	11**	ND	ND	ND	10.0	ND
Selenium	50	5	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	240	400	210	150
Cyanide (available)	200	20	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	7.37	6.88	7.42	7.2
Specific Conductivity (umhos/cm)	NL	NL	NE	3,570	4,600	4,180	2,580
Dissolved Oxygen (ppm)	NA	7	NE	0.49	0.54	0.39	0.39
Iron	300	NA	NE	5,700	4,700	5,000	6,200
Nitrate	10,000	NA	NE	340	220	ND	ND
Sulfate	250,000	NA	NE	18,000	43,000	16,000	45,000
Alkalinity (as CaCO3)	NL	NL	NE	490,000	440,000	590,000	380,000

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TA. _ 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW104D 30-35 6/23/1999	MW104D 30-35 2/15/2000	MW104D 30-35 5/24/2000	MW104D 30-35 11/6/2000	MW104D 30-35 5/31/2001
Sample Location Screen Depth (feet) Date Collected							
BTEX							
Benzene	5	200	ND	ND	ND	ND	ND
Toluene	790	140	1	ND	ND	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND
PAHs							
Naphthalene	1,500	13	16	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS							
Arsenic	50	150	16	28	27	25	25
Barium	2,000	1,200	230	260	250	270	240
Chromium (total)	100	11**	ND	ND	ND	5	ND
Selenium	50	5	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	28	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	7.34	7.44	7.52	7.34
Specific Conductivity (umhos/cm)	NL	NL	NE	1,540	1,090	1,660	742
Dissolved Oxygen (ppm)	NA	7	NE	3.5	2.42	1.18	1.52
Iron	300	NA	NE	5,800	5,700	5,900	5,500
Nitrate	10,000	NA	NE	ND	ND	ND	ND
Sulfate	250,000	NA	NE	77,000	71,000	76,000	71,000
Alkalinity (as CaCO3)	NL	NL	NE	280,000	320,000	320,000	310,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW105 11-16 6/24/1999	MW105 11-16 2/16/2000	MW105 11-16 5/22/2000	MW105 11-16 11/7/2000	MW105 11-16 6/1/2001
Sample Location Screen Depth (feet) Date Collected							
BTEX							
Benzene	5	200	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND
PAHs*							
Naphthalene	1,500	13	6	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS*							
Arsenic	50	150	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	7	ND
Selenium	50	5	ND	ND	ND	8	ND
Silver	98	0.2	ND	ND	ND	1.4	ND
Zinc	5,000	270	ND	ND	160	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	7.5	8.43	7.24	7.48
Specific Conductivity (umhos/cm)	NL	NL	NE	730	1,690	1,460	878
Dissolved Oxygen (ppm)	NA	7	NE	2.76	5.84	2.10	3.25
Iron	300	NA	NE	ND	150	ND	ND
Nitrate	10,000	NA	NE	5,300	1,400	2,900	1,100
Sulfate	250,000	NA	NE	90,000	51,000	80,000	50,000
Alkalinity (as CaCO3)	NL	NL	NE	270,000	370,000	350,000	410,000

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TAB. . 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW105D 39-44 6/24/1999	MW105D 39-44 2/16/2000	MW105D 39-44 5/22/2000	MW105D 39-44 11/7/2000	MW105D 39-44 6/1/2001
Sample Location Screen Depth (feet) Date Collected							
BTEX							
Benzene	5	200	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND
Xylenes	280	35	2	ND	ND	ND	ND
PAHs							
Naphthalene	1,500	13	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS							
Arsenic	50	150	ND	ND	ND	ND	ND
Barium	2,000	1,200	150	150	150	180	160
Selenium	50	5	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	210	200	230
Cyanide (available)	200	20	NE	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	NE	7.37	8.15	7.15	7.45
Specific Conductivity (umhos/cm)	NL	NL	NE	1,030	1,920	1,830	878
Dissolved Oxygen (ppm)	NA	7	NE	2.21	2.46	1.72	2.25
Iron	300	NA	NE	ND	540	200	52
Nitrate	10,000	NA	NE	540	640	400	730
Sulfate	250,000	NA	NE	73,000	76,000	86,000	76,000
Alkalinity (as CaCO3)	NL	NL	NE	300,000	380,000	300,000	300,000

SEE NOTES ON PAGE 28

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T/ 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW201 3-8 5/23/2000	MW201 3-8 11/6/2000	MW201 3-8 5/29/2001
		Sample Location Screen Depth (feet) Date Collected			
BTEX					
Benzene	5	200	150	20	ND
Toluene	790	140	5	ND	ND
Ethylbenzene	700	18	180	16	ND
Xylenes	280	15	130	11	ND
PAHs*					
Naphthalene	1,500	13	760	950	ND
2-Methylnaphthalene	750	ID	10	27	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	11	30	ND
Fluorene	2,000	12	ND	8	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS*					
Arsenic	50	150	ND	ND	8
Barium	2,000	1,200	200	190	120
Chromium (total)	100	11**	ND	8	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	0.9	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	6.59	7.07	7.17
Specific Conductivity (umhos/cm)	NL	NL	1,970	2,480	1,164
Dissolved Oxygen (ppm)	NA	7	0.35	0.34	0.41
Iron	300	NA	4,600	6,200	4,700
Nitrate	10,000	NA	ND	ND	100
Sulfate	250,000	NA	34,000	ND	21,000
Alkalinity (as CaCO3)	NL	NL	490,000	450,000	440,000

SEE NOTES ON PAGE 28

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS

SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW202D 55-60 5/23/2000	MW202D 55-60 11/7/2000	MW202D 55-60 6/1/2001
		Sample Location Screen Depth (feet) Date Collected			
BTEX					
Benzene	5	200	ND	ND	ND
Toluene	790	140	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND
Xylenes	280	35	5	8	ND
PAHs					
Naphthalene	1,500	13	35	68	37
2-Methylnaphthalene	750	ID	ND	6	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	ND	ND	ND
Barium	2,000	1,200	170	180	170
Selenium	50	5	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	7.53	--	7.17
Specific Conductivity (umhos/cm)	NL	NL	1,720	1,770	877
Dissolved Oxygen (ppm)	NA	7	1.48	0.55	1.02
Iron	300	NA	310	170	39
Nitrate	10,000	NA	560	300	540
Sulfate	250,000	NA	66,000	68,000	67,000
Alkalinity (as CaCO3)	NL	NL	310,000	330,000	300,000

SEE NOTES ON PAGE 28

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KALAM[illegible] MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW301 5-10 6/1/2001
Sample Location / Screen Depth (feet) / Date Collected			
BTEX			
Benzene	5	200	3,900
Toluene	790	140	30
Ethylbenzene	74	8	1,100
Xylenes	280	35	9,200
PAHs *			
Naphthalene	1,500	13	3,300
2-Methylnaphthalene	750	ID	290
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	37
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS *			
Arsenic	50	150	51
Barium	2,000	1,200	160
Chromium (total)	100	11**	ND
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	6.93
Specific Conductivity (umhos/cm)	NL	NL	968
Dissolved Oxygen (ppm)	NA	7	0.74
Iron	300	NA	14,000
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	ND
Alkalinity (as CaCO3)	NL	NL	400,000

SEE NOTES ON PAGE 28

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GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW302 4-9 5/29/2001
Sample Location Screen Depth (feet) Date Collected			
BTEX			
Benzene	5	200	ND
Toluene	790	140	ND
Ethylbenzene	74	18	ND
Xylenes	280	35	ND
PAHs*			
Naphthalene	1,500	13	ND
2-Methylnaphthalene	750	ID	ND
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	ND
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS*			
Arsenic	50	150	9
Barium	2,000	1,200	ND
Chromium (total)	100	11**	ND
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	7.33
Specific Conductivity (umhos/cm)	NL	NL	750
Dissolved Oxygen (ppm)	NA	7	0.55
Iron	300	NA	7,500
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	20,000
Alkalinity (as CaCO3)	NL	NL	230,000

SEE NOTES ON PAGE 28

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TABLE
KALAMAZO. .GP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW302I 20-25 5/29/2001
		Sample Location Screen Depth (feet) Date Collected	
BTEX			
Benzene	5	200	ND
Toluene	790	140	ND
Ethylbenzene	74	18	ND
Xylenes	280	35	ND
PAHs			
Naphthalene	1,500	13	ND
2-Methylnaphthalene	750	ID	ND
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	ND
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS			
Arsenic	50	150	15
Barium	2,000	1,200	890
Chromium (total)	100	11**	ND
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	7.33
Specific Conductivity (umhos/cm)	NL	NL	2,550
Dissolved Oxygen (ppm)	NA	7	0.52
Iron	300	NA	20,000
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	32,000
Alkalinity (as CaCO3)	NL	NL	330,000

SEE NOTES ON PAGE 28

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW302D 55-60 5/29/2001
		Sample Location Screen Depth (feet) Date Collected	
BTEX			
Benzene	5	200	ND
Toluene	790	140	ND
Ethylbenzene	74	18	ND
Xylenes	280	35	ND
PAH*			
Naphthalene	1,500	13	ND
2-Methylnaphthalene	750	ID	ND
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	ND
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS*			
Arsenic	50	150	29
Barium	2,000	1,200	200
Chromium (total)	100	11**	ND
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	7.5
Specific Conductivity (umhos/cm)	NL	NL	953
Dissolved Oxygen (ppm)	NA	7	0.76
Iron	300	NA	3,100
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	6,400
Alkalinity (as CaCO3)	NL	NL	330,000

SEE NOTES ON PAGE 28

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW303 3-8 5/29/2001
		Sample Location Screen Depth (feet) Date Collected	
BTEX			
Benzene	5	200	290
Toluene	790	140	10
Ethylbenzene	74	18	19
Xylenes	280	35	47
PAHs			
Naphthalene	1,500	150	39
2-Methylnaphthalene	750	ID	ND
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	ND
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS			
Arsenic	50	150	ND
Barium	2,000	1,200	370
Chromium (total)	100	11**	ND
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	6.94
Specific Conductivity (umhos/cm)	NL	NL	1,702
Dissolved Oxygen (ppm)	NA	7	0.67
Iron	300	NA	8,200
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	130,000
Alkalinity (as CaCO3)	NL	NL	680,000

SEE NOTES ON PAGE 28

GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS

SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW304 5-10 5/30/2001
Sample Location			MW304
Screen Depth (feet)			5-10
Date Collected			5/30/2001
BTEX			
Benzene	5	200	130
Toluene	790	140	7
Ethylbenzene	74	18	320
Xylenes	280	35	610
PAH			
Naphthalene	1,500	13	90
2-Methylnaphthalene	750	ID	ND
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	ND
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS			
Arsenic	50	150	36
Barium	2,000	1,200	220
Chromium (total)	100	11**	ND
Lead	4	29	4.0
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	7.06
Specific Conductivity (umhos/cm)	NL	NL	1,079
Dissolved Oxygen (ppm)	NA	7	0.44
Iron	300	NA	27,000
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	3,200
Alkalinity (as CaCO3)	NL	NL	380,000

SEE NOTES ON PAGE 28

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TABLE 5

TABLE

KALAMAZOO

GROUNDWATER ANALYTICAL RESULTS

MONITORING WELLS

SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW304D 65-70 5/30/2001
Sample Location Screen Depth (feet) Date Collected			
BTEX			
Benzene	5	200	ND
Toluene	790	140	ND
Ethylbenzene	74	18	ND
Xylenes	280	35	ND
PAHs			
Naphthalene	1,500	13	ND
2-Methylnaphthalene	750	ID	ND
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	ND
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS			
Arsenic	50	150	23
Barium	2,000	1,200	270
Chromium (total)	100	11**	ND
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	7.4
Specific Conductivity (umhos/cm)	NL	NL	896
Dissolved Oxygen (ppm)	NA	7	0.58
Iron	1,300	NA	5,600
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	68,000
Alkalinity (as CaCO3)	NL	NL	290,000

SEE NOTES ON PAGE 28

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb) unless otherwise noted.
(2) ND= Analytical result was less than target detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) NL = Not listed under Part 201 Generic Commercial II Cleanup Criteria dated June, 2000.
(6) NE = Chemical not evaluated by analytical laboratory.
(7) NS = Monitoring well not sampled.
(8) * = Constituents listed for PAHs and metals are limited to those constituents that indicated detectable concentrations for at least one sample.
(9) ** = GSI Criteria for Hexavalent Chromium.
(10) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(11) The above data was compared to criteria for volatilization to indoor air, groundwater contact, water solubility, flammability/explosivity and acute inhalation and the data did not exceed these criteria.
(12) Groundwater samples were collected on different dates due to insufficient recharge. BTEX and cyanide = 2/25/99. PAHs = 2/27/99. Metals = 3/1/99
(13) Groundwater samples were collected on different dates due to insufficient recharge. BTEX, PAHs and metals = 6/1/01. Other inorganics = 6/4/01

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APPENDIX E

LABORATORY ANALYTICAL REPORTS FOR SOIL SAMPLE COLLECTED IN MAY 2001

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-251, Jackson

Date: September 05, 2001

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823B
- Sampling Date of May 08,2001

File Index: 510117-410-808

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On May 09, 2001 the Chemistry Section (CHEM) of Laboratory Services received one soil sample collected at the KALAMAZOO former MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Michigan 10 Total Metals
Cyanide - Amenable

Analytical results are attached for your review.

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 recommendations. The sample was returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

VOC Sample Collection - VOC samples were collected by DEQ-ORGLAB-11, Methanol Preservation Protocol (Method 5035).

Aromatic Volatile Organics (BTEX) - Method 8260, Volatile Organic Compounds By Gas Chromatography / Mass Spectrometry: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide Soil Extraction - Method 9013, Cyanide Extraction Procedure For Solids and Oils. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Amenable - Method 9010, Total and Amenable Cyanide. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Total Metals Preparation - Soils - Method 3051, Microwave Assisted Acid Digestion Of Sediments, Sludges, Soils and Oils. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Total Metals Preparation – Soils (Mercury) – Method 7471, Mercury in Solid or Semisolid Waste. SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	SW846 Method
Arsenic	7060
Barium	7080
Cadmium	7131
Chromium	7191
Copper	7210
Lead	7421
Mercury	7471
Selenium	7740
Silver	7761
Zinc	7950

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sample Date of May 08, 2001	Project Number CHEM-01-0808

Sample Identification	B304
Sample Depth, ft	5-7
Sample Type	soil
Sample Date	05-08-01
Received Date	05-09-01
Report Date	09-05-01
Percent Solids, %w/w	82
Preservation Date	05-09-01
Preservation Type	MeOH
Analysis Date	05-18-01
Control Number	010808-01

BTEX, Method 8260	ug/kg	TDL
Benzene	1,900	500
Toluene	2,400	500
Ethylbenzene	17,000	500
m/p-Xylene	42,000	500
o-Xylene	27,000	500
rrogate Recovery	%Recovery	Criteria
,2-Dichloroethane-d4	87	70-121
Toluene-d8	85	84-138
4-Bromofluorobenzene	91	59-113

Sample Identification	B304
Sample Depth, ft	5-7
Sample Type	soil
Sample Date	05-08-01
Received Date	05-09-01
Report Date	09-05-01
Percent Solids, %w/w	82
Extraction Date	05-14-01
Analysis Date	05-30-01
Control Number	010808-01

PAHs, Method 8270	ug/kg	TDL
Naphthalene	130,000	5,000
2-Methylnaphthalene	21,000	5,000
Acenaphthylene	nd	5,000
Acenaphthene	nd	5,000
Fluorene	nd	5,000
Phenanthrene	nd	5,000
Anthracene	nd	5,000
Fluoranthene	nd	5,000
Pyrene	nd	5,000
Benzo(a)anthracene	nd	5,000
Chrysene	nd	5,000
Benzo(b)fluoranthene	nd	5,000
Benzo(k)fluoranthene	nd	5,000
Benzo(a)pyrene	nd	5,000
Indeno(1,2,3-cd)pyrene	nd	5,000
Dibenzo(a,h)anthracene	nd	5,000
Benzo(g,h,i)perylene	nd	5,000
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	diluted out	23-120
2-Fluorobiphenyl	diluted out	30-115
p-Terphenyl-d14	diluted out	18-137

'OTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

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Reviewed By [illegible] Date 9/05/01

Data File	Kalamazoo
B304	5-7

ORG KR059B030586

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sample Date of May 08, 2001	Project Number CHEM-01-0808

Sample Identification	B304	Sample Identification	B304
Sample Depth, ft	5-7	Sample Depth, ft	5-7
Sample Type	soil	Sample Type	soil
Sample Date	05-08-01	Sample Date	05-08-01
Received Date	05-09-01	Received Date	05-09-01
Report Date	09-05-01	Report Date	09-05-01
Percent Solids, %w/w	82	Percent Solids, %w/w	82
Preparation Date	05-15-01	Extraction Date	05-11-01
Analysis Date, Start	05-15-01	Analysis Date, Amenable	05-14-01
Analysis Date, End	06-06-01		
Control Number	010808-01	Control Number	010808-01

METALS	ug/kg	TDL
Arsenic - 7060	7,800	100
Barium - 7080	62,000	1,000
Cadmium - 7131	80	50
Chromium (total) - 7191	17,000	500
Copper - 7210	30,000	1,000
ad - 7421	110,000	1,000
ercury - 7471	210	100
Selenium - 7740	1,400	200
Silver - 7761	nd	500
Zinc - 7950	57,000	1,000
Metal Results Are Reported As	Totals	Totals

INORGANICS	ug/kg	TDL
Cyanide, Amenable - 9010/9013	nd	500

TES:

TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

00274479

Reviewed By [illegible] Date 9/05/01

Data File	Kalamazoo
B304	5-7

INORG KR059B030587

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CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: K031823B

SAMPLING TEAM: N. Carlson

DATE SHIPPED: 5/9/01

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Barrasse, SMO - Plymouth

PHONE: 734-454-9900

ANALYSIS REQUESTED: BTEX, PNAs, 10 TAL metals (Arsenic), Cyanide, Flashpoint, TCLP/Lead

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 TAL metals	Cyanide	Flashpoint	TCLP/Lead		REMARKS
01-0808-1	5/8/01	1330	S	B304 (5-7)	5-7	3	X	X	X	X	X			

KR059B030588

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	5/8/01	SMO Sample Room
RELINQUISHED BY: (SIGNATURE) SMO Sample Room	DATE / TIME 5/9/01 1100	RECEIVED BY: (SIGNATURE) Babe Smith
RELINQUISHED BY: (SIGNATURE) 00274480	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MALCP Method
- Any Questions contact Pat Barrasse

APPENDIX F

LABORATORY ANALYTICAL REPORT FOR GROUNDWATER SAMPLES COLLECTED DURING VERTICAL SAMPLING IN MAY 2001

00274482

KR059B030590

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-251, Jackson

Date: May 10, 2001

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823B
- Sampling Date of May 08,2001

File Index: 510117-410-807

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On May 09, 2001 the Chemistry Section (CHEM) of Laboratory Services received groundwater samples collected at the KALAMAZOO former MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX) Plus Naphthalene

Analytical results are attached for your review.

00274483

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Aromatic Volatile Organics (BTEX) Plus - Method 8260, Volatile Organic Compounds By Gas Chromatography / Mass Spectrometry: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo MGP - SEM # KB31823B - Sampling Date of May 08, 2001	Project Number CHEM-01-0807

Sample Identification	B304 GW	Sample Identification	B304 GW
Sample Depth, ft	7-10	Sample Depth, ft	7-10
Sample Type	water	Sample Type	water
Sample Date	05-08-01	Sample Date	05-08-01
Received Date	05-09-01	Received Date	05-09-01
Report Date	05-10-01	Report Date	05-10-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	05-09-01	-	
		-	
Control Number	010807-01	Control Number	010807-01

BTEX - Plus, Method 8260	ug/L	TDL
Benzene	210	1
Toluene	40	1
Ethylbenzene	290	1
m/p-Xylene	410	1
o-Xylene	26	1
'aphthalene	210	5

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	98	88-110
4-Bromofluorobenzene	101	86-115

no entry	ug/L	no entry

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274485

Reviewed By MWJ Date 05/001

Data File	010807
B304 GW	7-10

ORG KR059B030593

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo MGP - SEM # KB31823B - Sampling Date of May 08, 2001	Project Number CHEM-01-0807

Sample Identification	B304 GW	Sample Identification	B304 GW
Sample Depth, ft	20-25	Sample Depth, ft	20-25
Sample Type	water	Sample Type	water
Sample Date	05-08-01	Sample Date	05-08-01
Received Date	05-09-01	Received Date	05-09-01
Report Date	05-10-01	Report Date	05-10-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	05-09-01	-	
		-	
Control Number	010807-02	Control Number	010807-02

BTEX - Plus, Method 8260	ug/L	TDL
Benzene	34	1
Toluene	5	1
Ethylbenzene	150	1
m/p-Xylene	210	1
o-Xylene	20	1
aphthalene	290	5

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	102	86-115

no entry	ug/L	no entry

KR059B030594

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274486

Reviewed By HW Date 05/001

Data File	010807
B304 GW	20-25

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo MGP - SEM # KB31823B - Sampling Date of May 08, 2001	Project Number CHEM-01-0807

Sample Identification	B304	Sample Identification	B304
	GW		GW
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	05-08-01	Sample Date	05-08-01
Received Date	05-09-01	Received Date	05-09-01
Report Date	05-10-01	Report Date	05-10-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	05-09-01	-	
		-	
Control Number	010807-03	Control Number	010807-03

BTEX - Plus, Method 8260	ug/L	TDL
Benzene	3	1
Toluene	1	1
Ethylbenzene	40	1
m/p-Xylene	65	1
o-Xylene	2	1
aphthalene	50	5

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	101	88-110
4-Bromofluorobenzene	103	86-115

no entry	ug/L	no entry

KR059B030595

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274487

Reviewed By HWJ Date 05/001

Data File	010807
B304 GW	35-40

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo MGP - SEM # KB31823B - Sampling Date of May 08, 2001	Project Number CHEM-01-0807

Sample Identification	B304 GW	Sample Identification	B304 GW
Sample Depth, ft	50-55	Sample Depth, ft	50-55
Sample Type	water	Sample Type	water
Sample Date	05-08-01	Sample Date	05-08-01
Received Date	05-09-01	Received Date	05-09-01
Report Date	05-10-01	Report Date	05-10-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	05-09-01	-	
		-	
Control Number	010807-04	Control Number	010807-04

BTEX - Plus, Method 8260	ug/L	TDL
Benzene	2	1
Toluene	1	1
Ethylbenzene	18	1
m/p-Xylene	28	1
o-Xylene	1	1
naphthalene	15	5

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

no entry	ug/L	no entry

KR059B030596

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274488

Reviewed By [illegible] Date 05/10/01

Data File	010807
B304 GW	50-55

ORG

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KB31823B

SAMPLING TEAM: N. LAMASE

DATE SHIPPED: 5/9/01

SITE SKETCH ATTACHED? CIRCLE ONE: YES / NO

PAGE 1 OF 1

SEND REPORT TO: Pat Barresse, SMG-Plymouth

PHONE: 734-454-9900

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX (8260)	Naphthalene (8260)	REMARKS
01-0807-1	5/8/01	1355	W	B304 (7-10)	7-10	2	+	+	
01-0807-2	↓	1500	↓	B304 (20-25)	20-25	2	+	+	
01-0807-3	↓	1600	↓	B304 (35-40)	35-40	2	+	+	
01-0807-4	↓	1700	↓	B304 (50-55)	50-55	2	+	+	

KR059B030597

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	5/10/01	SMG Sample Room
RELINQUISHED BY: (SIGNATURE) SMG Sample Room	DATE / TIME 5/10/01 1:00	RECEIVED BY: (SIGNATURE) Gabe Smith
RELINQUISHED BY: (SIGNATURE) 00274489	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MDUS 2 methods
- contact Pat Barresse w/ questions

ORIGINAL TO LAB COPY TO CUSTOMER

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-251, Jackson

Date: May 11, 2001

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823B
- Sampling Dates of May 09 & 10,2001

File Index: 510117-410-827

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On May 10, 2001 the Chemistry Section (CHEM) of Laboratory Services received groundwater samples collected at the KALAMAZOO former MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX) Plus Naphthalene

Analytical results are attached for your review.

00274490

KR059B030598

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Aromatic Volatile Organics (BTEX) Plus - Method 8260, Volatile Organic Compounds By Gas Chromatography / Mass Spectrometry: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

ROJECT IDENTIFICATION	Kalamazoo MGP - SEM # KE31823B - Sampling Date of May 09 -10, 2001	Project Number CHEM-01-0827

Sample Identification	B302 GW	Sample Identification	B302 GW
Sample Depth, ft	4-9	Sample Depth, ft	4-9
Sample Type	water	Sample Type	water
Sample Date	05-09-01	Sample Date	05-09-01
Received Date	05-10-01	Received Date	05-10-01
Report Date	05-11-01	Report Date	05-11-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	05-10-01	-	
		-	
Control Number	010827-01	Control Number	010827-01

BTEX - Plus, Method 8260	ug/L	TDL
Benzene	1	1
Toluene	1	1
Ethylbenzene	10	1
m/p-Xylene	14	1
o-Xylene	3	1
aphthalene	nd	5

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	102	86-115

no entry	ug/L	no entry

KR059B030600

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274492

Reviewed By HCW Date 05/11/01

Data File	010827
B302 GW	4-9

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo MGP - SEM # KE31823B - Sampling Date of May 09 -10, 2001	Project Number CHEM-01-0827

Sample Identification	B302	Sample Identification	B302
	GW		GW
Sample Depth, ft	20-25	Sample Depth, ft	20-25
Sample Type	water	Sample Type	water
Sample Date	05-09-01	Sample Date	05-09-01
Received Date	05-10-01	Received Date	05-10-01
Report Date	05-11-01	Report Date	05-11-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	05-10-01	-	
		-	
Control Number	010827-02	Control Number	010827-02

BTEX - Plus, Method 8260	ug/L	TDL
Benzene	400	1
Toluene	4	1
Ethylbenzene	16	1
m/p-Xylene	23	1
o-Xylene	7	1
phthalene	70	5

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	99	86-115

no entry	ug/L	no entry

KR059B030601

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274493

Reviewed By [illegible] Date 05/1/01

Data File	010827
B302 GW	20-25

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

`OJECT IDENTIFICATION	Kalamazoo MGP - SEM # KE31823B - Sampling Date of May 09 -10, 2001	Project Number CHEM-01-0827

Sample Identification	B302 GW	**Sample Identification**	B302 GW
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	05-09-01	Sample Date	05-09-01
Received Date	05-10-01	Received Date	05-10-01
Report Date	05-11-01	Report Date	05-11-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	05-10-01	-	
		-	
Control Number	010827-03	Control Number	010827-03

BTEX - Plus, Method 8260	**ug/L**	**TDL**
Benzene	610	1
Toluene	5	1
Ethylbenzene	13	1
m/p-Xylene	18	1
o-Xylene	19	1
aphthalene	31	5

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	96	88-110
4-Bromofluorobenzene	98	86-115

no entry	**ug/L**	**no entry**

KR059B030602

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274494

Reviewed By [signature] Date 05/11/01

Data File	010827
B302 GW	35-40

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo MGP - SEM # KE31823B - Sampling Date of May 09 -10, 2001	Project Number CHEM-01-0827

Sample Identification	B302 GW	**Sample Identification**	B302 GW
Sample Depth, ft	50-55	Sample Depth, ft	50-55
Sample Type	water	Sample Type	water
Sample Date	05-09-01	Sample Date	05-09-01
Received Date	05-10-01	Received Date	05-10-01
Report Date	05-11-01	Report Date	05-11-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	05-10-01	-	
		-	
Control Number	010827-04	Control Number	010827-04

BTEX - Plus, Method 8260	**ug/L**	**TDL**
Benzene	40	1
Toluene	1	1
Ethylbenzene	3	1
m/p-Xylene	6	1
o-Xylene	1	1
phthalene	5	5

no entry	**ug/L**	**no entry**

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	104	88-110
4-Bromofluorobenzene	103	86-115

KR059B030603

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274495

Reviewed By [signature] Date 051101

Data File	010827
B302 GW	50-55

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo MGP - SEM # KE31823B - Sampling Date of May 09 -10, 2001	Project Number CHEM-01-0827

Sample Identification	B303 GW	Sample Identification	B303 GW
Sample Depth, ft	4-9	Sample Depth, ft	4-9
Sample Type	water	Sample Type	water
Sample Date	05-09-01	Sample Date	05-09-01
Received Date	05-10-01	Received Date	05-10-01
Report Date	05-11-01	Report Date	05-11-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	05-10-01	-	
		-	
Control Number	010827-05	Control Number	010827-05

BTEX - Plus, Method 8260	ug/L	TDL
Benzene	43	1
Toluene	3	1
Ethylbenzene	11	1
m/p-Xylene	17	1
o-Xylene	3	1
Naphthalene	5	5

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	102	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	103	86-115

no entry	ug/L	no entry

KR059B030604

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274496

Reviewed By HWJ Date 05/11/01

Data File	010827
B303 GW	4-9

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

ROJECT IDENTIFICATION	Kalamazoo MGP - SEM # KE31823B - Sampling Date of May 09 -10, 2001	Project Number CHEM-01-0827

Sample Identification	B303	**Sample Identification**	B303
	GW		GW
Sample Depth, ft	20-25	Sample Depth, ft	20-25
Sample Type	water	Sample Type	water
Sample Date	05-09-01	Sample Date	05-09-01
Received Date	05-10-01	Received Date	05-10-01
Report Date	05-11-01	Report Date	05-11-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	05-10-01	-	
		-	
Control Number	010827-06	Control Number	010827-06

BTEX - Plus, Method 8260	**ug/L**	**TDL**
Benzene	5	1
Toluene	nd	1
Ethylbenzene	3	1
m/p-Xylene	6	1
o-Xylene	2	1
aphthalene	nd	5

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	104	86-115

no entry	**ug/L**	**no entry**

KR059B030605

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274497

Reviewed By [signature] Date 05/1/01

Data File	010827
B303 GW	20-25

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo MGP - SEM # KE31823B - Sampling Date of May 09 -10, 2001	Project Number CHEM-01-0827

Sample Identification	B303 GW	Sample Identification	B303 GW
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	05-10-01	Sample Date	05-10-01
Received Date	05-10-01	Received Date	05-10-01
Report Date	05-11-01	Report Date	05-11-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	05-10-01	-	
		-	
Control Number	010827-07	Control Number	010827-07

BTEX - Plus, Method 8260	ug/L	TDL
Benzene	3	1
Toluene	1	1
Ethylbenzene	3	1
m/p-Xylene	5	1
o-Xylene	1	1
phthalene	nd	5

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	104	88-110
4-Bromofluorobenzene	103	86-115

no entry	ug/L	no entry

KR059B030606

TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274498

Reviewed By [signature] Date 05/11/01

Data File	010827
B303 GW	35-40

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo MGP - SEM # KE31823B - Sampling Date of May 09 -10, 2001	Project Number CHEM-01-0827

Sample Identification	B303 GW	**Sample Identification**	B303 GW
Sample Depth, ft	50-55	Sample Depth, ft	50-55
Sample Type	water	Sample Type	water
Sample Date	05-10-01	Sample Date	05-10-01
Received Date	05-10-01	Received Date	05-10-01
Report Date	05-11-01	Report Date	05-11-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	05-10-01	-	
		-	
Control Number	010827-08	Control Number	010827-08

BTEX - Plus, Method 8260	**ug/L**	**TDL**
Benzene	2	1
Toluene	1	1
Ethylbenzene	3	1
m/p-Xylene	4	1
o-Xylene	1	1
phthalene	nd	5

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	102	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	102	86-115

no entry	**ug/L**	**no entry**

KR059B030607

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274499

Reviewed By [signature] Date 05/1/01

Data File	010827
B303 GW	50-55

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo MGP - SEM # KE31823B - Sampling Date of May 09 -10, 2001	Project Number CHEM-01-0827

Sample Identification	Trip Blank	**Sample Identification**	Trip Blank
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	-	Sample Date	-
Received Date	05-10-01	Received Date	05-10-01
Report Date	05-11-01	Report Date	05-11-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	05-10-01	-	
		-	
Control Number	010827-09	Control Number	010827-09

BTEX - Plus, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
aphthalene	nd	5

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	102	86-115

no entry	**ug/L**	**no entry**

KR059B030608

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274500

Reviewed By [signature] Date 05/01

Data File	010827
Trip Blank	-

ORG

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KE 31823 B

SAMPLING TEAM: N. Warski

DATE SHIPPED: 5/10/01

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Bonesteel, SMO-Plymouth

PHONE: 734-454-9960

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX (8260)	Naphthalene (8260)	REMARKS
010827-1	5/9/01	0945	W	B302 (4-9)	4-9	2	X	X	
2		1045		B302 (20-25)	20-25				
3		1125		B302 (35-40)	35-40				
4		1220		B302 (50-55)	50-55				
5		1645		B303 (4-9)	4-9				
6		1730		B303 (20-25)	20-25				

KR059B030609

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	5/9/01	SMO sample Room
SMO sample Room	5.10.01	[signature]
00274501		

COMMENTS
- MDEQ MDLs - methods
- 4 & 12 NAT

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: N. LAEBEL

DATE SHIPPED: 5/10/01

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARLOSSE, SMG-PLYMOUTH

PHONE: 734-454-9900

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	ANALYSIS REQUESTED: BTEX (8260)	Naphthalene (8260)					REMARKS
01 0827-7	5/10/01	0900	W	B3303 (35-40)	35-40	2	X	X					
-8	↓	0940	↓	B3303 (50-55)	50-55	2	X	X					
				~~B3307~~ M									
-9				TRIP BLANK									

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	5/10/01	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE) 00274502	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MCSA Method
- 48 hr TAT

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APPENDIX G

LABORATORY ANALYTICAL REPORT FOR GROUNDWATER SAMPLES COLLECTED FROM WELLS IN MAY AND JUNE 2001

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-251, Jackson

Date: August 15, 2001

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823B
- Sampling Dates of May 29 – June 04,2001

File Index: 510117-410-980
510117-410-983

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On May 30 - June 04, 2001 the Chemistry Section (CHEM) of Laboratory Services received groundwater samples collected at the KALAMAZOO former MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Dissolved Michigan 10 Metals
Available (OIA) and Free Cyanide
Dissolved Iron
Nitrate
Sulfate
Alkalinity

Analytical Note: Nitrate and Sulfate determinations were performed by Brighton Analytical.

Analytical results are attached for your review.

00274505

KR059B030613

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 or parameter specific recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Aromatic Volatile Organics (BTEX) - Method 8260, Volatile Organic Compounds By Gas Chromatography / Mass Spectrometry: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Free - Method ASTM-D4282-95, Determination Of Free Cyanide In Water And Wastewater By Micro-diffusion, ASTM.

Cyanide, Available - Method OIA-1677, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry. EPA-821-R-99-013.

Dissolved Metals Preparation – Waters (Mercury) – Method 7470, Mercury in Liquid Waste. SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	SW846 Method
Arsenic	7060
Barium	6010
Cadmium	7131
Chromium	6010
Copper	7210
Iron	7380
Lead	7421
Mercury	7470
Selenium	7740
Silver	7761
Zinc	6010

Inorganic Analytes

Analyte	Test Method
Nitrate	353.2; 300.0
Sulfate	375.2; 300.0
Alkalinity	310.1

Methods For Chemical Analysis of Water and Wastes, USEPA, EMSL.

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

F IECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 01, 2001	Project Number CHEM-01-0980

PROJECT SEPARATOR

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW302I	Sample Identification	MW302I
Sample Depth, ft	19.8-24.8	Sample Depth, ft	19.8-24.8
Sample Type	water	Sample Type	water
Sample Date	05-29-01	Sample Date	05-29-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-05-01
Preservation Type	HCl	Analysis Date	06-22-01
Analysis Date	06-05-01		
Control Number	010980-01	Control Number	010980-01

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
ylene	nd	1
rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	94	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	101	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	94	43-116
p-Terphenyl-d14	102	33-141

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TES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [illegible] Date 8/15/01

Data File	Kalamazoo
MW302I	19.8-24.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW303
Sample Depth, ft	3.2-7.6
Sample Type	water
Sample Date	05-29-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-05-01
Control Number	010980-02

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	290	1
Toluene	10	1
Ethylbenzene	19	1
m/p-Xylene	20	1
Xylene	27	1
rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	93	76-114
Toluene-d8	95	88-110
4-Bromofluorobenzene	99	86-115

Sample Identification	MW303
Sample Depth, ft	3.2-7.6
Sample Type	water
Sample Date	05-29-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-05-01
Analysis Date	06-22-01
Control Number	010980-02

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	39	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	86	35-114
2-Fluorobiphenyl	91	43-116
p-Terphenyl-d14	98	33-141

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OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW303	3.2-7.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW302	Sample Identification	MW302
Sample Depth, ft	3.5-8.7	Sample Depth, ft	3.5-8.7
Sample Type	water	Sample Type	water
Sample Date	05-29-01	Sample Date	05-29-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-05-01
Preservation Type	HCl	Analysis Date	06-22-01
Analysis Date	06-05-01		
Control Number	010980-03	Control Number	010980-03

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
Xylene	nd	1
rrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	98	88-110
4-Bromofluorobenzene	102	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	93	43-116
p-Terphenyl-d14	101	33-141

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OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW302	3.5-8.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW302D	Sample Identification	MW302D
Sample Depth, ft	55.3-60.3	Sample Depth, ft	55.3-60.3
Sample Type	water	Sample Type	water
Sample Date	05-29-01	Sample Date	05-29-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-05-01
Preservation Type	HCl	Analysis Date	06-22-01
Analysis Date	06-05-01		
Control Number	010980-04	Control Number	010980-04

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
Xylene	nd	1
rrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	102	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	88	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	103	33-141

KR059B030619

OTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW302D	55.3-60.3

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW201	**Sample Identification**	MW201
Sample Depth, ft	3-7.5	Sample Depth, ft	3-7.5
Sample Type	water	Sample Type	water
Sample Date	05-29-01	Sample Date	05-29-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-05-01
Preservation Type	HCl	Analysis Date	06-22-01
Analysis Date	06-05-01		
Control Number	010980-05	Control Number	010980-05

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
Xylene	nd	1
rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	98	88-110
4-Bromofluorobenzene	104	86-115

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	10
2-Methylnaphthalene	nd	10
Acenaphthylene	nd	10
Acenaphthene	nd	10
Fluorene	nd	10
Phenanthrene	nd	10
Anthracene	nd	10
Fluoranthene	nd	10
Pyrene	nd	10
Benzo(a)anthracene	nd	10
Chrysene	nd	10
Benzo(b)fluoranthene	nd	10
Benzo(k)fluoranthene	nd	10
Benzo(a)pyrene	nd	10
Indeno(1,2,3-cd)pyrene	nd	10
Dibenzo(a,h)anthracene	nd	10
Benzo(g,h,i)perylene	nd	10
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	84	35-114
2-Fluorobiphenyl	92	43-116
p-Terphenyl-d14	97	33-141

KR059B030620

TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By Ad Date 8/15/01

Data File	Kalamazoo
MW201	3-7.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW304
Sample Depth, ft	4-10.1
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-05-01
Control Number	010980-06

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	130	5
Toluene	7	5
Ethylbenzene	320	5
m/p-Xylene	490	5
Xylene	120	5
rrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	96	88-110
4-Bromofluorobenzene	100	86-115

Sample Identification	MW304
Sample Depth, ft	4-10.1
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-05-01
Analysis Date	06-22-01
Control Number	010980-06

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	90	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	89	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	99	33-141

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OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW304	4-10.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW-3	Sample Identification	MW-3
Sample Depth, ft	2.9-7.8	Sample Depth, ft	2.9-7.8
Sample Type	water	Sample Type	water
Sample Date	05-30-01	Sample Date	05-30-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-05-01
Preservation Type	HCl	Analysis Date	06-22-01
Analysis Date	06-05-01		
Control Number	010980-07	Control Number	010980-07

BTEX, Method 8260	ug/L	TDL
Benzene	280	5
Toluene	13	5
Ethylbenzene	330	5
m/p-Xylene	610	5
Xylene	200	5
rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	101	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	61	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	88	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	102	33-141

KR059B030622

TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274514

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW-3	2.9-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-4
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-05-01
Control Number	010980-08

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
Xylene	nd	1
rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	98	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	P-4
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-05-01
Analysis Date	06-22-01
Control Number	010980-08

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	103	33-141

KR059B030623

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
P-4	2.9-7.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - *Sampling Dates of May 29 - June 04, 2001*	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW-4	**Sample Identification**	MW-4
Sample Depth, ft	2.2-6.8	Sample Depth, ft	2.2-6.8
Sample Type	water	Sample Type	water
Sample Date	05-30-01	Sample Date	05-30-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-05-01
Preservation Type	HCl	Analysis Date	06-22-01
Analysis Date	06-05-01		
Control Number	010980-09	Control Number	010980-09

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
-Xylene	nd	1
rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	98	88-110
4-Bromofluorobenzene	102	86-115

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	104	33-141

KR059B030624

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW-4	2.2-6.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

)JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-05-01
Control Number	010980-10

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
Xylene	nd	1
:ogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	98	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-05-01
Analysis Date	06-22-01
Control Number	010980-10

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	85	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	102	33-141

KR059B030625

TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
P-3	2.9-7.3

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

)JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW304D
Sample Depth, ft	64.5-69.5
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-05-01
Control Number	010980-11

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
Xylene	nd	1
..rrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	98	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW304D
Sample Depth, ft	64.5-69.5
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-05-01
Analysis Date	06-22-01
Control Number	010980-11

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	89	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	103	33-141

KR059B030626

)TES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW304D	64.5-69.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	DUP #1
Sample Depth, ft	-
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-05-01
Control Number	010980-12

BTEX, Method 8260	ug/L	TDL
Benzene	290	5
Toluene	13	5
Ethylbenzene	330	5
m/p-Xylene	550	5
-Xylene	170	5
rrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	94	88-110
4-Bromofluorobenzene	98	86-115

Sample Identification	DUP #1
Sample Depth, ft	-
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-05-01
Analysis Date	06-22-01
Control Number	010980-12

PAHs, Method 8270	ug/L	TDL
Naphthalene	43	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	83	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	99	33-141

KR059B030627

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
DUP #1	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW-2
Sample Depth, ft	4-7.7
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-05-01
Control Number	010980-13

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
Xylene	nd	1
.rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	98	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-2
Sample Depth, ft	4-7.7
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-05-01
Analysis Date	06-22-01
Control Number	010980-13

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	84	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	102	33-141

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)TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By Date

Data File	Kalamazoo
MW-2	4-7.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW104
Sample Depth, ft	4.6-9.4
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-05-01
Control Number	010980-14

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
Xylene	nd	1
rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	105	86-115

Sample Identification	MW104
Sample Depth, ft	4.6-9.4
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-05-01
Analysis Date	06-22-01
Control Number	010980-14

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	102	33-141

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)TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW104	4.6-9.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-3D
Sample Depth, ft	34.6-39.6
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-05-01
Control Number	010980-15

BTEX, Method 8260	ug/L	TDL
Benzene	180	1
Toluene	2	1
Ethylbenzene	2	1
m/p-Xylene	2	1
Xylene	5	1
.rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	98	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	P-3D
Sample Depth, ft	34.6-39.6
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-05-01
Analysis Date	06-22-01
Control Number	010980-15

PAHs, Method 8270	ug/L	TDL
Naphthalene	58	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	*%Recovery*	*Criteria*
Nitrobenzene-d5	88	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	101	33-141

KR059B030630

)TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By AU Date 8/15/01

Data File	Kalamazoo
P-3D	34.6-39.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW104D	**Sample Identification**	MW104D
Sample Depth, ft	29.9-34.9	Sample Depth, ft	29.9-34.9
Sample Type	water	Sample Type	water
Sample Date	05-31-01	Sample Date	05-31-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-05-01
Preservation Type	HCl	Analysis Date	06-22-01
Analysis Date	06-05-01		
Control Number	010980-16	Control Number	010980-16

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
Xylene	nd	1
rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	96	88-110
4-Bromofluorobenzene	101	86-115

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	86	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	99	33-141

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TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW104D	29.9-34.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW-1	**Sample Identification**	MW-1
Sample Depth, ft	7.9-11.6	Sample Depth, ft	7.9-11.6
Sample Type	water	Sample Type	water
Sample Date	05-31-01	Sample Date	05-31-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-06-01
Preservation Type	HCl	Analysis Date	06-22-01
Analysis Date	06-08-01		
Control Number	010980-17	Control Number	010980-17

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	10
Toluene	150	10
Ethylbenzene	1,700	10
m/p-Xylene	950	10
Xylene	700	10
ogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	94	76-114
Toluene-d8	95	88-110
4-Bromofluorobenzene	97	86-115

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	250	5
2-Methylnaphthalene	17	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	85	35-114
2-Fluorobiphenyl	94	43-116
p-Terphenyl-d14	98	33-141

KR059B030632

TES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW-1	7.9-11.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW101	**Sample Identification**	MW101
Sample Depth, ft	12.2-16.9	Sample Depth, ft	12.2-16.9
Sample Type	water	Sample Type	water
Sample Date	05-31-01	Sample Date	05-31-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	*Percent Solids, %w/w*	-
Preservation Date	at collection	Extraction Date	06-06-01
Preservation Type	HCl	Analysis Date	06-22-01
Analysis Date	06-08-01		
Control Number	010980-18	Control Number	010980-18

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	62	50
Toluene	5,700	50
Ethylbenzene	2,700	50
m/p-Xylene	7,700	50
Xylene	13,000	50
rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	87	76-114
Toluene-d8	90	88-110
4-Bromofluorobenzene	93	86-115

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	2,700	10
2-Methylnaphthalene	110	10
Acenaphthylene	30	10
Acenaphthene	51	10
Fluorene	nd	10
Phenanthrene	nd	10
Anthracene	nd	10
Fluoranthene	11	10
Pyrene	17	10
Benzo(a)anthracene	nd	10
Chrysene	nd	10
Benzo(b)fluoranthene	nd	10
Benzo(k)fluoranthene	nd	10
Benzo(a)pyrene	nd	10
Indeno(1,2,3-cd)pyrene	nd	10
Dibenzo(a,h)anthracene	nd	10
Benzo(g,h,i)perylene	nd	10
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	diluted out	35-114
2-Fluorobiphenyl	diluted out	43-116
p-Terphenyl-d14	diluted out	33-141

KR059B030633

TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW101	12.2-16.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW103	**Sample Identification**	MW103
Sample Depth, ft	10.7-15.3	Sample Depth, ft	10.7-15.3
Sample Type	water	Sample Type	water
Sample Date	05-31-01	Sample Date	05-31-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-06-01
Preservation Type	HCl	Analysis Date	06-22-01
Analysis Date	06-08-01		
Control Number	010980-19	Control Number	010980-19

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	102	86-115

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	102	33-141

KR059B030634

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274526

Reviewed By Ad Date 8/15/01

Data File	Kalamazoo
MW103	10.7-15.3

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	DUP #2
Sample Depth, ft	-
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-08-01
Control Number	010980-20

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	70	50
Toluene	5,100	50
Ethylbenzene	2,200	50
m/p-Xylene	6,800	50
Xylene	9,900	50
rrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	85	76-114
Toluene-d8	92	88-110
4-Bromofluorobenzene	95	86-115

Sample Identification	DUP #2
Sample Depth, ft	-
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-06-01
Analysis Date	06-23-01
Control Number	010980-20

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	1,100	10
2-Methylnaphthalene	27	10
Acenaphthylene	nd	10
Acenaphthene	17	10
Fluorene	nd	10
Phenanthrene	nd	10
Anthracene	nd	10
Fluoranthene	nd	10
Pyrene	nd	10
Benzo(a)anthracene	nd	10
Chrysene	nd	10
Benzo(b)fluoranthene	nd	10
Benzo(k)fluoranthene	nd	10
Benzo(a)pyrene	nd	10
Indeno(1,2,3-cd)pyrene	nd	10
Dibenzo(a,h)anthracene	nd	10
Benzo(g,h,i)perylene	nd	10
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	diluted out	35-114
2-Fluorobiphenyl	diluted out	43-116
p-Terphenyl-d14	diluted out	33-141

KR059B030635

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274527

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
DUP #2	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-08-01
Control Number	010980-21

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	94	76-114
Toluene-d8	96	88-110
4-Bromofluorobenzene	101	86-115

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-06-01
Analysis Date	06-23-01
Control Number	010980-21

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	101	33-141

KR059B030636

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274528

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
P-1	9.3-11.1

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW301
Sample Depth, ft	4-10.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-08-01
Control Number	010980-22

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	3,900	50
Toluene	30	50
Ethylbenzene	1,100	50
m/p-Xylene	5,800	50
Xylene	3,400	50
rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	83	76-114
Toluene-d8	94	88-110
4-Bromofluorobenzene	96	86-115

Sample Identification	MW301
Sample Depth, ft	4-10.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-06-01
Analysis Date	06-23-01
Control Number	010980-22

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	3,300	10
2-Methylnaphthalene	290	10
Acenaphthylene	nd	10
Acenaphthene	37	10
Fluorene	nd	10
Phenanthrene	nd	10
Anthracene	nd	10
Fluoranthene	nd	10
Pyrene	nd	10
Benzo(a)anthracene	nd	10
Chrysene	nd	10
Benzo(b)fluoranthene	nd	10
Benzo(k)fluoranthene	nd	10
Benzo(a)pyrene	nd	10
Indeno(1,2,3-cd)pyrene	nd	10
Dibenzo(a,h)anthracene	nd	10
Benzo(g,h,i)perylene	nd	10
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	diluted out	35-114
2-Fluorobiphenyl	diluted out	43-116
p-Terphenyl-d14	diluted out	33-141

KR059B030637

TES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274529

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW301	4-10.1

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW302I	**Sample Identification**	MW302I
Sample Depth, ft	19.8-24.8	Sample Depth, ft	19.8-24.8
Sample Type	water	Sample Type	water
Sample Date	05-29-01	Sample Date	05-29-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-01	Control Number	010980-01

METALS	**ug/L**	**TDL**
Arsenic - 7060	15	5.0
Barium - 6010	890	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	20,000	20

KR059B030638

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

00274530

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW302I	19.8-24.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW303	**Sample Identification**	MW303
Sample Depth, ft	3.2-7.6	Sample Depth, ft	3.2-7.6
Sample Type	water	Sample Type	water
Sample Date	05-29-01	Sample Date	05-29-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-02	Control Number	010980-02

METALS	**ug/L**	**TDL**
Arsenic - 7060	nd	5.0
Barium - 6010	370	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
·pper - 7210	nd	25.0
·ad - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	8,200	20

KR059B030639

)TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274531

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW303	3.2-7.6

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW302	**Sample Identification**	MW302
Sample Depth, ft	3.5-8.7	Sample Depth, ft	3.5-8.7
Sample Type	water	Sample Type	water
Sample Date	05-29-01	Sample Date	05-29-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-03	Control Number	010980-03

METALS	**ug/L**	**TDL**
Arsenic - 7060	9.0	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	7,500	20

KR059B030640

NOTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274532

Reviewed By AU Date 8/15/01

Data File	Kalamazoo
MW302	3.5-8.7

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW302D	Sample Identification	MW302D
Sample Depth, ft	55.3-60.3	Sample Depth, ft	55.3-60.3
Sample Type	water	Sample Type	water
Sample Date	05-29-01	Sample Date	05-29-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-04	Control Number	010980-04

METALS	ug/L	TDL	METALS	ug/L	TDL
Arsenic - 7060	29	5.0	Iron (dissolved) - 7380	3,100	20
Barium - 6010	200	100.0			
Cadmium - 7131	nd	0.5			
Chromium (total) - 6010	nd	5.0			
ɔper - 7210	nd	25.0			
ɹd - 7421	nd	3.0			
Mercury - 7470	nd	0.2			
Selenium - 7740	nd	5.0			
Silver - 7761	nd	0.5			
Zinc - 6010	nd	10.0			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B030641

)TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274533

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW302D	55.3-60.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW201
Sample Depth, ft	3-7.5
Sample Type	water
Sample Date	05-29-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01
Analysis Date, Start	06-20-01
Analysis Date, End	08-06-01
Control Number	010980-05

METALS	**ug/L**	**TDL**
Arsenic - 7060	8.0	5.0
Barium - 6010	120	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
ıpper - 7210	nd	25.0
.ead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW201
Sample Depth, ft	3-7.5
Sample Type	water
Sample Date	05-29-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date	06-19-01
Control Number	010980-05

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	4,700	20

KR059B030642

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274534

Reviewed By *Ad* Date *8/15/01*

Data File	Kalamazoo
MW201	3-7.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW304	Sample Identification	MW304
Sample Depth, ft	4-10.1	Sample Depth, ft	4-10.1
Sample Type	water	Sample Type	water
Sample Date	05-30-01	Sample Date	05-30-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-06	Control Number	010980-06

METALS	ug/L	TDL
Arsenic - 7060	36	5.0
Barium - 6010	220	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	4.0	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	27,000	20

KR059B030643

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274535

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW304	4-10.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW-3	**Sample Identification**	MW-3
Sample Depth, ft	2.9-7.8	Sample Depth, ft	2.9-7.8
Sample Type	water	Sample Type	water
Sample Date	05-30-01	Sample Date	05-30-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-07	Control Number	010980-07

METALS	**ug/L**	**TDL**
Arsenic - 7060	nd	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
ad - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	64	20

KR059B030644

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274536

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW-3	2.9-7.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-4	**Sample Identification**	P-4
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	05-30-01	Sample Date	05-30-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-08	Control Number	010980-08

METALS	**ug/L**	**TDL**
Arsenic - 7060	nd	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
pper - 7210	nd	25.0
ad - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	24	20

KR059B030645

OTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

00274537

Reviewed By *AL* Date *8/15/01*

Data File	Kalamazoo
P-4	2.9-7.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

)JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW-4	**Sample Identification**	MW-4
Sample Depth, ft	2.2-6.8	Sample Depth, ft	2.2-6.8
Sample Type	water	Sample Type	water
Sample Date	05-30-01	Sample Date	05-30-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-09	Control Number	010980-09

METALS	**ug/L**	**TDL**
Arsenic - 7060	nd	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
ıpper - 7210	nd	25.0
;ad - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	15	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	20	20

KR059B030646

)TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274538

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW-4	2.2-6.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-3	**Sample Identification**	P-3
Sample Depth, ft	2.9-7.3	Sample Depth, ft	2.9-7.3
Sample Type	water	Sample Type	water
Sample Date	05-30-01	Sample Date	05-30-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-10	Control Number	010980-10

METALS	**ug/L**	**TDL**
Arsenic - 7060	nd	5.0
Barium - 6010	200	100.0
Cadmium - 7131	0.8	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	300	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	300	20

KR059B030647

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274539

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
P-3	2.9-7.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

)JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW304D
Sample Depth, ft	64.5-69.5
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01
Analysis Date, Start	06-20-01
Analysis Date, End	08-06-01
Control Number	010980-11

METALS	**ug/L**	**TDL**
Arsenic - 7060	23	5.0
Barium - 6010	270	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
pper - 7210	nd	25.0
,ad - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW304D
Sample Depth, ft	64.5-69.5
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date	06-19-01
Control Number	010980-11

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	5,600	20

KR059B030648

)TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274540

Reviewed By Ad Date 8/15/01

Data File	Kalamazoo
MW304D	64.5-69.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

)JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	DUP #1
Sample Depth, ft	-
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date (Hg)	no sample
Analysis Date, Start	no sample
Analysis Date, End	no sample
Control Number	010980-12

METALS	**ug/L**	**TDL**
Arsenic - 7060	-	5.0
Barium - 6010	-	100.0
Cadmium - 7131	-	0.5
Chromium (total) - 6010	-	5.0
·pper - 7210	-	25.0
ad - 7421	-	3.0
Mercury - 7470	-	0.2
Selenium - 7740	-	5.0
Silver - 7761	-	0.5
Zinc - 6010	-	10.0
Metal Results Are Reported As	-	Dissolved

Sample Identification	DUP #1
Sample Depth, ft	-
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date	no sample
Analysis Date	no sample
Control Number	010980-12

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	-	20

KR059B030649

)TES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274541

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
DUP #1	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW-2	**Sample Identification**	MW-2
Sample Depth, ft	4-7.7	Sample Depth, ft	4-7.7
Sample Type	water	Sample Type	water
Sample Date	05-31-01	Sample Date	05-31-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-13	Control Number	010980-13

METALS	**ug/L**	**TDL**
Arsenic - 7060	nd	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	46	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	4,000	20

KR059B030650

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274542

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW-2	4-7.7

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW104	**Sample Identification**	MW104
Sample Depth, ft	4.6-9.4	Sample Depth, ft	4.6-9.4
Sample Type	water	Sample Type	water
Sample Date	05-31-01	Sample Date	05-31-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-14	Control Number	010980-14

METALS	**ug/L**	**TDL**
Arsenic - 7060	nd	5.0
Barium - 6010	310	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	150	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	6,200	20

KR059B030651

TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274543

Reviewed By [illegible] Date 8/15/01

Data File	Kalamazoo
MW104	4.6-9.4

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-3D	Sample Identification	P-3D
Sample Depth, ft	34.6-39.6	Sample Depth, ft	34.6-39.6
Sample Type	water	Sample Type	water
Sample Date	05-31-01	Sample Date	05-31-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-15	Control Number	010980-15

METALS	ug/L	TDL
Arsenic - 7060	35	5.0
Barium - 6010	200	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	6,100	20

KR059B030652

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274544

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
P-3D	34.6-39.6

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW104D	**Sample Identification**	MW104D
Sample Depth, ft	29.9-34.9	Sample Depth, ft	29.9-34.9
Sample Type	water	Sample Type	water
Sample Date	05-31-01	Sample Date	05-31-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-16	Control Number	010980-16

METALS	**ug/L**	**TDL**
Arsenic - 7060	25	5.0
Barium - 6010	240	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
ad - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	5,500	20

KR059B030653

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274545

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW104D	29.9-34.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW-1	**Sample Identification**	MW-1
Sample Depth, ft	7.9-11.6	Sample Depth, ft	7.9-11.6
Sample Type	water	Sample Type	water
Sample Date	05-31-01	Sample Date	05-31-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-17	Control Number	010980-17

METALS	**ug/L**	**TDL**
Arsenic - 7060	7.0	5.0
Barium - 6010	290	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
pper - 7210	nd	25.0
ad - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	*Dissolved*	*Dissolved*

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	6,300	20

KR059B030654

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274546

Reviewed By Ad Date 8/15/01

Data File	Kalamazoo
MW-1	7.9-11.6

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW101	**Sample Identification**	MW101
Sample Depth, ft	12.2-16.9	Sample Depth, ft	12.2-16.9
Sample Type	water	Sample Type	water
Sample Date	05-31-01	Sample Date	05-31-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-18	Control Number	010980-18

METALS	**ug/L**	**TDL**
Arsenic - 7060	5.0	5.0
Barium - 6010	230	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	1,400	20

KR059B030655

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274547

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW101	12.2-16.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW103	**Sample Identification**	MW103
Sample Depth, ft	10.7-15.3	Sample Depth, ft	10.7-15.3
Sample Type	water	Sample Type	water
Sample Date	05-31-01	Sample Date	05-31-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-20-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010980-19	Control Number	010980-19

METALS	**ug/L**	**TDL**
Arsenic - 7060	nd	5.0
Barium - 6010	480	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
·pper - 7210	nd	25.0
ad - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	0.6	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	100	20

KR059B030656

OTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

00274548

Reviewed By Ad Date 8/15/01

Data File	Kalamazoo
MW103	10.7-15.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

)JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	DUP #2
Sample Depth, ft	-
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date (Hg)	no sample
Analysis Date, Start	no sample
Analysis Date, End	no sample
Control Number	010980-20

METALS	**ug/L**	**TDL**
Arsenic - 7060	-	5.0
Barium - 6010	-	100.0
Cadmium - 7131	-	0.5
Chromium (total) - 6010	-	5.0
opper - 7210	-	25.0
.ad - 7421	-	3.0
Mercury - 7470	-	0.2
Selenium - 7740	-	5.0
Silver - 7761	-	0.5
Zinc - 6010	-	10.0
Metal Results Are Reported As	-	Dissolved

Sample Identification	DUP #2
Sample Depth, ft	-
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date	no sample
Analysis Date	no sample
Control Number	010980-20

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	-	20

KR059B030657

)TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274549

Reviewed By AU Date 8/15/01

Data File	Kalamazoo
DUP #2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date (Hg)	no sample
Analysis Date, Start	no sample
Analysis Date, End	no sample
Control Number	010980-21

METALS	**ug/L**	**TDL**
Arsenic - 7060	-	5.0
Barium - 6010	-	100.0
Cadmium - 7131	-	0.5
Chromium (total) - 6010	-	5.0
Copper - 7210	-	25.0
ad - 7421	-	3.0
Mercury - 7470	-	0.2
Selenium - 7740	-	5.0
Silver - 7761	-	0.5
Zinc - 6010	-	10.0
Metal Results Are Reported As	-	Dissolved

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date	no sample
Analysis Date	no sample
Control Number	010980-21

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	-	20

KR059B030658

OTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

00274550

Reviewed By Ad Date 8/15/01

Data File	Kalamazoo
P-1	9.3-11.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW301
Sample Depth, ft	4-10.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01
Analysis Date, Start	06-20-01
Analysis Date, End	08-06-01
Control Number	010980-22

METALS	**ug/L**	**TDL**
Arsenic - 7060	51	5.0
Barium - 6010	160	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
·pper - 7210	nd	25.0
ad - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW301
Sample Depth, ft	4-10.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date	06-19-01
Control Number	010980-22

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	14,000	20

KR059B030659

'TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274551

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Data File	Kalamazoo
MW301	4-10.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW302I
Sample Depth, ft	19.8-24.8
Sample Type	water
Sample Date	05-29-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	05-30-01
Analysis Date, Sulfate	05-30-01
Analysis Date, Alkalinity	
Control Number	010980-01

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	32,000	1,000
Alkalinity, as CaCO3 - 310.1	330,000	-

Sample Identification	MW302I
Sample Depth, ft	19.8-24.8
Sample Type	water
Sample Date	05-29-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	06-12-01
Analysis Date, Free	06-07-01
Control Number	010980-01

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030660

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274552

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Data File	Kalamazoo
MW302I	19.8-24.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW303	**Sample Identification**	MW303
Sample Depth, ft	3.2-7.6	Sample Depth, ft	3.2-7.6
Sample Type	water	Sample Type	water
Sample Date	05-29-01	Sample Date	05-29-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-12-01
Analysis Date, Nitrate	05-30-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	05-30-01		
Analysis Date, Alkalinity			
Control Number	010980-02	Control Number	010980-02

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	130,000	1,000
Alkalinity, as CaCO3 - 310.1	680,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030661

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274553

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Data File	Kalamazoo
MW303	3.2-7.6

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW302	**Sample Identification**	MW302
Sample Depth, ft	3.5-8.7	Sample Depth, ft	3.5-8.7
Sample Type	water	Sample Type	water
Sample Date	05-29-01	Sample Date	05-29-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-12-01
Analysis Date, Nitrate	05-30-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	05-30-01		
Analysis Date, Alkalinity			
Control Number	010980-03	Control Number	010980-03

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	20,000	1,000
Alkalinity, as CaCO3 - 310.1	230,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030662

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274554

Reviewed By [illegible] Date 8/15/01

Data File	Kalamazoo
MW302	3.5-8.7

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW302D	**Sample Identification**	MW302D
Sample Depth, ft	55.3-60.3	Sample Depth, ft	55.3-60.3
Sample Type	water	Sample Type	water
Sample Date	05-29-01	Sample Date	05-29-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-12-01
Analysis Date, Nitrate	05-30-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	05-30-01		
Analysis Date, Alkalinity			
Control Number	010980-04	Control Number	010980-04

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	6,400	1,000
Alkalinity, as CaCO3 - 310.1	330,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030663

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274555

Reviewed By *Mu* Date *8/15/01*

Data File	Kalamazoo
MW302D	55.3-60.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW201	**Sample Identification**	MW201
Sample Depth, ft	3-7.5	Sample Depth, ft	3-7.5
Sample Type	water	Sample Type	water
Sample Date	05-29-01	Sample Date	05-29-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-12-01
Analysis Date, Nitrate	05-30-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	05-30-01		
Analysis Date, Alkalinity			
Control Number	010980-05	Control Number	010980-05

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	100	100
Sulfate - 375.2; 300.0	21,000	1,000
Alkalinity, as CaCO3 - 310.1	440,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030664

TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274556

Reviewed By *MU* Date *8/15/01*

Data File	Kalamazoo
MW201	3-7.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW304	**Sample Identification**	MW304
Sample Depth, ft	4-10.1	Sample Depth, ft	4-10.1
Sample Type	water	Sample Type	water
Sample Date	05-30-01	Sample Date	05-30-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-12-01
Analysis Date, Nitrate	06-01-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	06-01-01		
Analysis Date, Alkalinity			
Control Number	010980-06	Control Number	010980-06

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	3,200	1,000
Alkalinity, as CaCO3 - 310.1	380,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030665

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274557

Reviewed By [illegible] Date 8/5/01

Data File	Kalamazoo
MW304	4-10.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW-3	Sample Identification	MW-3
Sample Depth, ft	2.9-7.8	Sample Depth, ft	2.9-7.8
Sample Type	water	Sample Type	water
Sample Date	05-30-01	Sample Date	05-30-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-12-01
Analysis Date, Nitrate	06-01-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	06-01-01		
Analysis Date, Alkalinity			
Control Number	010980-07	Control Number	010980-07

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	1,300	100
Sulfate - 375.2; 300.0	17,000	1,000
Alkalinity, as CaCO3 - 310.1	190,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030666

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274558

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW-3	2.9-7.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-4	**Sample Identification**	P-4
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	05-30-01	Sample Date	05-30-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-12-01
Analysis Date, Nitrate	06-01-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	06-01-01		
Analysis Date, Alkalinity			
Control Number	010980-08	Control Number	010980-08

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	490	100
Sulfate - 375.2; 300.0	58,000	1,000
Alkalinity, as CaCO3 - 310.1	350,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030667

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274559

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
P-4	2.9-7.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW-4	Sample Identification	MW-4
Sample Depth, ft	2.2-6.8	Sample Depth, ft	2.2-6.8
Sample Type	water	Sample Type	water
Sample Date	05-30-01	Sample Date	05-30-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-12-01
Analysis Date, Nitrate	06-01-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	06-01-01		
Analysis Date, Alkalinity			
Control Number	010980-09	Control Number	010980-09

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	2,000	100
Sulfate - 375.2; 300.0	40,000	1,000
Alkalinity, as CaCO3 - 310.1	360,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030668

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274560

Reviewed By [illegible] Date 8/15/01

Data File	Kalamazoo
MW-4	2.2-6.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

'OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	06-01-01
Analysis Date, Sulfate	06-01-01
Analysis Date, Alkalinity	
Control Number	010980-10

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	500	100
Sulfate - 375.2; 300.0	130,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	06-12-01
Analysis Date, Free	06-07-01
Control Number	010980-10

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030669

'OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274561

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
P-3	2.9-7.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW304D
Sample Depth, ft	64.5-69.5
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	06-01-01
Analysis Date, Sulfate	06-01-01
Analysis Date, Alkalinity	
Control Number	010980-11

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	68,000	1,000
Alkalinity, as CaCO3 - 310.1	290,000	-

Sample Identification	MW304D
Sample Depth, ft	64.5-69.5
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	06-12-01
Analysis Date, Free	06-07-01
Control Number	010980-11

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030670

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274562

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW304D	64.5-69.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	DUP #1
Sample Depth, ft	-
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	no sample
Analysis Date, Nitrate	no sample
Analysis Date, Sulfate	no sample
Analysis Date, Alkalinity	no sample
Control Number	010980-12

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	-	100
Sulfate - 375.2; 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

Sample Identification	DUP #1
Sample Depth, ft	-
Sample Type	water
Sample Date	05-30-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	no sample
Analysis Date, Free	no sample
Control Number	010980-12

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B030671

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274563

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
DUP #1	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW-2
Sample Depth, ft	4-7.7
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	06-01-01
Analysis Date, Sulfate	06-01-01
Analysis Date, Alkalinity	
Control Number	010980-13

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	850	100
Sulfate - 375.2; 300.0	510,000	1,000
Alkalinity, as CaCO3 - 310.1	110,000	-

Sample Identification	MW-2
Sample Depth, ft	4-7.7
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	06-12-01
Analysis Date, Free	06-07-01
Control Number	010980-13

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030672

)TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274564

Reviewed By M Date 8/15/01

Data File	Kalamazoo
MW-2	4-7.7

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW104	**Sample Identification**	MW104
Sample Depth, ft	4.6-9.4	Sample Depth, ft	4.6-9.4
Sample Type	water	Sample Type	water
Sample Date	05-31-01	Sample Date	05-31-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-12-01
Analysis Date, Nitrate	06-01-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	06-01-01		
Analysis Date, Alkalinity			
Control Number	010980-14	Control Number	010980-14

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	45,000	1,000
Alkalinity, as CaCO3 - 310.1	380,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030673

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274565

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW104	4.6-9.4

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-3D	Sample Identification	P-3D
Sample Depth, ft	34.6-39.6	Sample Depth, ft	34.6-39.6
Sample Type	water	Sample Type	water
Sample Date	05-31-01	Sample Date	05-31-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-12-01
Analysis Date, Nitrate	06-01-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	06-01-01		
Analysis Date, Alkalinity			
Control Number	010980-15	Control Number	010980-15

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	330,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274566

Reviewed By *Ad* Date 8/15/01

Data File	Kalamazoo
P-3D	34.6-39.6

KR059B030674

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW104D	Sample Identification	MW104D
Sample Depth, ft	29.9-34.9	Sample Depth, ft	29.9-34.9
Sample Type	water	Sample Type	water
Sample Date	05-31-01	Sample Date	05-31-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-12-01
Analysis Date, Nitrate	06-01-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	06-01-01		
Analysis Date, Alkalinity			
Control Number	010980-16	Control Number	010980-16

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	71,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

)TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274567

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW104D	29.9-34.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

ROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW-1	**Sample Identification**	MW-1
Sample Depth, ft	7.9-11.6	Sample Depth, ft	7.9-11.6
Sample Type	water	Sample Type	water
Sample Date	05-31-01	Sample Date	05-31-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-12-01
Analysis Date, Nitrate	06-01-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	06-01-01		
Analysis Date, Alkalinity			
Control Number	010980-17	Control Number	010980-17

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	270	100
Sulfate - 375.2; 300.0	73,000	1,000
Alkalinity, as CaCO3 - 310.1	400,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274568

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW-1	7.9-11.6

KR059B030676

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW101
Sample Depth, ft	12.2-16.9
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	06-01-01
Analysis Date, Sulfate	06-01-01
Analysis Date, Alkalinity	
Control Number	010980-18

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	970	100
Sulfate - 375.2; 300.0	96,000	1,000
Alkalinity, as CaCO3 - 310.1	380,000	-

Sample Identification	MW101
Sample Depth, ft	12.2-16.9
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	06-12-01
Analysis Date, Free	06-07-01
Control Number	010980-18

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

OTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274569

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW101	12.2-16.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

`OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW103
Sample Depth, ft	10.7-15.3
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	06-01-01
Analysis Date, Sulfate	06-01-01
Analysis Date, Alkalinity	
Control Number	010980-19

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	3,300	100
Sulfate - 375.2; 300.0	150,000	1,000
Alkalinity, as CaCO3 - 310.1	230,000	-

Sample Identification	MW103
Sample Depth, ft	10.7-15.3
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	06-12-01
Analysis Date, Free	06-07-01
Control Number	010980-19

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030678

`OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274570

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW103	10.7-15.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	DUP #2
Sample Depth, ft	-
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	no sample
Analysis Date, Nitrate	no sample
Analysis Date, Sulfate	no sample
Analysis Date, Alkalinity	no sample
Control Number	010980-20

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	-	100
Sulfate - 375.2; 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

Sample Identification	DUP #2
Sample Depth, ft	-
Sample Type	water
Sample Date	05-31-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	no sample
Analysis Date, Free	no sample
Control Number	010980-20

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B030679

)TES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274571

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
DUP #2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	no sample
Analysis Date, Nitrate	no sample
Analysis Date, Sulfate	no sample
Analysis Date, Alkalinity	
Control Number	010980-21

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	-	100
Sulfate - 375.2; 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1		-

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-01-01
Report Date	08-15-01
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	no sample
Analysis Date, Free	no sample
Control Number	010980-21

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B030680

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274572

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
P-1	9.3-11.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW301	Sample Identification	MW301
Sample Depth, ft	4-10.1	Sample Depth, ft	4-10.1
Sample Type	water	Sample Type	water
Sample Date	06-01-01	Sample Date	06-01-01
Received Date	06-01-01	Received Date	06-01-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-12-01
Analysis Date, Nitrate	06-01-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	06-01-01		
Analysis Date, Alkalinity			
Control Number	010980-22	Control Number	010980-22

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	400,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030681

'TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274573

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW301	4-10.1

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. OJALA

DATE SHIPPED: 5/30/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRESSE, SME - PLYMOUTH

PHONE: 734-454-9900

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAHs	10 MT metals	CYANIDE	Free & OIA	ALKALINITY	DISSOLVED IRON	REMARKS
CN-0980-01	5/29/01	1255	W	MW302I	19.8-24.8	8	X	X	X	X		X	X	
-02		1735		MW303	3.2-7.6								X	
-03		1425		MW302	3.5-8.7								X	
-04		1630		MW302D	53.60.3								X	
-05		1555		MW201	3-7.5								X	

KR059B030682

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	5/25/01 1840	SMG Sample Room
SMG Sample Room	6/1 300	Gabe Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
00274574		

COMMENTS
- MDEQ methods or MDLs
- Contact Pat Barresse w/ Questions

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. OJALA

DATE SHIPPED: 5/31/01

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARCLASSE, PLYMOUTH - SAE

PHONE: 734-454-7700

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	HE & METALS	PAHs	CYANIDE	Dissolved Iron	ALKALINITY	REMARKS
01-0980-06	5/30	10:35	W	MW304	4-10.1	8	X	X	X	X	X	X	
-07		11:40		MW-3	2.9-7.8	8	X	X	X	X	X	X	
-08		12:40		P-4	2.9-7.9	8	X	X	X	X	X	X	
-09		1:50		MW-4	2.2-6.8	8	X	X	X	X	X	X	
-10		2:40		P-3	2.5-7.3	8	X	X	X	X	X	X	
-11		3:00		MW304D	64.5-69.5	8	X	X	X	X	X	X	
-12	5/30	—	W	DUPLICATE #1	—	3	X		X				

ANALYSIS REQUESTED

KR059B030683

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	5/30 4:15	SME sample room
SME sample room	6/1 3:00	Gabe Smith
00274575		

COMMENTS: MDEQ Method + MDL, contact Pat B. w/ questions

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

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LABORATORY COMMERCIAL SERVICES

Consumers Energy

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SAMPLING SITE: KAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. OJALA

DATE SHIPPED: 6/1

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRABEE, SME – PLYMOUTH

PHONE: 734-454-9900

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	TCL 10 METALS	CYANIDE	FLDE & AMMABLE	ALKALINITY	DISSOLVED IRON	REMARKS
01-0980-13	5-31	10:10	W	MW-2	4-7.7	8	X	X	X	X		X	X	
-14		11:20	W	MW104	4.6-9.4	8								
-15		12:00	W	P-3D	34.6-39.6	8								
-16		3:00	W	MW104D	29.9-34.9	8								
-17		3:50	W	MW-1	7.7-11.6	8								
-18		5:00	W	MW101	12.2-16.9	8								
-19		6:15	W	MW103	10.7-15.3	8								
-20		—	W	DUPLICATE #2		3	X	X						

KR059B030684

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	5-31 7:00 PM	SME Sample Room
SME Sample Room	6/1 3:00	Gabe Smith
RELINQUISHED BY: (SIGNATURE) 00274576	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ METHODS + MDLS
- PLEASE CALL PAT B. w/ QUESTIONS

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D OSALA

DATE SHIPPED: 6/1

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASSE
SITE – PLYMOUTH
PHONE: 734-454-9900

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	Hi ID Metals	PAHs	CYANIDE	FREE CYANIDE	Alkalinity	Dissolved Fe	REMARKS
01-0930-21	6/1	9:00	W	P-1	9.3-11.1	3	X		X					
-22	6/1	11:15	W	MW301	4-10.1	8	X	X	X	X		X	X	

KR059B030685

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6-1 11:50	Gabe Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE) 00274577	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MORE METHODS + MOLS
- CALL PAT B. w/ QUESTIONS

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy 50745

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. OJALA

DATE SHIPPED: 5/30/00

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASSE, SITE – PLYMOUTH, PHONE: 734-454-9900

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE	REMARKS
12942	5/29	12:55	W	MW302I	19.8-24.8	1	X	X	
43	↓	1735	↓	MW303	3.2-7.6	↓	↓	↓	
44	↓	1425	↓	MW302	3.5-8.7	↓	↓	↓	
45	↓	1630	↓	MW302D	55.3-60.3	↓	↓	↓	
46	↓	1555	↓	MW201	3-7.3	↓	↓	↓	
2983				MW201 Dup					
84				201 MS					
85				201 MSD					

KR059B030686

4°C

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	5/29/01 1845	SITE SAMPLE Box
SITE SAMPLE Box	5/30/01 0830	[signature]
[signature]	5/30/01 1530	[signature]

00274578

COMMENTS
- MDEQ METHODS & MDLS
- CONTACT PAT BARRASSE w/ QUESTIONS

Original to Gordon Cattell/Consumers per Doug E. / John K. 5/30/00

ORIGINAL TO LAB COPY TO CUSTOMER

50.3

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. OSAKO

DATE SHIPPED: 5/31/01

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

ANALYSIS REQUESTED

PAGE 1 OF 1

SEND REPORT TO: PAT BARRESE, PLYMOUTH - SITE, PHONE: 734-454-5900

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE						REMARKS
3145	5/30	10:35	w	MW304	4.10.1'	1	X	X						
46		11:40		MW-3	2.9-7.8	1	X	X						
47		12:40		P-4	2.9-7.9	1	X	X						
48		1:50		MW-4	2.2-6.8	1	X	X						
49		2:40		P-3	2.9-7.3	1	X	X						
50		3:00		MW304D	64.5-69.5	1	X	X						

KR059B030687

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	5/30 4:13	SAS Sample Room
SAS Sample Room	5/31/01 9:25	[signature]
[signature]	5/31/01 2:10	[signature]

00274579

COMMENTS

ORIGINAL TO LAB COPY TO CUSTOMER

SC 3

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. OSALA

DATE SHIPPED: 6/1

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARBASSE, PLYMOUTH – SMC, PHONE: 734-454-9900

ANALYSIS REQUESTED

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE						REMARKS
3236	5-31	10:10	W	MW-2	4-7.7	1	X	X						
37		11:20		MW104	4.6-9.4	1	X	X						
38		12:00		P-3D	34.6-39.6	1	X	X						
39		3:00		MW1040	29.9-34.9	1	X	X						
40		3:50		MW-1	7.9-11.6	1	X	X						
41		5:00		MW101	12.2-16.9	1	X	X						
42		6:15		MW103	10.7-15.3	1	X	X						
				[illegible]										

KR059B030688

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	5-31 7:00pm	SMC SAMPLE Room
SMC SAMPLE Room	6/1/01 1:00	[signature]
[signature]	6/1/01 300	Laurie Ouellet

00274580

COMMENTS
- MDEQ METHODS & MDLS
- PLEASE CALL PAT B. w/ QUESTIONS

ORIGINAL TO LAB COPY TO CUSTOMER

508.1

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. OSACA

DATE SHIPPED: 6/1

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASSE, SME - PLYMOUTH, PHONE: 734-454-9900

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE						REMARKS
03243	6/1	11:15	W	MW301	4'-10.1	1	X	X						

KR059B030689

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6-1 11:50	[signature]
[signature]	6/1/01 3:00	[signature]
00274581		

COMMENTS
- NDEQ METHODS + MDLS
- CALL PAT B. W/ QUESTIONS

ORIGINAL TO LAB COPY TO CUSTOMER

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of June 01 & 04, 2001	Project Number CHEM-01-0983

PROJECT SEPARATOR

THIS SHEET INTENTIONALLY BLANK

KR059B030690

00274582

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW102	**Sample Identification**	MW102
Sample Depth, ft	10.3-14.9	Sample Depth, ft	10.3-14.9
Sample Type	water	Sample Type	water
Sample Date	06-04-01	Sample Date	06-04-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-06-01
Preservation Type	HCl	Analysis Date	06-23-01
Analysis Date	06-08-01		
Control Number	010983-01	Control Number	010983-01

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
-Xylene	nd	1
rrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	98	88-110
4-Bromofluorobenzene	103	86-115

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	101	33-141

KR059B030691

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274583

Reviewed By *Acl* Date *8/15/01*

Data File	Kalamazoo
MW102	10.3-14.9

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-2	**Sample Identification**	P-2
Sample Depth, ft	7.6-12.1	Sample Depth, ft	7.6-12.1
Sample Type	water	Sample Type	water
Sample Date	06-04-01	Sample Date	06-04-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-06-01
Preservation Type	HCl	Analysis Date	06-23-01
Analysis Date	06-08-01		
Control Number	010983-02	Control Number	010983-02

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	330	1
Toluene	83	1
Ethylbenzene	160	1
m/p-Xylene	390	1
Xylene	280	1
rrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	94	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	99	86-115

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	790	5
2-Methylnaphthalene	27	5
Acenaphthylene	nd	5
Acenaphthene	71	5
Fluorene	40	5
Phenanthrene	81	5
Anthracene	11	5
Fluoranthene	17	5
Pyrene	10	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	82	35-114
2-Fluorobiphenyl	91	43-116
p-Terphenyl-d14	93	33-141

KR059B030692

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274584

Reviewed By AU Date 8/15/01

Data File	Kalamazoo
P-2	7.6-12.1

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-2D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	06-04-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-08-01
Control Number	010983-03

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
Xylene	nd	1
rrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	99	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	P-2D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	06-04-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-06-01
Analysis Date	06-23-01
Control Number	010983-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	102	33-141

KR059B030693

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274585

Reviewed By [illegible] Date 8/15/01

Data File	Kalamazoo
P-2D	35-40

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-1	**Sample Identification**	P-1
Sample Depth, ft	9.3-11.1	Sample Depth, ft	9.3-11.1
Sample Type	water	Sample Type	water
Sample Date	06-04-01	Sample Date	06-04-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	no sample	Extraction Date	no sample
Preservation Type	no sample	Analysis Date	no sample
Analysis Date	no sample		
Control Number	010983-04	Control Number	010983-04

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	-	1
Toluene	-	1
Ethylbenzene	-	1
m/p-Xylene	-	1
Xylene	-	1
.rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	-	76-114
Toluene-d8	-	88-110
4-Bromofluorobenzene	-	86-115

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	1
Chrysene	-	5
Benzo(b)fluoranthene	-	2
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	2
Indeno(1,2,3-cd)pyrene	-	2
Dibenzo(a,h)anthracene	-	2
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

KR059B030694

)TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274586

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
P-1	9.3-11.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-08-01
Control Number	010983-05

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
Xylene	nd	1
.rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	98	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-06-01
Analysis Date	06-23-01
Control Number	010983-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	37	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	86	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	104	33-141

KR059B030695

)TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274587

Reviewed By Date

Data File	Kalamazoo
MW202D	55.4-60.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-08-01
Control Number	010983-06

BTEX, Method 8260	ug/L	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	590	50
m/p-Xylene	2,800	50
-Xylene	4,000	50
rrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	92	76-114
Toluene-d8	94	88-110
4-Bromofluorobenzene	97	86-115

Sample Identification	MW101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-06-01
Analysis Date	06-23-01
Control Number	010983-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	9,800	50
2-Methylnaphthalene	710	50
Acenaphthylene	400	50
Acenaphthene	nd	50
Fluorene	nd	50
Phenanthrene	nd	50
Anthracene	nd	50
Fluoranthene	nd	50
Pyrene	nd	50
Benzo(a)anthracene	nd	50
Chrysene	nd	50
Benzo(b)fluoranthene	nd	50
Benzo(k)fluoranthene	nd	50
Benzo(a)pyrene	nd	50
Indeno(1,2,3-cd)pyrene	nd	50
Dibenzo(a,h)anthracene	nd	50
Benzo(g,h,i)perylene	nd	50
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	diluted out	35-114
2-Fluorobiphenyl	diluted out	43-116
p-Terphenyl-d14	diluted out	33-141

KR059B030696

OTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW101D	34.5-39.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW105D
Sample Depth, ft	38.4-43.4
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	06-08-01
Control Number	010983-07

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
Xylene	nd	1
.rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW105D
Sample Depth, ft	38.4-43.4
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	06-06-01
Analysis Date	06-23-01
Control Number	010983-07

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	89	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	103	33-141

KR059B030697

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Reviewed By *Acl* Date *8/15/01*

Data File	Kalamazoo
MW105D	38.4-43.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

)JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW105	**Sample Identification**	MW105
Sample Depth, ft	10.8-15.3	Sample Depth, ft	10.8-15.3
Sample Type	water	Sample Type	water
Sample Date	06-01-01	Sample Date	06-01-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	06-06-01
Preservation Type	HCl	Analysis Date	06-23-01
Analysis Date	06-08-01		
Control Number	010983-08	Control Number	010983-08

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
Xylene	nd	1
.rogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	104	86-115

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	104	33-141

KR059B030698

)TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274590

Reviewed By *Acl* Date 8/5/01

Data File	Kalamazoo
MW105	10.8-15.3

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date	no sample
Control Number	010983-09

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	-	1
Toluene	-	1
Ethylbenzene	-	1
m/p-Xylene	-	1
Xylene	-	1
.rrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	-	76-114
Toluene-d8	-	88-110
4-Bromofluorobenzene	-	86-115

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date	no sample
Control Number	010983-09

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	1
Chrysene	-	5
Benzo(b)fluoranthene	-	2
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	2
Indeno(1,2,3-cd)pyrene	-	2
Dibenzo(a,h)anthracene	-	2
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

KR059B030699

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274591

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
P-1	9.3-11.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW102	**Sample Identification**	MW102
Sample Depth, ft	10.3-14.9	Sample Depth, ft	10.3-14.9
Sample Type	water	Sample Type	water
Sample Date	06-04-01	Sample Date	06-04-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-15-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010983-01	Control Number	010983-01

METALS	**ug/L**	**TDL**
Arsenic - 7060	nd	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
ad - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	nd	20

KR059B030700

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274592

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW102	10.3-14.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-2	**Sample Identification**	P-2
Sample Depth, ft	7.6-12.1	Sample Depth, ft	7.6-12.1
Sample Type	water	Sample Type	water
Sample Date	06-04-01	Sample Date	06-04-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-15-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010983-02	Control Number	010983-02

METALS	**ug/L**	**TDL**
Arsenic - 7060	11	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
·pper - 7210	nd	25.0
ad - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	11,000	20

KR059B030701

)TES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

00274593

Reviewed By MU Date 8/15/01

Data File	Kalamazoo
P-2	7.6-12.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-2D	**Sample Identification**	P-2D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	06-04-01	Sample Date	06-04-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-15-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010983-03	Control Number	010983-03

METALS	**ug/L**	**TDL**
Arsenic - 7060	9.0	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	3,400	20

KR059B030702

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274594

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
P-2D	35-40

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-1	Sample Identification	P-1
Sample Depth, ft	9.3-11.1	Sample Depth, ft	9.3-11.1
Sample Type	water	Sample Type	water
Sample Date	06-04-01	Sample Date	06-04-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	no sample	Preparation Date	no sample
Analysis Date, Start	no sample	Analysis Date	no sample
Analysis Date, End	no sample		
Control Number	010983-04	Control Number	010983-04

METALS	ug/L	TDL
Arsenic - 7060	-	5.0
Barium - 6010	-	100.0
Cadmium - 7131	-	0.5
Chromium (total) - 6010	-	5.0
Copper - 7210	-	25.0
ad - 7421	-	3.0
Mercury - 7470	-	0.2
Selenium - 7740	-	5.0
Silver - 7761	-	0.5
Zinc - 6010	-	10.0
Metal Results Are Reported As	-	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	-	20

KR059B030703

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274595

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
P-1	9.3-11.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01
Analysis Date, Start	06-15-01
Analysis Date, End	08-06-01
Control Number	010983-05

METALS	**ug/L**	**TDL**
Arsenic - 7060	nd	5.0
Barium - 6010	170	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date	06-19-01
Control Number	010983-05

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	39	20

KR059B030704

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274596

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW202D	55.4-60.4

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW101D	**Sample Identification**	MW101D
Sample Depth, ft	34.5-39.5	Sample Depth, ft	34.5-39.5
Sample Type	water	Sample Type	water
Sample Date	06-01-01	Sample Date	06-01-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	*Percent Solids, %w/w*	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-15-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010983-06	Control Number	010983-06

METALS	**ug/L**	**TDL**
Arsenic - 7060	27	5.0
Barium - 6010	330	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
ad - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	2,000	20

KR059B030705

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274597

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW101D	34.5-39.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW105D	Sample Identification	MW105D
Sample Depth, ft	38.4-43.4	Sample Depth, ft	38.4-43.4
Sample Type	water	Sample Type	water
Sample Date	06-01-01	Sample Date	06-01-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-15-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010983-07	Control Number	010983-07

METALS	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium - 6010	160	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
ad - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	230	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	52	20

KR059B030706

OTES:

TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274598

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW105D	38.4-43.4

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW105	**Sample Identification**	MW105
Sample Depth, ft	10.8-15.3	Sample Depth, ft	10.8-15.3
Sample Type	water	Sample Type	water
Sample Date	06-01-01	Sample Date	06-01-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01	Preparation Date	-
Analysis Date, Start	06-15-01	Analysis Date	06-19-01
Analysis Date, End	08-06-01		
Control Number	010983-08	Control Number	010983-08

METALS	**ug/L**	**TDL**
Arsenic - 7060	nd	5.0
Barium - 6010	nd	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	nd	5.0
Copper - 7210	nd	25.0
ad - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 7380	nd	20

KR059B030707

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274599

Reviewed By [illegible] Date 8/15/01

Data File	Kalamazoo
MW105	10.8-15.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date (Hg)	06-12-01
Analysis Date, Start	06-15-01
Analysis Date, End	08-06-01
Control Number	010983-09

METALS	ug/L	TDL
Arsenic - 7060	nd	5.0
Barium - 6010	140	100.0
Cadmium - 7131	nd	0.5
Chromium (total) - 6010	6.0	5.0
Copper - 7210	nd	25.0
Lead - 7421	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 7740	nd	5.0
Silver - 7761	nd	0.5
Zinc - 6010	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preparation Date	-
Analysis Date	06-19-01
Control Number	010983-09

METALS	ug/L	TDL
Iron (dissolved) - 7380	nd	20

KR059B030708

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274600

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
P-1	9.3-11.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW102	**Sample Identification**	MW102
Sample Depth, ft	10.3-14.9	Sample Depth, ft	10.3-14.9
Sample Type	water	Sample Type	water
Sample Date	06-04-01	Sample Date	06-04-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-11-01
Analysis Date, Nitrate	06-05-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	06-05-01		
Analysis Date, Alkalinity			
Control Number	010983-01	Control Number	010983-01

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	950	100
Sulfate - 375.2; 300.0	60,000	1,000
Alkalinity, as CaCO3 - 310.1	330,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030709

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274601

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW102	10.3-14.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-2	Sample Identification	P-2
Sample Depth, ft	7.6-12.1	Sample Depth, ft	7.6-12.1
Sample Type	water	Sample Type	water
Sample Date	06-04-01	Sample Date	06-04-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-11-01
Analysis Date, Nitrate	06-05-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	06-05-01		
Analysis Date, Alkalinity			
Control Number	010983-02	Control Number	010983-02

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2; 300.0	12,000	1,000	Cyanide, Free - D4282	nd	10
Alkalinity, as CaCO3 - 310.1	340,000	-			

KR059B030710

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274602

Reviewed By AU Date 8/15/9

Data File	Kalamazoo
P-2	7.6-12.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-2D	**Sample Identification**	P-2D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	06-04-01	Sample Date	06-04-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-11-01
Analysis Date, Nitrate	06-05-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	06-05-01		
Analysis Date, Alkalinity			
Control Number	010983-03	Control Number	010983-03

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	100,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030711

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274603

Reviewed By AK Date 8/15/01

Data File	Kalamazoo
P-2D	35-40

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-04-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	06-05-01
Analysis Date, Sulfate	06-05-01
Analysis Date, Alkalinity	
Control Number	010983-04

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	5,400	100
Sulfate - 375.2; 300.0	57,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-04-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	no sample
Analysis Date, Free	no sample
Control Number	010983-04

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B030712

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274604

Reviewed By MC Date 8/15/01

Data File	Kalamazoo
P-1	9.3-11.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	06-03-01
Analysis Date, Sulfate	06-03-01
Analysis Date, Alkalinity	
Control Number	010983-05

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	540	100
Sulfate - 375.2; 300.0	67,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

Sample Identification	MW202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	06-11-01
Analysis Date, Free	06-07-01
Control Number	010983-05

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030713

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274605

Reviewed By *Acc* Date 8/15/01

Data File	Kalamazoo
MW202D	55.4-60.4

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	-
Analysis Date, Nitrate	06-03-01
Analysis Date, Sulfate	06-03-01
Analysis Date, Alkalinity	
Control Number	010983-06

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	11,000	1,000
Alkalinity, as CaCO3 - 310.1	360,000	-

Sample Identification	MW101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	06-11-01
Analysis Date, Free	06-07-01
Control Number	010983-06

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030714

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274606

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW101D	34.5-39.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW105D	**Sample Identification**	MW105D
Sample Depth, ft	38.4-43.4	Sample Depth, ft	38.4-43.4
Sample Type	water	Sample Type	water
Sample Date	06-01-01	Sample Date	06-01-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-11-01
Analysis Date, Nitrate	06-03-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	06-03-01		
Analysis Date, Alkalinity			
Control Number	010983-07	Control Number	010983-07

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	730	100
Sulfate - 375.2; 300.0	76,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030715

TES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274607

Reviewed By [illegible] Date 8/15/01

Data File	Kalamazoo
MW105D	38.4-43.4

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	MW105	**Sample Identification**	MW105
Sample Depth, ft	10.8-15.3	Sample Depth, ft	10.8-15.3
Sample Type	water	Sample Type	water
Sample Date	06-01-01	Sample Date	06-01-01
Received Date	06-04-01	Received Date	06-04-01
Report Date	08-15-01	Report Date	08-15-01
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	-	Analysis Date, Available (OIA)	06-11-01
Analysis Date, Nitrate	06-03-01	Analysis Date, Free	06-07-01
Analysis Date, Sulfate	06-03-01		
Analysis Date, Alkalinity			
Control Number	010983-08	Control Number	010983-08

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	1,100	100
Sulfate - 375.2; 300.0	50,000	1,000
Alkalinity, as CaCO3 - 310.1	410,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030716

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274608

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
MW105	10.8-15.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project #KE31823B - Sampling Dates of May 29 - June 04, 2001	Project Numbers CHEM-01-0980 CHEM-01-0983

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Preservation Date	no sample
Analysis Date, Nitrate	no sample
Analysis Date, Sulfate	no sample
Analysis Date, Alkalinity	no sample
Control Number	010983-09

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	-	100
Sulfate - 375.2; 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-01-01
Received Date	06-04-01
Report Date	08-15-01
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	06-11-01
Analysis Date, Free	06-07-01
Control Number	010983-09

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030717

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

00274609

Reviewed By [signature] Date 8/15/01

Data File	Kalamazoo
P-1	9.3-11.1

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. OJALA

DATE SHIPPED: 6-4-01

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARBASSE
SITE - PLYMOUTH
PHONE: 734-454-9900

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	TCL 10 METALS	PNAs	CYANIDE:	FREE AMMONIA	DISSOLVED CHROM	ALKALINITY	REMARKS
01-0423-01	6-4	9:40	W	MW102	10.3-14.9	8	X	X	X		X	X	X	
-02		10:45		P-2	7.6-12.1	8	X	X	X		X	X	X	
-03		11:25		P-2D	35-40	8	X	X	X		X	X	X	
-04		12:10		P-1	9.3-11.1	1							X	

KR059B030718

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/4 1:30	SITE SAMPLE ROOM
SITE SAMPLE ROOM	6/4/01 2:15	[signature]

COMMENTS
- MODIFY METHODS + RDLs
- CALL PAT B. W/ ANY QUESTIONS

00274610

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. OSALA

DATE SHIPPED: 6-4-01

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARCASE, SME - PLYMOUTH, PHONE: 734-454-5700

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	MI 10 METALS	PNAs	CYANIDE	FREE CYANIDE	DISSOLVED IRON	ALKALINITY	REMARKS
01-0883-05	6-1	12:30	W	MW202D	55.4 - 60.4	8	X	X	X	X		X	X	
-06		1:50		MW101D	34.5 - 39.5	8	X	X	X	X		X	X	
-07		2:50		MW105D	38.4 - 43.4	8	X	X	X	X		X	X	
-08		3:30		MW105	10.8 - 15.3	8	X	X	X	X		X	X	
-09	6/1	4:25	W	P-1	9.3 - 11.1	4		X		X		X	X	Vial Not Received. See 01-0883-4 MM 6/04/01

KR059B030719

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/1 6:00	SME SAMPLE Room
SME SAMPLE Room	6/4/01 2:15	[signature]

00274611

COMMENTS
- MDEQ METHODS + MDLS
- CALL PAT B. w/ ANY QUESTIONS

ORIGINAL TO LAB COPY TO CUSTOMER

E 5875

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: CE31823B

SAMPLING TEAM: D. [illegible]

DATE SHIPPED: 6-4-01

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARBASSE, SITE - PLYMOUTH, PHONE: 734-454-9900

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	ALKALINITY	SULFATE						REMARKS
3504	6-4	9:40	W	MW102	10.3-14.9	1	X	X						
05		10:45		P-2	7.6-12.1	1	X	X						
06		11:25		P-2D	35-40	1	X	X						
07		12:10		P-1	9.3-11.1	1	X	X						

KR059B030720

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[illegible]	6/4 1:30	SITE SAMPLE ROOM
SITE SAMPLE ROOM	6/5/01 12:30	[illegible]
[illegible]	6/5/01 3:40	[illegible]

00274612

COMMENTS
- ORDER METHODS & MDLS
- CALL PAT B. W/ ANY QUESTIONS

ORIGINAL TO LAB COPY TO CUSTODIAN

508

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: CE31823B

SAMPLING TEAM: D. ZDALA

DATE SHIPPED: 6/1/01

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

ANALYSIS REQUESTED

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASSE PLYMOUTH-SITE

PHONE:

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE						REMARKS
03361	6/1	12:30	W	MW202D	55.4-60.4	1	X	X						
62		1:50		MW101D	34.5-39.5	1	X	X						
63		2:50		MW105D	38.4-43.4	1	X	X						
64		3:30		MW105	10.8-15.3	1	X	X						

KR059B030721

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/1 4:45	Fed ex
Fed ex	6/2/01	Pamie Reed

COMMENTS: FIDEQ METHODS & MDLs -CALL PAT B. w/ ANY QUESTIONS

00274613

ORIGINAL TO LAB COPY TO CUSTOMER

EXHIBIT MGP-9

Consumers Energy

A CMS Energy Company

Environmental & Lab Services
1945 West Parnall Road
Jackson, MI 49201-8643

Fax: 517 788 2329

April 23, 2002

WORKING COPY

Carol Weaver
Environmental Response Division
Michigan Department of Environmental Quality
Kalamazoo District
7953 Adobe Road
Kalamazoo, MI 49009-5026

GROUNDWATER MONITORING REPORT
CONSUMERS ENERGY FORMER
KALAMAZOO MANUFACTURED GAS PLANT SITE

Enclosed for review is a copy of an April 19, 2002 "Groundwater Monitoring Report" as prepared by our consultant, Soil and Materials Engineers (SME).

The enclosed report summarizes December 2001 groundwater monitoring activities on and off the former MGP property. The report indicates that quarterly groundwater monitoring was completed the second week of March 2002.

Our intent is to conduct quarterly groundwater sampling in 2002.

Should you have any questions concerning the enclosed report, please contact me on 517-788-0350.

Robert G Neumann PE
Senior Engineer/Kalamazoo MGP Site Manager

cc JMuller, Pharmacia w/2 copies
CRutland, City of Kalamazoo
JBosch, The Bosch Group, Kalamazoo
TEGriffiths, Consumers, Royal Oak w/o enclosure
GLKelterborn, Consumers, P-24-605A w/o enclosure
JHerdus, Consumers, Kalamazoo w/o enclosure
AMAurino, Consumers, Owosso w/o enclosure
PBarrese, SME, Plymouth w/o enclosure

KR059B030723

OO402-24.RGN

soil and materials engineers, inc.

43980 Plymouth Oaks Blvd. Plymouth, MI 48170-2584 (734) 454-9900 FAX (734) 454-0629

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Michael J. Thelen, PE

1964 37 2001 Years of Service

April 19, 2002

Mr. Robert G. Neumann, P.E.
Environmental & Technical Services Department
Consumers Energy Company
1945 W. Parnall Road, Room P-22-520
Jackson, Michigan 49201

RE: Groundwater Monitoring Report
Kalamazoo MGP
Consumers Energy Company
Kalamazoo, Michigan
SME Project No. KE31823

Dear Mr. Neumann:

This letter presents the results for groundwater monitoring that SME conducted at the above referenced site on December 10 through 14, 2001. Groundwater monitoring is being conducted in accordance with the recommendations that were presented in the "Report of Third Phase of Remedial Investigation and Groundwater Monitoring Activities," dated November 12, 2001.

SCOPE OF SERVICES

The following scope of services was conducted for the groundwater monitoring event:

1. Gauged groundwater elevations at MW-1, MW-2, MW-3, MW-4, P-1, P-2, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW201, MW202D, MW301, MW302, MW302I, MW302D, MW303, MW304 and MW304D on December 10, 2001. Figure No. 1 of Attachment A depicts the locations of the wells at the site.

2. Collected groundwater samples from MW-1, MW-2, MW-3, MW-4, P-2, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW201, MW202D MW301, MW302, MW302I, MW302D, MW303, MW304 and MW304D on December 10 through 14, 2001 for laboratory analysis of benzene, toluene, ethylbenzene and xylene(s) (BTEX); polynuclear aromatic hydrocarbons (PAHs); Michigan 10 Metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc); and cyanide (available and free).

Detroit
Bay City
Kalamazoo
Lansing
Toledo
Grand Rapids

Consultants in the geosciences, materials, and the environment

Groundwater samples were evaluated in the field for pH, specific conductivity and dissolved oxygen (DO).

There was insufficient water present in P-1 to collect samples for the laboratory analysis of the Michigan 10 Metals, cyanide (available and free), dissolved iron, nitrate, sulfate and alkalinity (as $CaCO_3$). However, there was sufficient water in P-1 to collect groundwater samples for BTEX and PAH analysis.

3. Prepared this summary letter report which includes the following:

   a. a groundwater elevation diagram for December 10, 2001;

   b. analytical test results.

PROCEDURES

With the exception of the disposal of purge water, groundwater sampling procedures were consistent with those presented in the "Report of Third Phase of Remedial Investigation and Groundwater Monitoring Activities," dated November 12, 2001. Purge water collected from monitoring wells was returned to the corresponding well after sampling activities had been completed. Analytical methods and detection limits for BTEX, PAHs, the Michigan 10 Metals and cyanide (available and free) were also consistent with those presented in the "Report of Third Phase of Remedial Investigation and Groundwater Monitoring," dated November 12, 2001. Groundwater samples were submitted to Consumers Energy Company's (Consumers Energy's) Chemistry & Material Services Department (C&MSD) in Jackson, Michigan for analysis.

RESULTS

The results for the December 2001 groundwater monitoring event are discussed below. The discussion of the results is supported by the attached figures, tables and charts listed below.

- Figure No. 2 of Attachment A shows the groundwater elevation contours for groundwater levels gauged in site monitoring wells on December 10, 2001.
- Table 1 of Attachment B lists groundwater elevations gauged on December 10, 2001, as well as groundwater elevations gauged during previous groundwater monitoring events.
- Table 2 of Attachment B presents the analytical results for the December 2001 groundwater monitoring event, as well as analytical results from previous groundwater sampling events.
- Chart Nos. 1 through 5 of Attachment C present bar graph comparisons of natural attenuation parameters for impacted wells compared to non-impacted wells.
- Copies of analytical test results for the December 2001 groundwater monitoring event are presented in Attachment D.

Groundwater Elevations

For December 2001, groundwater was encountered at depths below ground surface ranging from approximately 3.9 feet at MW302D to approximately 13.9 feet at MW202D. Groundwater elevations for December 2001 were lower by approximately 0.3 to 1.0 feet compared with groundwater elevations gauged in May 2001.

For the northern portion of the site, where former MGP production components, storage structures and/or transfer lines had been located, groundwater flow appears to be to the east with a calculated horizontal hydraulic gradient of 0.004 feet per foot. This horizontal hydraulic gradient was calculated between the 759.2 and 757.0 contour lines on the north side of the site. For the southern portion of the site, groundwater flow also appears to be generally to the east with a calculated horizontal hydraulic gradient of 0.004 feet per foot. This horizontal hydraulic gradient was calculated between the 758.0 and 757.0 contour lines on the south side of the site. The interpreted groundwater flow direction and corresponding horizontal gradients are generally consistent with previous groundwater gauging events. Groundwater elevations gauged at P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D and MW304D were not used to interpret groundwater flow conditions at the water table because the well screens are set below the water table surface.

Based on the December 2001 groundwater elevation data, it appears that groundwater at the water table in the vicinity of the site is discharging to Portage Creek since groundwater elevations at MW302 and MW304, 756.93 feet MSL and 756.87 feet MSL, respectively, were higher than the gauged elevation of the creek, 756.36 feet MSL. MW302 and MW304 are located adjacent to Portage Creek and are screened at the water table.

Vertical hydraulic gradients were calculated for the following well pairs, P-2/P-2D, P-3/P-3D, MW101/MW202D, MW104/MW104D, MW105/MW105D, MW302/MW302D and MW304/MW304D. The following table summarizes the calculated vertical gradients.

Well Pair Location	Gradient (feet per foot) and Direction
P-2/P-2D	0.013 – Downward
P-3/P-3D	0.005 – Downward
MW101/MW202D	0.018 – Downward
MW104/MW104D	0.010 – Upward
MW105/MW105D	0.035 – Downward
MW302/MW302D	0.014 – Upward
MW304/MW304D	0.012 – Upward

The calculated vertical hydraulic gradients are generally consistent with those calculated for May 2001 groundwater elevation data. The calculated vertical gradients for well pairs

located on the west side of Pitcher Street, P-2/P-2D, P-3/P-3D, MW101/MW202D and MW105/MW105D, are downward, however calculated vertical gradients for well pairs located on the east side of Pitcher Street, MW104/MW104D, MW302/MW302D and MW304/MW304D are upward.

Analytical Results – MGP Parameters

BTEX and PAHs concentrations for groundwater samples were less than the Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air Inhalation, Groundwater Contact, Flammability/Explosivity, Water Solubility and Acute Inhalation.

Comparisons of analytical results to Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI are discussed below.

BTEX

Benzene, toluene, ethylbenzene and/or xylene(s) concentrations at MW-1, P-2, P-3D, MW101, MW101D, MW201, MW301, MW302I and MW304 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI.

BTEX concentrations for other groundwater samples were either less than the target detection limit (TDL) or Part 201 Commercial II Cleanup Criteria.

PAHs

Naphthalene concentrations at MW-1, P-2, P-3D, MW101, MW101D, MW202D, MW301 and MW304 exceeded the Part 201 Commercial II Cleanup Criterion for GSI. Naphthalene concentrations at MW101D and MW301 also exceeded the Part 201 Commercial II Cleanup Criterion for Drinking Water. The concentrations of remaining PAHs constituents at MW-1, P-3D, MW101, MW101D, MW202D and MW304 were either less than the TDL or Part 201 Commercial II Cleanup Criteria.

Acenaphthene, fluorene, phenanthrene and fluoranthene concentrations at P-2 exceeded the Part 201 Commercial II Cleanup Criteria for GSI. At MW301, the acenaphthene concentration exceeded the Part 201 Commercial II Cleanup Criteria for GSI. Excluding naphthalene, the concentrations of remaining PAHs constituents at P-2 and MW301 were either less than the TDL or Part 201 Commercial II Cleanup Criteria.

PAH concentrations for other groundwater samples were less than the TDL.

Michigan 10 Metals

The arsenic concentration at MW301 exceeded the Part 201 Commercial II Cleanup Criterion for Drinking Water by 1 ppb. Other metals concentrations for this groundwater sample were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

The mercury concentration at P-3D exceeded the Part 201 Commercial II Cleanup Criterion for GSI by less than 1 ppb. Other metals concentrations for this groundwater sample were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Selenium concentrations at P-3, MW102 and MW105 exceeded the Part 201 Commercial II Cleanup Criterion for GSI. Other metals concentrations for groundwater samples collected from these wells were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Metals concentrations for other groundwater samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Cyanide

Free and available cyanide concentrations for the groundwater samples were less than the TDLs.

Analytical Results – Natural Attenuation Parameters

The evaluation of natural attenuation parameters considered the analytical results from MW-4, P-4, MW102, MW103 and MW105 to be representative of non-impacted wells; while the analytical results from MW-1, P-2, P-3, MW101, MW201, MW301 and MW304 to be representative of wells impacted by MGP parameters. The rationale for these selections are presented in the "Report of Third Phase of Remedial Investigation and Groundwater Monitoring," dated November 12, 2001.

For the evaluation of natural attenuation data, concentrations reported as less than the TDL were set as equal to the TDL as a conservative assumption.

Dissolved Oxygen

DO concentrations for non-impacted wells for the December 2001 groundwater monitoring event ranged from 0.43 parts per million (ppm) at MW-4 to 1.33 ppm at MW102, with a mean value of 0.90 ppm. The mean value DO concentration appears to be slightly low, since mean value DO concentrations for the previous 4 groundwater monitoring events have been greater than 1 ppm.

DO concentrations for impacted wells for the December 2001 groundwater monitoring event ranged from 0.30 ppm at MW-1 to 0.80 ppm at MW304, with a mean value of 0.46 ppm.

An indicator of natural attenuation is when DO concentrations for impacted wells are lower than DO concentrations for non-impacted wells. Generally, this trend was observed for the December 2001 groundwater monitoring event.

Alkalinity

Alkalinity concentrations for non-impacted wells for the December 2001 groundwater monitoring event ranged from 320,000 ppb at MW102 to 480,000 ppb at MW103, with a mean value of 390,000 ppb.

Alkalinity concentrations for impacted wells for the December 2001 groundwater monitoring event ranged from 270,000 ppb at P-3 to 500,000 ppb at MW201, with a mean value of 421,429 ppb.

An indicator of natural attenuation is when alkalinity concentrations for impacted wells are higher than alkalinity concentrations for non-impacted wells. This trend was not observed for the December 2001 groundwater monitoring event.

Nitrate

Nitrate concentrations for non-impacted wells for the December 2001 groundwater monitoring event ranged from less than TDL (<100 ppb) at MW-4 to 1,100 ppb at MW102, with a mean value of 628 ppb.

Nitrate concentrations for impacted wells for the December 2001 groundwater monitoring event ranged from less than the TDL (<100 ppb) at MW-1, P-2, MW201 and MW304 to 900 ppb at MW101, with a mean value of 239 ppb.

An indicator of natural attenuation is when nitrate concentrations for impacted wells are lower than nitrate concentrations for non-impacted wells. Generally, this trend was observed for the December 2001 groundwater monitoring event.

Dissolved Iron

Dissolved iron concentrations for non-impacted wells for the December 2001 groundwater monitoring event ranged from less than the TDL (<20ppb) at P-4, MW102, MW103 and MW105 to 7,600 ppb at MW-4, with a mean value of 1,536 ppb. The apparent elevated dissolved iron concentration for MW-4 may be attributed to the well screen of MW-4 being partially set within a peat unit.

Dissolved iron concentrations for impacted wells for the December 2001 groundwater monitoring event ranged 300 ppb at P-3 to 18,000 ppb at MW304, with a mean value of 7,127 ppb.

An indicator of natural attenuation is when dissolved iron concentrations for impacted wells are higher than dissolved iron concentrations for non-impacted wells. This trend was observed for the December 2001 groundwater monitoring event.

Sulfate

Sulfate concentrations for non-impacted wells for the December 2001 groundwater monitoring event ranged from 15,000 ppb at MW103 to 48,000 ppb at MW102, with a mean value of 29,800 ppb.

Sulfate concentrations for impacted wells for the December 2001 groundwater monitoring event ranged from less than the TDL (<1,000 ppb) at MW301 and MW304 to 320,000 ppb at P-3, with a mean value of 57,886 ppb. The reported sulfate concentration at P-3 may be anomalous, since previous sulfate concentrations at P-3 have ranged from 35,000 to 130,000 ppb.

An indicator of natural attenuation is when sulfate concentrations for impacted wells are less than sulfate concentrations for non-impacted wells. This trend was not observed for the December 2001 groundwater monitoring event.

The observed relationships for DO, nitrate and dissolved iron are consistent with previous groundwater monitoring activities.

GENERAL

The next round of groundwater monitoring was conducted on March 12, 13, 14 and 15, 2002. If you have any questions or comments concerning this report, please call.

Sincerely,

SOIL AND MATERIALS ENGINEERS, INC.

Patrick G. Barrese, CPG
Senior Project Consultant

Attachments:

Attachment A: Figure No. 1 - Monitoring Well Location Diagram
Figure No. 2 - Groundwater Elevation Contours, November 6, 2000

Attachment B: Table 1 - Groundwater Elevation Summary
Table 2 - Analytical Summary - Groundwater

Attachment C: Chart No. 1 – Dissolved Oxygen: Non-Impacted Wells vs. Impacted Wells
Chart No. 2 - Alkalinity: Non-Impacted Wells vs. Impacted Wells
Chart No. 3 - Nitrate: Non-Impacted Wells vs. Impacted Wells
Chart No. 4 – Dissolved Iron: Non-Impacted Wells vs. Impacted Wells
Chart No. 5 - Sulfate: Non-Impacted Wells vs. Impacted Wells

Attachment D: Analytical Report

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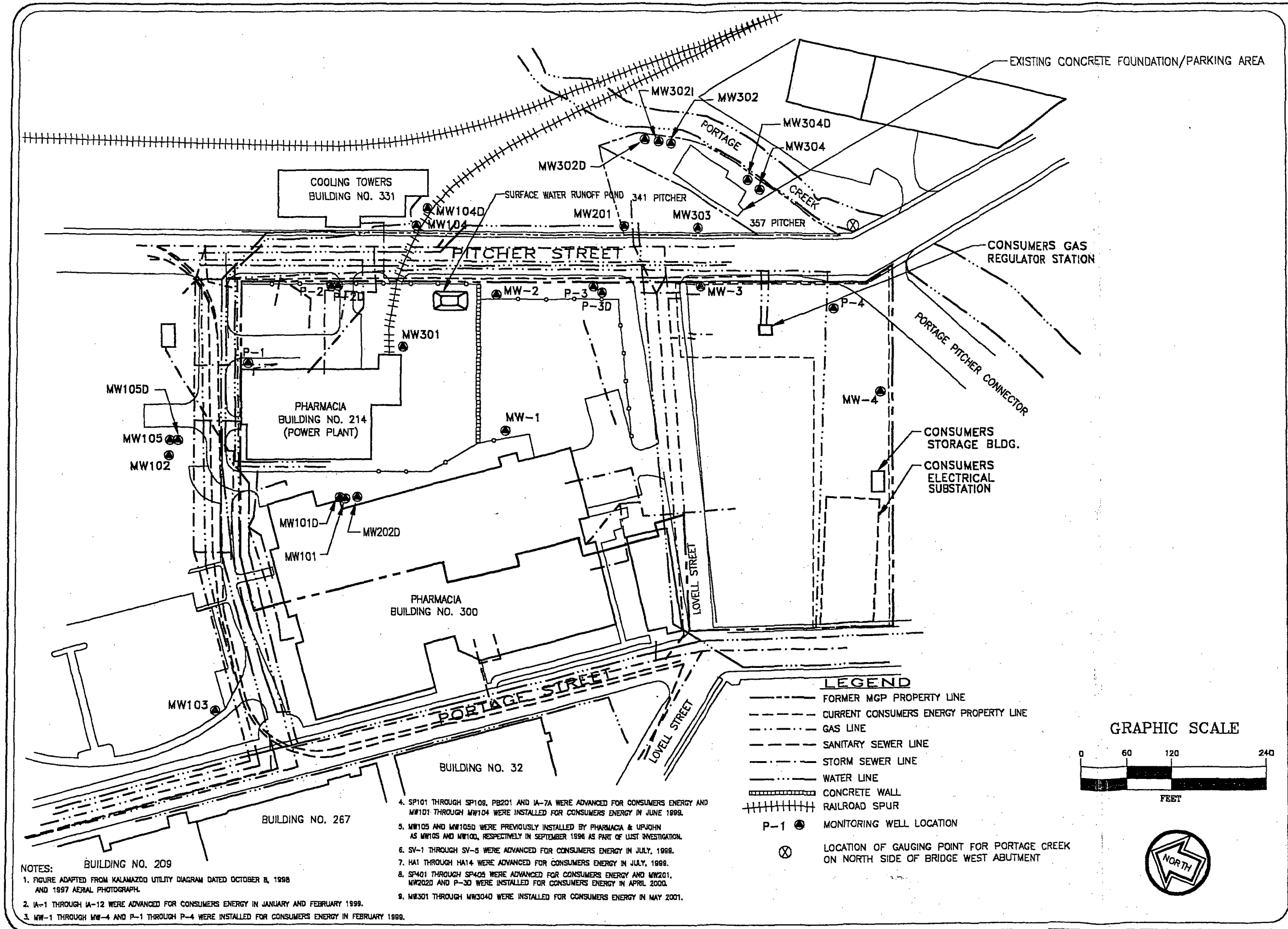
ATTACHMENT A

FIGURES

Figure No. 1 - Monitoring Well Location Diagram
Figure No. 2 - Groundwater Elevation Contours, December 10, 2001

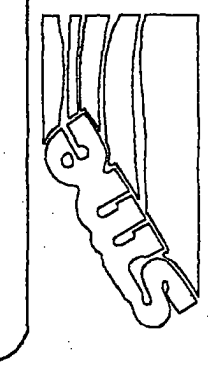


NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
9. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.

MONITORING WELL LOCATION DIAGRAM
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 5-25-01
SCALE: 1" = 120'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823



FILE NAME H:CECO\31823-11.DWG

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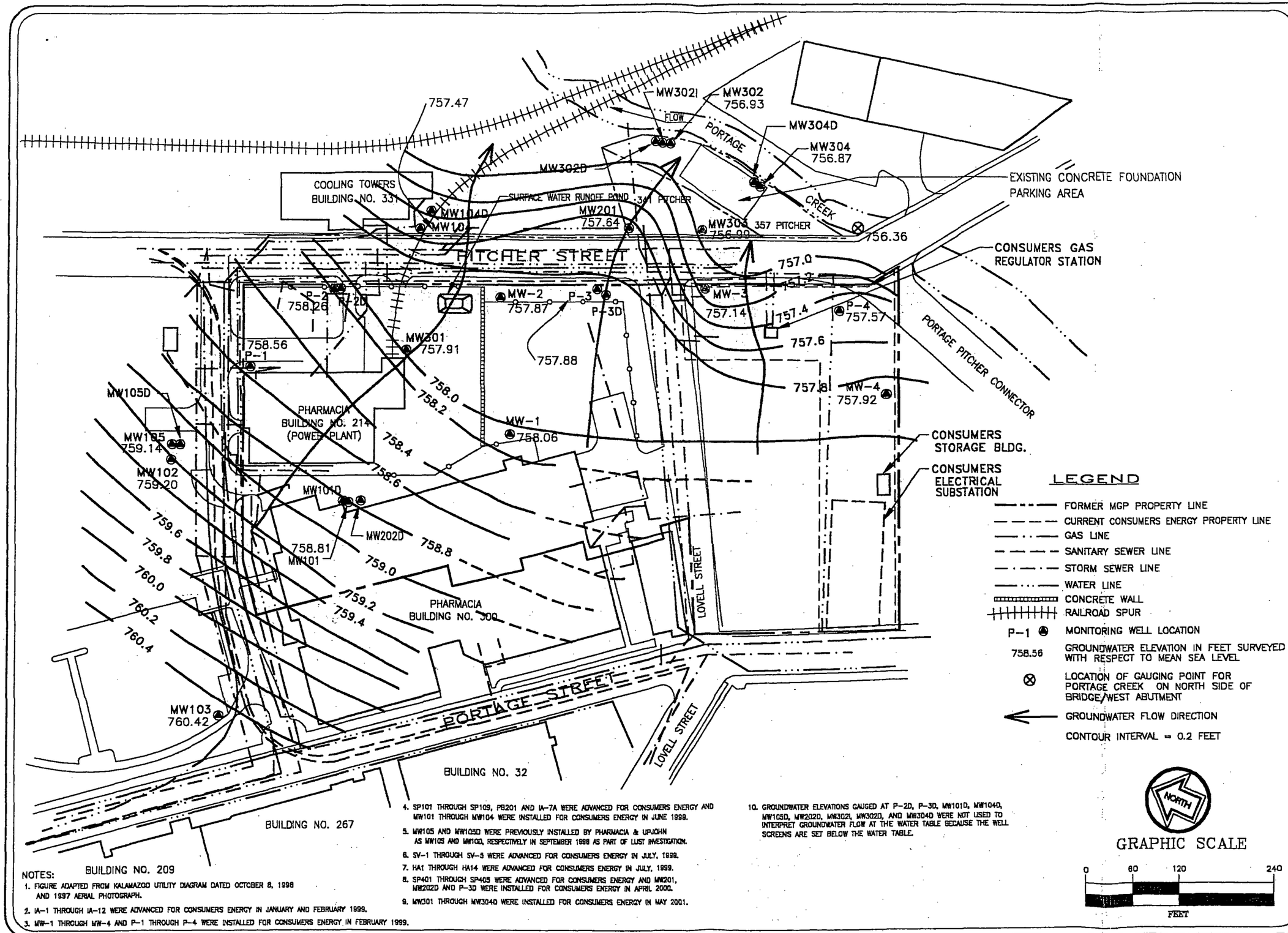
Figure No. 1

00151



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW103 AND MW103D, RESPECTIVELY IN SEPTEMBER 1998 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
9. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
10. GROUNDWATER ELEVATIONS GAUGED AT P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D, AND MW304D WERE NOT USED TO INTERPRET GROUNDWATER FLOW AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.

GROUNDWATER ELEVATION CONTOUR DIAGRAM
DECEMBER 10, 2001
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 12-10-01
SCALE: 1" = 120'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823B-8

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-14.DWG

KR059B030734

Figure No. 2

00152

ATTACHMENT B

TABLES

Table 1 - Groundwater Elevation Summary
Table 2 - Analytical Summary - Groundwater

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	2/8/1999 Depth to Water from TOC (ft.)	2/8/1999 Static Groundwater Elevation (ft.)	2/25/1999 Depth to Water from TOC (ft.)	2/25/1999 Static Groundwater Elevation (ft.)	6/22/1999 (See 5) Depth to Water from TOC (ft.)	6/22/1999 (See 5) Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	8.47	758.04	8.77	757.74	9.13	757.38
MW-2	763.00	762.56	759.6 - 754.6	4.89	757.67	5.27	757.29	5.66	756.90
MW-3	761.43	760.86	758.2 - 753.2	3.63	757.23	3.82	757.04	4.32	756.54
MW-4	761.70	760.99	759.2 - 754.2	2.68	758.31	3.02	757.97	3.45	757.54
P-1	768.91	768.38	762.4 - 757.4	NI	NI	10.44	757.94	10.50	757.88
P-2	766.95	766.35	759.4 - 754.4	8.17	758.18	8.38	757.97	8.87	757.48
P-2D	766.84	766.61	731.7 - 726.7	NI	NI	NI	NI	9.61	757.00
P-3	761.87	761.35	758.6 - 753.6	3.82	757.53	4.16	757.19	4.61	756.74
P-4	761.95	761.51	758.7 - 753.7	3.39	758.12	3.95	757.56	4.46	757.05
MW101	771.74	771.41	759.6 - 754.6	NI	NI	NI	NI	13.28	758.13
MW101D	771.59	770.91	736.5 - 731.5	NI	NI	NI	NI	13.19	757.72
MW102	770.02	769.88	760.1 - 755.1	NI	NI	NI	NI	11.32	758.56
MW103	771.99	771.52	761.3 - 756.3	NI	NI	NI	NI	11.42	760.10
MW104	763.07	762.74	758.4 - 753.4	NI	NI	NI	NI	6.04	756.70
MW104D	762.92	762.66	732.8 - 727.8	NI	NI	NI	NI	5.81	756.85
MW105	770.61	770.31	760.1 - 755.1	NG	NG	NG	NG	11.77 (5)	758.54
MW105D	770.61	770.20	731.9 - 726.9	NG	NG	NG	NG	12.85 (5)	757.35

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) NG = Groundwater elevation not gauged.
(5) Groundwater elevations for MW105 and MW105D were gauged on June 23, 1999.

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	2/15/2000		5/22/2000		11/6/2000	
				Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	9.58	756.93	7.92	758.59	9.17	757.34
MW-2	763.00	762.56	759.6 - 754.6	6.04	756.52	4.24	758.32	5.44	757.12
MW-3	761.43	760.86	758.2 - 753.2	4.62	756.24	3.23	757.63	4.35	756.51
MW-4	761.70	760.99	759.2 - 754.2	3.78 (4)	757.21	2.52	758.47	3.38	757.61
P-1	768.91	768.38	762.4 - 757.4	DRY	DRY	9.27	759.11	10.57	757.81
P-2	766.95	766.35	759.4 - 754.4	8.94	757.41	7.54	758.81	8.35	758.00
P-2D	766.84	766.61	731.7 - 726.7	10.00	756.61	8.29	758.32	9.59	757.02
P-3	761.87	761.35	758.6 - 753.6	4.82	756.53	3.33	758.02	3.95	757.40
P-3D	762.58	762.16	727.6 - 722.6	NI	NI	3.49	758.67	---	---
P-3D (5)	761.81	761.39	727.6 - 722.6	---	---	---	---	4.52	756.87
P-4	761.95	761.51	758.7 - 753.7	4.42 (4)	757.09	3.30	758.21	4.45	757.06
MW101	771.74	771.41	759.6 - 754.6	13.80	757.61	12.24	759.17	13.16	758.25
MW101D	771.59	770.91	736.5 - 731.5	13.63	757.28	12.01	758.90	13.35	757.56
MW102	770.02	769.88	760.1 - 755.1	11.93	757.95	10.10	759.78	11.44	758.44
MW103	771.99	771.52	761.3 - 756.3	12.12	759.40	10.46	761.06	11.63	759.89
MW104	763.07	762.74	758.4 - 753.4	6.34	756.40	4.65	758.09	6.01	756.73
MW104D	762.92	762.66	732.8 - 727.8	6.18	756.48	4.46	758.20	5.80	756.86
MW105	770.61	770.31	760.1 - 755.1	12.42	757.89	10.62	759.69	11.92	758.39
MW105D	770.61	770.20	731.9 - 726.9	13.28	756.92	11.58	758.62	12.89	757.31
MW201	761.78	761.31	759.8 - 754.8	NI	NI	3.12	758.19	4.28	757.03
MW202D	771.89	771.53	716.1 - 711.1	NI	NI	13.07	758.46	14.35	757.18

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) Groundwater elevations for MW-4 and P-4 were gauged on February 22, 2000.
(5) Top of casing elevations for P3 and P3D were resurveyed as a result of landscaping surface modifications+A140.

KR059B030738

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	5/29/2001 Depth to Water from TOC (ft.)	5/29/2001 Static Groundwater Elevation (ft.)	12/10/2001 Depth to Water from TOC (ft.)	12/10/2001 Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	7.92	758.59	8.45	758.06
MW-2	763.00	762.56	759.6 - 754.6	4.00	758.56	4.69	757.87
MW-3	761.43	760.86	758.2 - 753.2	2.99	757.87	3.72	757.14
MW-4 (3)	763.08	762.42	759.2 - 754.2	3.64	758.78	4.50	757.92
P-1	768.91	768.38	762.4 - 757.4	9.38	759.00	9.82	758.56
P-2	766.95	766.35	759.4 - 754.4	7.61	758.74	8.09	758.26
P-2D	766.84	766.61	731.7 - 726.7	8.16	758.45	8.72	757.89
P-3	761.87	761.35	758.6 - 753.6	2.88	758.47	3.47	757.88
P-3D	761.81	761.39	727.6 - 722.6	3.06	758.33	3.66	757.73
P-4	761.95	761.51	758.7 - 753.7	2.93	758.58	3.94	757.57
MW101	771.74	771.41	759.6 - 754.6	12.26	759.15	12.60	758.81
MW101D	771.59	770.91	736.5 - 731.5	11.94	758.97	12.35	758.56
MW102	770.02	769.88	760.1 - 755.1	10.36	759.52	10.68	759.20
MW103	771.99	771.52	761.3 - 756.3	10.76	760.76	11.10	760.42
MW104	763.07	762.74	758.4 - 753.4	4.64	758.10	5.27	757.47
MW104D	762.92	762.66	732.8 - 727.8	4.34	758.32	4.94	757.72
MW105	770.61	770.31	760.1 - 755.1	10.84	759.47	11.17	759.14
MW105D	770.61	770.20	731.9 - 726.9	11.51	758.69	12.04	758.16
MW201	761.78	761.31	759.8 - 754.8	3.05	758.26	3.67	757.64
MW202D	771.89	771.53	716.1 - 711.1	12.96	758.57	13.50	758.03
MW301	762.93	762.54	757.4 - 752.4	4.02	758.52	4.63	757.91
MW302	761.48	761.07	757.4 - 752.4	3.48	757.59	4.14	756.93
MW302I	761.51	760.97	741.2 - 736.2	3.41	757.56	4.07	756.90
MW302D	761.49	761.19	705.9 - 700.9	2.95	758.24	3.56	757.63
MW303	761.25	760.78	758.2 - 753.2	3.18	757.60	3.79	756.99
MW304	761.96	761.54	756.4 - 751.4	4.00	757.54	4.67	756.87
MW304D	761.96	761.63	697.1 - 692.1	3.42	758.21	4.04	757.59
N. Side of Bridge / West Abutment	—	759.41	—	3.00	756.41	3.05	756.36

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) Top of casing and ground level elevations for MW-4 were resurveyed as a result of landscaping surface modifications.

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-1 7-12 2/8/99	MW-1 7-12 6/22/99	MW-1 7-12 2/15/00	MW-1 7-12 5/22/00	MW-1 7-12 11/7/00	MW-1 7-12 5/31/01	MW-1 7-12 12/12/01
Sample Location / Screen Depth (feet) / Date Collected									
BTEX									
Benzene	5	200	12	110	16	12	ND	ND	ND
Toluene	790	140	20	520	950	1,700	220	150	350
Ethylbenzene	74	18	910	280	900	1,400	1,300	1,700	3,500
Xylenes	280	75	1,740	920	1,540	2,600	4,100	1,650	2,100
PAHs									
Naphthalene	1,500	13	120	50	27	260	200	250	150
2-Methylnaphthalene	750	ID	21	7	ND	ND	ND	17	20
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND
INORGANICS									
Arsenic	50	150	ND	8	13	ND	6	7	11
Barium	2,000	1,200	ND	190	130	160	220	290	110
Chromium	100	11**	ND	ND	ND	ND	7	ND	6
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (ph Units)	NL	NL	NE	NE	7.26	7.1	--	7.11	7.31
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,920	1,960	3,590	1,482	1,208
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.65	0.35	0.38	0.4	0.3
Iron	300	NA	NE	NE	8,900	4,700	4,300	6,300	3,700
Nitrate	10,000	NA	NE	NE	ND	160	ND	270	ND
Sulfate	250,000	NA	NE	NE	33,000	110,000	61,000	73,000	33,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	470,000	420,000	400,000	470,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-2 3-8 2/8/99	MW-2 3-8 6/22/99	MW-2 3-8 2/15/00	MW-2 3-8 5/22/00	MW-2 3-8 11/6/00	MW-2 3-8 5/31/01	MW-2 3-8 12/11/01
BTEX									
Benzene	5	200	1	ND	ND	ND	ND	ND	ND
Toluene	790	140	4	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND	ND	ND	ND
Xylenes	280	35	7	ND	ND	ND	ND	ND	ND
PAHs									
Naphthalene	1,500	13	6	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND
INORGANICS									
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	1.6	ND	ND
Zinc	5,000	270	ND	ND	100	30	60	46	63
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	NE	5.5	6.59	6.50	6.43	6.19
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	3,050	860	2,110	1,267	939
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.84	0.51	0.40	0.52	0.37
Iron	300	NA	NE	NE	21,000	350	6,300	4,000	6,700
Nitrate	10,000	NA	NE	NE	140	1,100	600	850	100
Sulfate	250,000	NA	NE	NE	1,500,000	410,000	920,000	510,000	740,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	26,000	130,000	91,000	110,000	82,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-3 3-8 2/8/99	MW-3 3-8 6/22/99	MW-3 3-8 2/15/00	MW-3 3-8 5/24/00	MW-3 3-8 11/6/00	MW-3 3-8 5/30/01	MW-3 3-8 12/11/01
BTEX									
Benzene	5	200	3	ND	ND	ND	ND	280	ND
Toluene	790	140	1	ND	ND	ND	ND	13	ND
Ethylbenzene	743	18	1	ND	ND	ND	ND	330	ND
Xylenes	280	15	3	ND	ND	ND	ND	810	ND
PAHs									
Naphthalene	1,500	110	ND	ND	ND	ND	ND	61	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND
INORGANICS									
Arsenic	50	150	13	8	8	ND	7	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	13
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	NE	7.27	7.7	7.22	7.71	7.43
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,290	1,380	860	473	362
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.53	0.7	0.48	0.85	0.63
Iron	300	NA	NE	NE	110	ND	410	64	160
Nitrate	10,000	NA	NE	NE	ND	ND	ND	1,300	ND
Sulfate	250,000	NA	NE	NE	33,000	26,000	25,000	17,000	8,900
Alkalinity (as CaCO3)	NL	NL	NE	NE	260,000	230,000	290,000	190,000	210,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-4 3-8 2/8/99	MW-4 3-8 6/22/99	MW-4 3-8 2/22/00	MW-4 3-8 5/24/00	MW-4 3-8 11/6/00	MW-4 3-8 5/30/01	MW-4 3-8 12/11/01
Sample Location / Screen Depth (feet) / Date Collected									
BTEX									
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND
Xylenes	280	35	2	ND	ND	ND	ND	ND	ND
PAHs*									
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND
INORGANICS*									
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	ND	6	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	15	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	NE	NE	7.09	7.02	7.04	7.02
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	850	1,370	800	612
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.39	0.67	0.45	0.43
Iron	300	NA	NE	NE	8,700	5,900	8,900	20	7,600
Nitrate	10,000	NA	NE	NE	ND	230	ND	2,000	ND
Sulfate	250,000	NA	NE	NE	6,900	22,000	27,000	40,000	20,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	360,000	410,000	420,000	360,000	380,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-1 7-12 See (12)	P-1 7-12 6/22/99	P-1 7-12 2/16/00	P-1 7-12 5/22/00	P-1 7-12 11/6/00	P-1 7-12 See (13)	P-1 7-12 12/13/01
Sample Location / Screen Depth (feet) / Date Collected									
BTEX									
Benzene	5	200	ND	ND	NS	ND	NS	ND	ND
Toluene	790	140	ND	ND	NS	ND	NS	ND	ND
Ethylbenzene	74	18	ND	ND	NS	ND	NS	ND	ND
Xylenes	280	35	ND	ND	NS	ND	NS	ND	ND
PAHs *									
Naphthalene	1,500	13	ND	NE	NS	ND	NS	ND	ND
2-Methylnaphthalene	750	ID	ND	NE	NS	ND	NS	ND	ND
Acenaphthylene	150	ID	ND	NE	NS	ND	NS	ND	ND
Acenaphthene	3,800	19	ND	NE	NS	ND	NS	ND	ND
Fluorene	2,000	12	ND	NE	NS	ND	NS	ND	ND
Phenanthrene	150	5	ND	NE	NS	ND	NS	ND	ND
Anthracene	43	ID	ND	NE	NS	ND	NS	ND	ND
Fluoranthene	210	1.6	ND	NE	NS	ND	NS	ND	ND
Pyrene	140	ID	ND	NE	NS	ND	NS	ND	ND
INORGANICS *									
Arsenic	50	150	ND	NE	NS	ND	NS	ND	NE
Barium	2,000	1,200	ND	NE	NS	100	NS	140	NE
Chromium (Total)	100	11 **	ND	NE	NS	8	NS	6	NE
Selenium	50	5	6	NE	NS	ND	NS	ND	NE
Zinc	5,000	270	ND	NE	NS	ND	NS	ND	NE
Cyanide (available)	200	20	NE	NE	NS	ND	NS	ND	NE
Cyanide (amenable)	200	20	ND	NE	NS	NE	NS	NE	NE
Cyanide (free)	200	20	NE	NE	NS	ND	NS	ND	NE
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	NE	NS	NE	NS	NE	NE
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NS	NE	NS	NE	NE
Dissolved Oxygen (ppm)	NA	7	NE	NE	NS	NE	NS	NE	NE
Iron	300	NA	NE	NE	NS	380	NS	ND	NE
Nitrate	10,000	NA	NE	NE	NS	7,200	NS	5,400	NE
Sulfate	250,000	NA	NE	NE	NS	84,000	NS	57,000	NE
Alkalinity (as CaCO3)	NL	NL	NE	NE	NS	320,000	NS	300,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-2 8-13 2/8/99	P-2 8-13 6/23/99	P-2 8-13 2/16/00	P-2 8-13 5/23/00	P-2 8-13 11/8/00	P-2 8-13 6/4/01	P-2 8-13 12/12/01
BTEX									
Benzene	5	200	480	140	410	30	290	330	530
Toluene	790	140	280	160	86	40	54	83	160
Ethylbenzene	74	118	820	130	220	30	200	160	570
Xylenes	280	35	1,590	610	690	450	550	670	1,900
PAHs									
Naphthalene	1,500	13	2,900	1,200	410	ND	680	790	480
2-Methylnaphthalene	750	ID	59	15	21	ND	16	27	35
Acenaphthylene	150	ID	ND	8	5	ND	ND	ND	ND
Acenaphthene	3,800	19	65	38	30	13	58	71	34
Fluorene	2,000	12	37	23	16	6	32	40	17
Phenanthrene	150	5	46	24	5	ND	66	81	32
Anthracene	43	ID	ND	8	5	ND	8	11	6
Fluoranthene	210	1.6	ND	10	7	11	13	17	5
Pyrene	140	ID	ND	5	ND	10	15	10	5
INORGANICS									
Arsenic	50	150	8	8	9	8	13	11	5
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND
Cadmium	5	4.6	ND	ND	ND	ND	4.9	ND	ND
Chromium (Total)	100	11**	ND	ND	ND	5	13	ND	ND
Lead	4	29	ND	ND	ND	ND	9	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	31	ND	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	NE	7.09	7.61	--	6.98	7.15
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	920	1,570	1,660	628	747
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.82	0.43	0.91	0.85	0.43
Iron	300	NA	NE	NE	440	12,000	940	11,000	790
Nitrate	10,000	NA	NE	NE	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	NE	32,000	47,000	14,000	12,000	3,200
Alkalinity (as CaCO3)	NL	NL	NE	NE	530,000	360,000	550,000	340,000	450,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-2D 35-40 6/23/99	P-2D 35-40 2/16/00	P-2D 35-40 5/23/00	P-2D 35-40 11/8/00	P-2D 35-40 6/4/01	P-2D 35-40 12/12/01
Sample Location / Screen Depth (feet) / Date Collected								
BTEX								
Benzene	5	200	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND
PAHs								
Naphthalene	1,500	13	ND	ND	ND	6	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	5	ND	ND	ND	ND	ND
Anthracene	43	ID	6	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND
INORGANICS								
Arsenic	50	150	ND	8	5	6	9	7
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	21	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	7.34	7.02	–	7.01	7.36
Specific Conductivity (umhos/cm)	NL	NL	NE	990	1,170	2,100	858	928
Dissolved Oxygen (ppm)	NA	7	NE	3.04	2.64	1.62	2.01	0.56
Iron	300	NA	NE	1,400	3,100	3,200	3,400	3,000
Nitrate	10,000	NA	NE	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	86,000	93,000	110,000	100,000	110,000
Alkalinity (as CaCO3)	NL	NL	NE	300,000	300,000	310,000	300,000	300,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-3 3-8 2/8/99	P-3 3-8 6/22/99	P-3 3-8 2/15/00	P-3 3-8 5/22/00	P-3 3-8 11/6/00	P-3 3-8 5/30/01	P-3 3-8 12/11/01
Sample Location / Screen Depth (feet) / Date Collected									
BTEX									
Benzene	5	200	3	90	59	ND	25	ND	ND
Toluene	790	140	5	21	5	ND	2	ND	ND
Ethylbenzene	74	18	13	330	260	ND	67	ND	ND
Xylenes	280	35	31	298	129	ND	65	ND	ND
PAHs*									
Naphthalene	1,500	13	24	24	180	ND	71	ND	ND
2-Methylnaphthalene	750	ID	ND	5	10	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	5	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	9	14	ND	ND	ND	ND
Fluorene	2,000	12	ND	10	12	ND	ND	ND	ND
Phenanthrene	150	5	ND	16	6	ND	ND	ND	ND
Anthracene	43	ID	ND	5	6	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	5	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND
INORGANICS*									
Arsenic	50	150	ND	ND	6	ND	ND	ND	ND
Barium	2,000	1,200	ND	150	290	ND	190	200	130
Cadmium	5	4	ND	ND	ND	0.5	47	0.8	0.9
Chromium (total)	100	11**	ND	ND	ND	ND	12	ND	ND
Lead	4	29	ND	ND	ND	ND	4	ND	ND
Selenium	50	5	29	ND	ND	77	11	ND	7
Zinc	5,000	270	ND	ND	ND	190	260	300	180
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	29	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	NE	7.26	7.18	7.05	7.25	7.34
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	4,320	1,790	4,770	1,692	1,568
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.95	0.61	1.98	1.1	0.57
Iron	300	NA	NE	NE	9,400	210	1,000	300	300
Nitrate	10,000	NA	NE	NE	ND	3,200	600	500	270
Sulfate	250,000	NA	NE	NE	35,000	76,000	80,000	130,000	320,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	400,000	440,000	310,000	270,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-3D 35-40 5/22/00	P-3D 35-40 11/6/00	P-3D 35-40 5/31/01	P-3D 35-40 12/11/01
BTEX						
Benzene	15	200	110	110	180	100
Toluene	790	140	2	2	2	ND
Ethylbenzene	74	18	1	2	2	ND
Xylenes	280	35	10	9	7	ND
PAHs						
Naphthalene	1,500	13	22	28	28	6
2-Methylnaphthalene	750	ID	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS						
Arsenic	50	150	27	30	35	31
Barium	2,000	1,200	190	200	200	200
Mercury	2	0.013	ND	ND	ND	0.2
Selenium	50	5	ND	ND	ND	ND
Zinc	5,000	270	30	ND	ND	10
Cyanide (available)	200	20	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	8.26	7.36	7.34	7.39
Specific Conductivity (umhos/cm)	NL	NL	1,630	1,740	1,021	850
Dissolved Oxygen (ppm)	NA	7	1.5	0.40	0.73	0.42
Iron	300	NA	6,000	6,300	6,100	5,600
Nitrate	10,000	NA	ND	ND	ND	ND
Sulfate	250,000	NA	ND	ND	ND	ND
Alkalinity (as CaCO3)	NL	NL	320,000	320,000	330,000	350,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-4 3-8 2/8/99	P-4 3-8 6/22/99	P-4 3-8 2/22/00	P-4 3-8 5/24/00	P-4 3-8 11/6/00	P-4 3-8 5/30/01	P-4 3-8 12/11/01
BTEX									
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	1	ND	ND	ND	ND
Xylenes	280	35	ND	ND	7	ND	ND	ND	ND
PAHs *									
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND
INORGANICS *									
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	ND	9	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	NE	NE	7.59	7.11	7.09	6.93
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	1,770	1,990	1,619	1,065
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.15	0.28	0.45	0.53
Iron	300	NA	NE	NE	4,800	ND	3,600	24	ND
Nitrate	10,000	NA	NE	NE	240	430	ND	490	280
Sulfate	250,000	NA	NE	NE	21,000	37,000	22,000	58,000	16,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	340,000	390,000	440,000	350,000	350,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW101 12-17 6/23/99	MW101 12-17 2/16/00	MW101 12-17 5/23/00	MW101 12-17 11/7/00	MW101 12-17 5/31/01	MW101 12-17 12/13/01
BTEX								
Benzene	5	200	62	180	39	110	620	ND
Toluene	790	140	4,100	6,400	4,300	9,900	5,700	2,200
Ethylbenzene	74	18	760	1,400	590	1,600	2,700	1,100
Xylenes	280	35	5,600	8,000	6,600	18,000	20,700	2,600
PAHs								
Naphthalene	1,500	13	2,800	1,100	680	3,100	2,700	770
2-Methylnaphthalene	750	ID	55	31	35	150	110	39
Acenaphthylene	150	ID	75	33	ND	88	30	20
Acenaphthene	3,800	19	ND	6	21	ND	51	ND
Fluorene	2,000	12	25	11	ND	ND	ND	ND
Phenanthrene	150	5	24	7	ND	ND	ND	ND
Anthracene	43	ID	ND	7	ND	ND	ND	ND
Fluoranthene	210	16	ND	ND	ND	ND	11	ND
Pyrene	140	ID	ND	ND	ND	ND	17	ND
INORGANICS								
Arsenic	50	150	7	9	6	6	5	5
Barium	2,000	1,200	760	230	230	190	230	190
Cadmium	5	4	ND	ND	0.5	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	7	ND	ND
Selenium	50	5	ND	ND	15	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	7.34	7.44	–	7.28	7.32
Specific Conductivity (umhos/cm)	NL	NL	NE	1,420	3,040	2,350	2,890	1,483
Dissolved Oxygen (ppm)	NCA	7	NE	0.58	0.62	0.42	0.36	0.33
Iron	300	NA	NE	5,500	1,700	1,700	1,400	2,100
Nitrate	10,000	NA	NE	310	4,500	710	970	900
Sulfate	250,000	NA	NE	63,000	70,000	44,000	96,000	44,000
Alkalinity (as CaCO3)	NL	NL	NE	470,000	490,000	490,000	380,000	460,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW101D 35-40 6/23/99	MW101D 35-40 2/16/00	MW101D 35-40 5/23/00	MW101D 35-40 11/7/00	MW101D 35-40 6/1/01	MW101D 35-40 12/13/01
Sample Location / Screen Depth (feet) / Date Collected								
BTEX								
Benzene	5	200	2	ND	ND	ND	ND	ND
Toluene	790	140	12	5	ND	15	ND	ND
Ethylbenzene	74	18	170	1,450	390	410	590	600
Xylenes	280	35	872	4,480	5,200	4,700	6,800	5,000
PAHs								
Naphthalene	1,500	13	3,100	4,500	4,600	5,100	9,800	6,800
2-Methylnaphthalene	750	ID	210	120	400	530	710	380
Acenaphthylene	150	ID	190	150	250	370	400	120
Acenaphthene	3,800	19	65	5	ND	ND	ND	ND
Fluorene	2,000	12	25	25	79	52	ND	ND
Phenanthrene	150	5	ND	5	ND	ND	ND	ND
Anthracene	43	ID	ND	5	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND
INORGANICS								
Arsenic	50	150	16	23	23	23	27	25
Barium	2,000	1,200	420	450	430	390	330	280
Selenium	50	5	ND	ND	ND	ND	ND	ND
Silver	98	02	ND	ND	ND	1.4	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	7.34	8.04	--	7.42	7.40
Specific Conductivity (umhos/cm)	NL	NL	NE	1,970	2,510	3,090	1,217	1,256
Dissolved Oxygen (ppm)	NA	7	NE	2.59	1.27	0.65	0.68	0.31
Iron	300	NA	NE	3,300	3,000	2,300	2,000	1,800
Nitrate	10,000	NA	NE	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	15,000	15,000	15,000	11,000	18,000
Alkalinity (as CaCO3)	NL	NL	NE	330,000	410,000	340,000	360,000	350,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW102 10-15 6/22/99	MW102 10-15 2/16/00	MW102 10-15 5/22/00	MW102 10-15 11/7/00	MW102 10-15 6/4/01	MW102 10-15 12/13/01
Sample Location / Screen Depth (feet) / Date Collected								
BTEX								
Benzene	5	200	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND
PAHs *								
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	9	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND
INORGANICS *								
Arsenic	50	150	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	5	ND	ND
Selenium	50	5	ND	6	ND	9	ND	8
Zinc	5,000	270	ND	250	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	7.46	7.76	7.10	7.11	7.32
Specific Conductivity (umhos/cm)	NL	NL	NE	590	1,590	1,090	649	555
Dissolved Oxygen (ppm)	NA	7	NE	3.67	7.55	3.97	4.4	1.33
Iron	300	NA	NE	ND	ND	ND	ND	ND
Nitrate	10,000	NA	NE	3,100	1,300	2,100	950	1,100
Sulfate	250,000	NA	NE	54,000	38,000	68,000	60,000	48,000
Alkalinity (as CaCO3)	NL	NL	NE	240,000	280,000	290,000	330,000	320,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW103 11-16 6/22/99	MW103 11-16 2/16/00	MW103 11-16 5/22/00	MW103 11-16 11/7/00	MW103 11-16 5/31/01	MW103 11-16 12/13/01
Sample Location / Screen Depth (feet) / Date Collected								
BTEX								
Benzene	5	200	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	2	ND	ND	ND	ND	ND
Xylenes	280	35	2	ND	ND	ND	ND	ND
PAHs*								
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND
INORGANICS*								
Arsenic	50	150	ND	5	11	14	ND	11
Barium	2,000	1,200	ND	ND	160	ND	480	ND
Chromium (total)	100	11**	ND	ND	ND	9	ND	7
Selenium	50	5	ND	ND	36	ND	ND	ND
Silver	98	102	ND	ND	ND	ND	0.6	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	7.84	8.65	7.64	7.37	7.79
Specific Conductivity (umhos/cm)	NL	NL	NE	2,370	6,370	2,390	4,680	1,608
Dissolved Oxygen (ppm)	NA	7	NE	1.38	1.5	1.85	1.9	1.12
Iron	300	NA	NE	ND	370	ND	100	ND
Nitrate	10,000	NA	NE	410	2,500	1,400	3,300	720
Sulfate	250,000	NA	NE	19,000	58,000	27,000	150,000	15,000
Alkalinity (as CaCO3)	NL	NL	NE	430,000	410,000	490,000	230,000	480,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW104 5-10 6/23/99	MW104 5-10 2/15/00	MW104 5-10 5/24/00	MW104 5-10 11/6/00	MW104 5-10 5/31/01	MW104 5-10 12/11/01
Sample Location / Screen Depth (feet) / Date Collected								
BTEX								
Benzene	5	200	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND
PAHs*								
Naphthalene	1,500	13	ND	ND	ND	10	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND
INORGANICS*								
Arsenic	50	150	5	ND	ND	ND	ND	ND
Barium	2,000	1,200	340	190	420	220	310	140
Cadmium	5	4	ND	ND	0.8	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	10.0	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	240	400	210	150	64
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	7.37	6.88	7.42	7.20	7.29
Specific Conductivity (umhos/cm)	NL	NL	NE	3,570	4,600	4,180	2,580	1,373
Dissolved Oxygen (ppm)	NA	7	NE	0.49	0.54	0.39	0.39	0.43
Iron	300	NA	NE	5,700	4,700	5,000	6,200	5,200
Nitrate	10,000	NA	NE	340	220	ND	ND	ND
Sulfate	250,000	NA	NE	18,000	43,000	16,000	45,000	29,000
Alkalinity (as CaCO3)	NL	NL	NE	490,000	440,000	590,000	380,000	450,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW104D 30-35 6/23/99	MW104D 30-35 2/15/00	MW104D 30-35 5/24/00	MW104D 30-35 11/6/00	MW104D 30-35 5/31/01	MW104D 30-35 12/12/01
BTEX								
Benzene	5	200	ND	ND	ND	ND	ND	ND
Toluene	790	140	1	ND	ND	ND	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND
PAHs								
Naphthalene	1,500	ID	16	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND
INORGANICS								
Arsenic	50	150	16	28	27	25	25	22
Barium	2,000	1,200	230	260	250	270	240	230
Chromium (total)	100	11**	ND	ND	ND	5	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	28	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	7.34	7.44	7.52	7.34	7.34
Specific Conductivity (umhos/cm)	NL	NL	NE	1,540	1,090	1,660	742	721
Dissolved Oxygen (ppm)	NA	7	NE	3.5	2.42	1.18	1.52	0.46
Iron	300	NA	NE	5,800	5,700	5,900	5,500	5,200
Nitrate	10,000	NA	NE	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	77,000	71,000	76,000	71,000	70,000
Alkalinity (as CaCO3)	NL	NL	NE	280,000	320,000	320,000	310,000	320,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW105 11-16 6/24/99	MW105 11-16 2/16/00	MW105 11-16 5/22/00	MW105 11-16 11/7/00	MW105 11-16 6/1/01	MW105 11-16 12/14/01
Sample Location Screen Depth (feet) Date Collected								
BTEX								
Benzene	5	200	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND
PAHs								
Naphthalene	1,500	13	6	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND
INORGANICS								
Arsenic	50	150	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	7	ND	5
Selenium	50	5	ND	ND	ND	8	ND	9
Silver	98	0.2	ND	ND	ND	1.4	ND	ND
Zinc	5,000	270	ND	ND	160	ND	ND	10
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	7.50	8.43	7.24	7.48	7.44
Specific Conductivity (umhos/cm)	NL	NL	NE	730	1,690	1,460	878	662
Dissolved Oxygen (ppm)	NA	7	NE	2.76	5.84	2.10	3.25	1.07
Iron	300	NA	NE	ND	150	ND	ND	ND
Nitrate	10,000	NA	NE	5,300	1,400	2,900	1,100	940
Sulfate	250,000	NA	NE	90,000	51,000	80,000	50,000	50,000
Alkalinity (as CaCO3)	NL	NL	NE	270,000	370,000	350,000	410,000	420,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	Sample Location / Screen Depth (feet) / Date Collected / GSI Criteria	MW105D 39-44 6/24/99	MW105D 39-44 2/16/00	MW105D 39-44 5/22/00	MW105D 39-44 11/7/00	MW105D 39-44 6/1/01	MW105D 39-44 12/14/01
BTEX								
Benzene	5	200	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND
Xylenes	280	35	2	ND	ND	ND	ND	ND
PAHs*								
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND
INORGANICS*								
Arsenic	50	150	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	150	150	150	180	160	150
Selenium	50	5	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	210	200	230	180
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	7.37	8.15	7.15	7.45	7.34
Specific Conductivity (umhos/cm)	NL	NL	NE	1,030	1,920	1,830	878	871
Dissolved Oxygen (ppm)	NA	7	NE	2.21	2.46	1.72	2.25	0.36
Iron	300	NA	NE	ND	540	200	52	ND
Nitrate	10,000	NA	NE	540	640	400	730	770
Sulfate	250,000	NA	NE	73,000	76,000	86,000	76,000	74,000
Alkalinity (as CaCO3)	NL	NL	NE	300,000	380,000	300,000	300,000	310,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW201 3-8 5/23/00	MW201 3-8 11/6/2000	MW201 3-8 5/29/01	MW201 3-8 12/10/01
		Sample Location Screen Depth (feet) Date Collected				
BTEX						
Benzene	5	200	150	20	ND	170
Toluene	790	140	5	ND	ND	ND
Ethylbenzene	74	18	180	16	ND	40
Xylenes	280	35	130	11	ND	50
PAHs *						
Naphthalene	1,500	13	760	950	ND	ND
2-Methylnaphthalene	750	ID	10	27	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	11	30	ND	ND
Fluorene	2,000	12	ND	8	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS *						
Arsenic	50	150	ND	ND	8	8
Barium	2,000	1,200	200	190	120	140
Chromium (total)	100	11**	ND	8	ND	ND
Selenium	50	5	ND	ND	ND	ND
Silver	98	0.2	ND	9.9	ND	ND
Zinc	5,000	270	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	6.59	7.07	7.17	7.10
Specific Conductivity (umhos/cm)	NL	NL	1,970	2,480	1,164	1,368
Dissolved Oxygen (ppm)	NA	7	0.35	0.34	0.41	0.38
Iron	300	NA	4,600	6,200	4,700	10,000
Nitrate	10,000	NA	ND	ND	100	ND
Sulfate	250,000	NA	34,000	ND	21,000	3,000
Alkalinity (as CaCO3)	NL	NL	490,000	450,000	440,000	500,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW202D 55-60 5/23/2000	MW202D 55-60 11/7/2000	MW202D 55-60 6/1/01	MW202D 55-60 12/13/01
Sample Location Screen Depth (feet) Date Collected						
BTEX						
Benzene	5	200	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND
Xylenes	280	35	5	8	ND	ND
PAHs						
Naphthalene	1,500	13	35	68	37	17
2-Methylnaphthalene	750	ID	ND	6	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS						
Arsenic	50	150	ND	ND	ND	ND
Barium	2,000	1,200	170	180	170	160
Selenium	50	5	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	7.53	--	7.17	7.38
Specific Conductivity (umhos/cm)	NL	NL	1,720	1,770	877	843
Dissolved Oxygen (ppm)	NA	7	1.48	0.55	1.02	0.29
Iron	300	NA	310	170	39	ND
Nitrate	10,000	NA	560	300	540	330
Sulfate	250,000	NA	66,000	68,000	67,000	68,000
Alkalinity (as CaCO3)	NL	NL	310,000	330,000	300,000	300,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW301 5-10 6/1/01	MW301 5-10 12/12/01
Constituent	Commercial II Drinking Water Criteria	GSI Criteria		
BTEX				
Benzene	15	200	3,900	3,400
Toluene	790	140	30	ND
Ethylbenzene	74	185	1,100	1,300
Xylenes	280	35	9,200	1,500
PAHs				
Naphthalene	1,500	13	3,300	6,000
2-Methylnaphthalene	750	ID	290	250
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	19	37	60
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
INORGANICS				
Arsenic	50	150	51	51
Barium	2,000	1,200	160	160
Chromium (total)	100	11**	ND	5
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
NATURAL ATTENUATION PARAMETERS				
pH (pH units)	NL	NL	6.93	7.09
Specific Conductivity (umhos/cm)	NL	NL	968	852
Dissolved Oxygen (ppm)	NA	7	0.74	0.39
Iron	300	NA	14,000	15,000
Nitrate	10,000	NA	ND	ND
Sulfate	250,000	NA	ND	ND
Alkalinity (as CaCO3)	NL	NL	400,000	410,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW302 4-9 5/29/01	MW302 4-9 12/10/01
		Sample Location Screen Depth (feet) Date Collected		
BTEX				
Benzene	5	200	ND	ND
Toluene	790	140	ND	ND
Ethylbenzene	74	18	ND	ND
Xylenes	280	35	ND	ND
PAHs *				
Naphthalene	1,500	13	ND	6
2-Methylnaphthalene	750	ID	ND	ND
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	19	ND	ND
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
INORGANICS *				
Arsenic	50	150	9	8
Barium	2,000	1,200	ND	ND
Chromium (total)	100	11**	ND	ND
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
NATURAL ATTENUATION PARAMETERS				
pH (pH units)	NL	NL	7.33	7.11
Specific Conductivity (umhos/cm)	NL	NL	750	526
Dissolved Oxygen (ppm)	NA	7	0.55	0.45
Iron	300	NA	7,500	5,500
Nitrate	10,000	NA	ND	ND
Sulfate	250,000	NA	20,000	5,400
Alkalinity (as CaCO3)	NL	NL	230,000	330,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW302I 20-25 5/29/01	MW302I 20-25 12/10/01
		Sample Location Screen Depth (feet) Date Collected		
BTEX				
Benzene	5	200	ND	110
Toluene	790	140	ND	ND
Ethylbenzene	74	18	ND	ND
Xylenes	280	35	ND	ND
PAHs				
Naphthalene	1,500	13	ND	ND
2-Methylnaphthalene	750	ID	ND	ND
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	19	ND	ND
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
INORGANICS				
Arsenic	50	150	15	20
Barium	2,000	1,200	890	1,200
Chromium (total)	100	11**	ND	ND
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
NATURAL ATTENUATION PARAMETERS				
pH (pH units)	NL	NL	7.33	7.11
Specific Conductivity (umhos/cm)	NL	NL	2,550	2,960
Dissolved Oxygen (ppm)	NA	7	0.52	0.45
Iron	300	NA	20,000	18,000
Nitrate	10,000	NA	ND	ND
Sulfate	250,000	NA	32,000	25,000
Alkalinity (as CaCO3)	NL	NL	330,000	420,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW302D 55-60 5/29/01	MW302D 55-60 12/11/01
		Sample Location Screen Depth (feet) Date Collected		
BTEX				
Benzene	5	200	ND	ND
Toluene	790	140	ND	ND
Ethylbenzene	74	18	ND	ND
Xylenes	280	35	ND	ND
PAHs				
Naphthalene	1,500	13	ND	ND
2-Methylnaphthalene	750	ID	ND	ND
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	19	ND	ND
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
INORGANICS *				
Arsenic	50	150	29	26
Barium	2,000	1,200	200	180
Chromium (total)	100	11**	ND	ND
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
NATURAL ATTENUATION PARAMETERS				
pH (pH units)	NL	NL	7.5	7.34
Specific Conductivity (umhos/cm)	NL	NL	953	816
Dissolved Oxygen (ppm)	NA	7	0.76	0.56
Iron	300	NA	3,100	2,800
Nitrate	10,000	NA	ND	ND
Sulfate	250,000	NA	6,400	23,000
Alkalinity (as CaCO3)	NL	NL	330,000	330,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW303 3-8 5/29/01	MW303 3-8 12/10/01
		Sample Location Screen Depth (feet) Date Collected		
BTEX				
Benzene	5	200	290	ND
Toluene	790	140	10	ND
Ethylbenzene	74	18	19	ND
Xylenes	280	36	47	ND
PAHs *				
Naphthalene	1,500	13	392	5
2-Methylnaphthalene	750	ID	ND	ND
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	19	ND	ND
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
INORGANICS *				
Arsenic	50	150	ND	ND
Barium	2,000	1,200	370	150
Chromium (total)	100	11**	ND	8
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	20
Cyanide (free)	200	20	ND	10
NATURAL ATTENUATION PARAMETERS				
pH (pH units)	NL	NL	6.94	6.9
Specific Conductivity (umhos/cm)	NL	NL	1,702	1,236
Dissolved Oxygen (ppm)	NA	7	0.67	0.85
Iron	300	NA	8,200	7,200
Nitrate	10,000	NA	ND	ND
Sulfate	250,000	NA	130,000	3,600
Alkalinity (as CaCO3)	NL	NL	680,000	720,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW304 5-10 5/30/01	MW304 5-10 12/10/01
		Sample Location Screen Depth (feet) Date Collected		
BTEX				
Benzene	5	200	130	260
Toluene	790	140	7	5
Ethylbenzene	74	18	320	150
Xylenes	280	35	610	210
PAHs*				
Naphthalene	1,500	13	90	20
2-Methylnaphthalene	750	ID	ND	ND
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	19	ND	ND
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
INORGANICS*				
Arsenic	50	150	36	28
Barium	2,000	1,200	220	180
Chromium (total)	100	11**	ND	ND
Lead	4	29	4.0	4.0
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
NATURAL ATTENUATION PARAMETERS				
pH (pH units)	NL	NL	7.06	6.95
Specific Conductivity (umhos/cm)	NL	NL	1,079	1,595
Dissolved Oxygen (ppm)	NA	7	0.44	0.8
Iron	300	NA	27,000	18,000
Nitrate	10,000	NA	ND	ND
Sulfate	250,000	NA	3,200	ND
Alkalinity (as CaCO3)	NL	NL	380,000	390,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW304D 65-70 5/30/01	MW304D 65-70 12/10/01
Constituent	Commercial II Drinking Water Criteria	GSI Criteria		
BTEX				
Benzene	5	200	ND	ND
Toluene	790	140	ND	ND
Ethylbenzene	74	18	ND	ND
Xylenes	280	35	ND	ND
PAHs				
Naphthalene	1,500	13	ND	ND
2-Methylnaphthalene	750	ID	ND	ND
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	19	ND	ND
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
INORGANICS				
Arsenic	50	150	23	22
Barium	2,000	1,200	270	270
Chromium (total)	100	11**	ND	ND
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
NATURAL ATTENUATION PARAMETERS				
pH (pH units)	NL	NL	7.4	7.37
Specific Conductivity (umhos/cm)	NL	NL	896	896
Dissolved Oxygen (ppm)	NA	7	0.58	0.7
Iron	300	NA	5,600	5,600
Nitrate	10,000	NA	ND	ND
Sulfate	250,000	NA	68,000	69,000
Alkalinity (as CaCO3)	NL	NL	290,000	300,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb) unless otherwise noted.
(2) ND= Analytical result was less than target detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) NL = Not listed under Part 201 Generic Commercial II Cleanup Criteria dated June, 2000.
(6) NE = Chemical not evaluated by analytical laboratory.
(7) NS = Monitoring well not sampled.
(8) * = Constituents listed for PAHs and metals are limited to those constituents that indicated detectable concentrations for at least one sample.
(9) ** = GSI Criteria for Hexavalent Chromium.
(10) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(11) The above data was compared to criteria for volatilization to indoor air, groundwater contact, water solubility, flammability/explosivity and acute inhalation and the data did not exceed these criteria.
(12) Groundwater samples were collected on different dates due to insufficient recharge. BTEX and cyanide = 2/25/99. PAHs = 2/27/99. Metals = 3/1/99
(13) Groundwater samples were collected on different dates due to insufficient recharge. BTEX, PAHs and metals = 6/1/01. Other inorganics = 6/4/01

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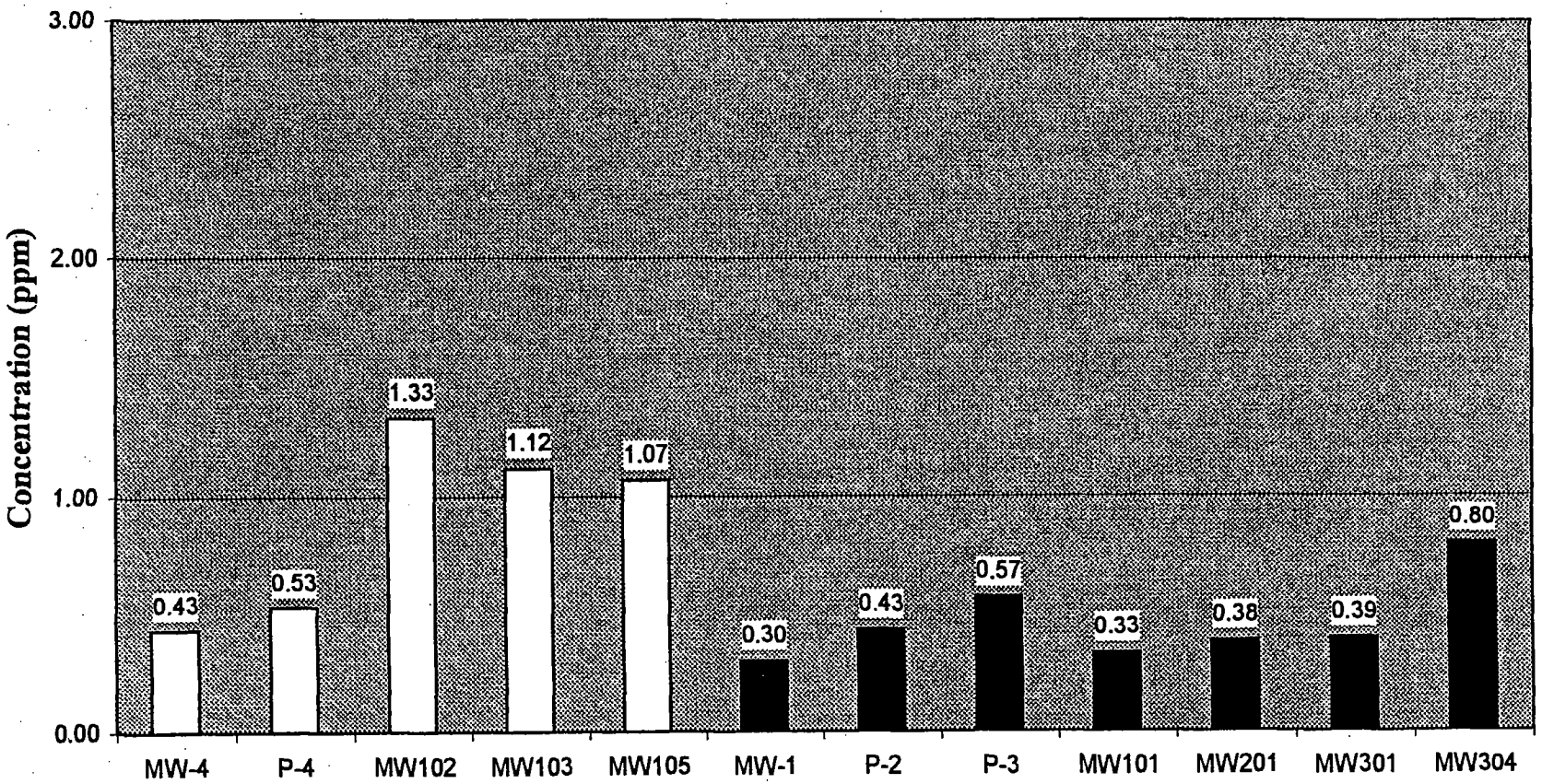
ATTACHMENT C

CHARTS

Chart No. 1 – Dissolved Oxygen: Non-Impacted Wells vs. Impacted Wells
Chart No. 2 - Alkalinity: Non-Impacted Wells vs. Impacted Wells
Chart No. 3 - Nitrate: Non-Impacted Wells vs. Impacted Wells
Chart No. 4 – Dissolved Iron: Non-Impacted Wells vs. Impacted Wells
Chart No. 5 - Sulfate: Non-Impacted Wells vs. Impacted Wells

DISSOLVED OXYGEN
Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

Impacted Wells = MW-1, P-2, P-3, MW101, MW201, MW301 and MW304

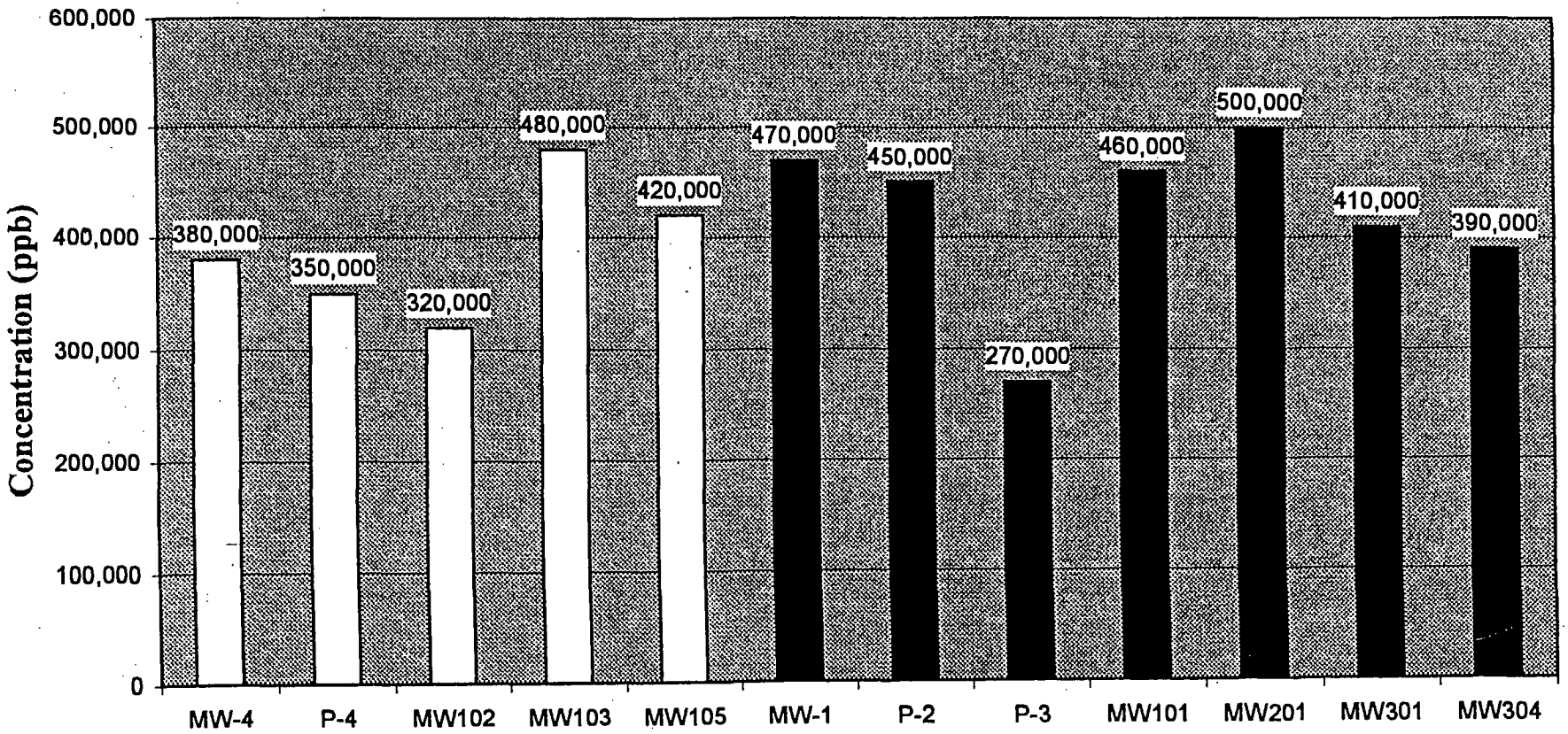
KR059B030770

DISSOLVED OXYGEN DECEMBER 2001 KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 2-26-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 1

ALKALINITY

Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

KR059B030771

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

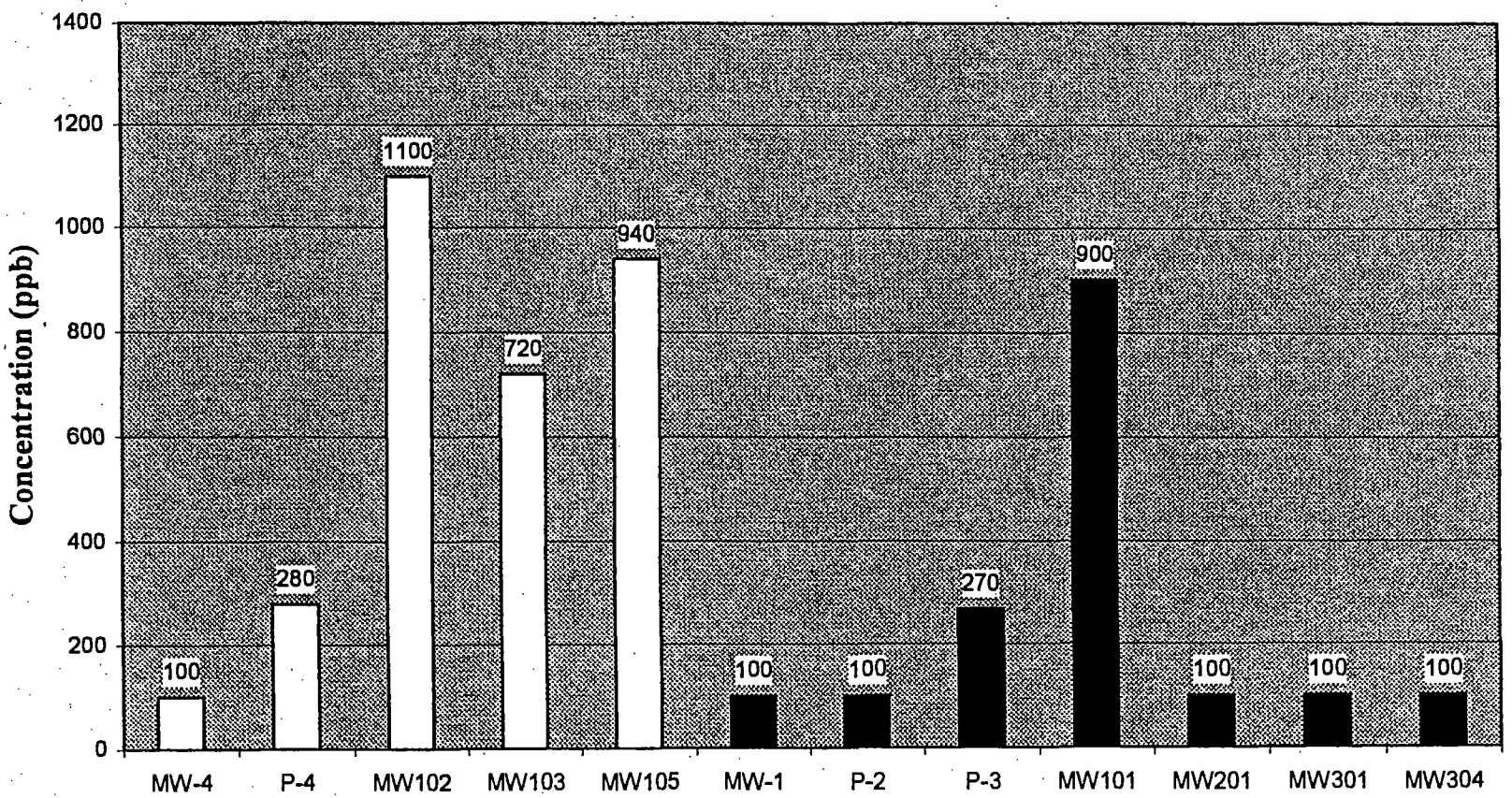
Impacted Wells = MW-1, P-2, P-3, MW101, MW201, MW301 and MW304

ALKALINITY DECEMBER 2001 KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 2-26-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 2

NITRATE

Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

Impacted Wells = MW-1, P-2, P-3, MW101, MW201, MW301 and MW304

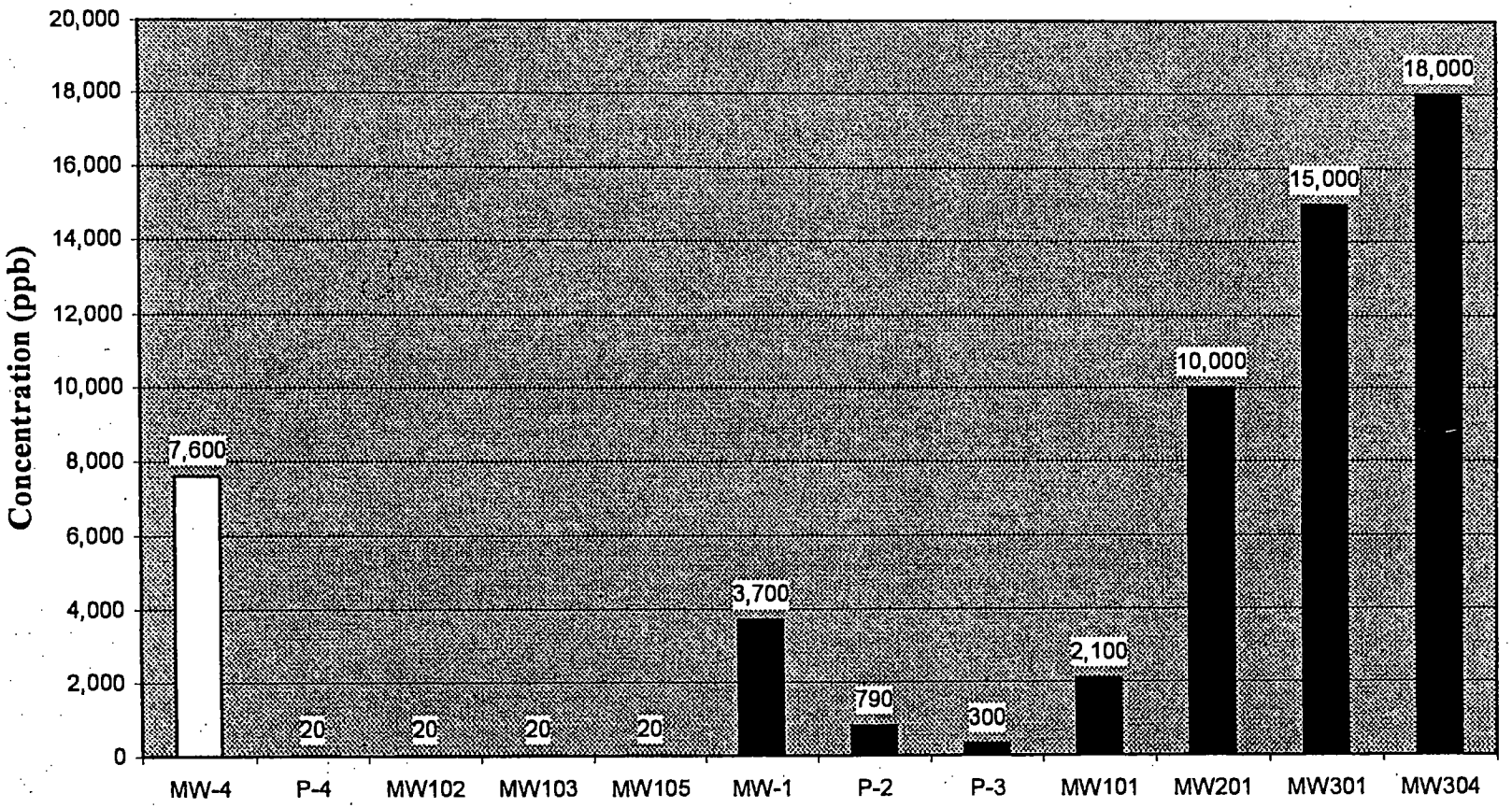
KR059B030772

NITRATE DECEMBER 2001 KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 2-26-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 3

DISSOLVED IRON

Non-Impacted Wells vs. Impacted Wells



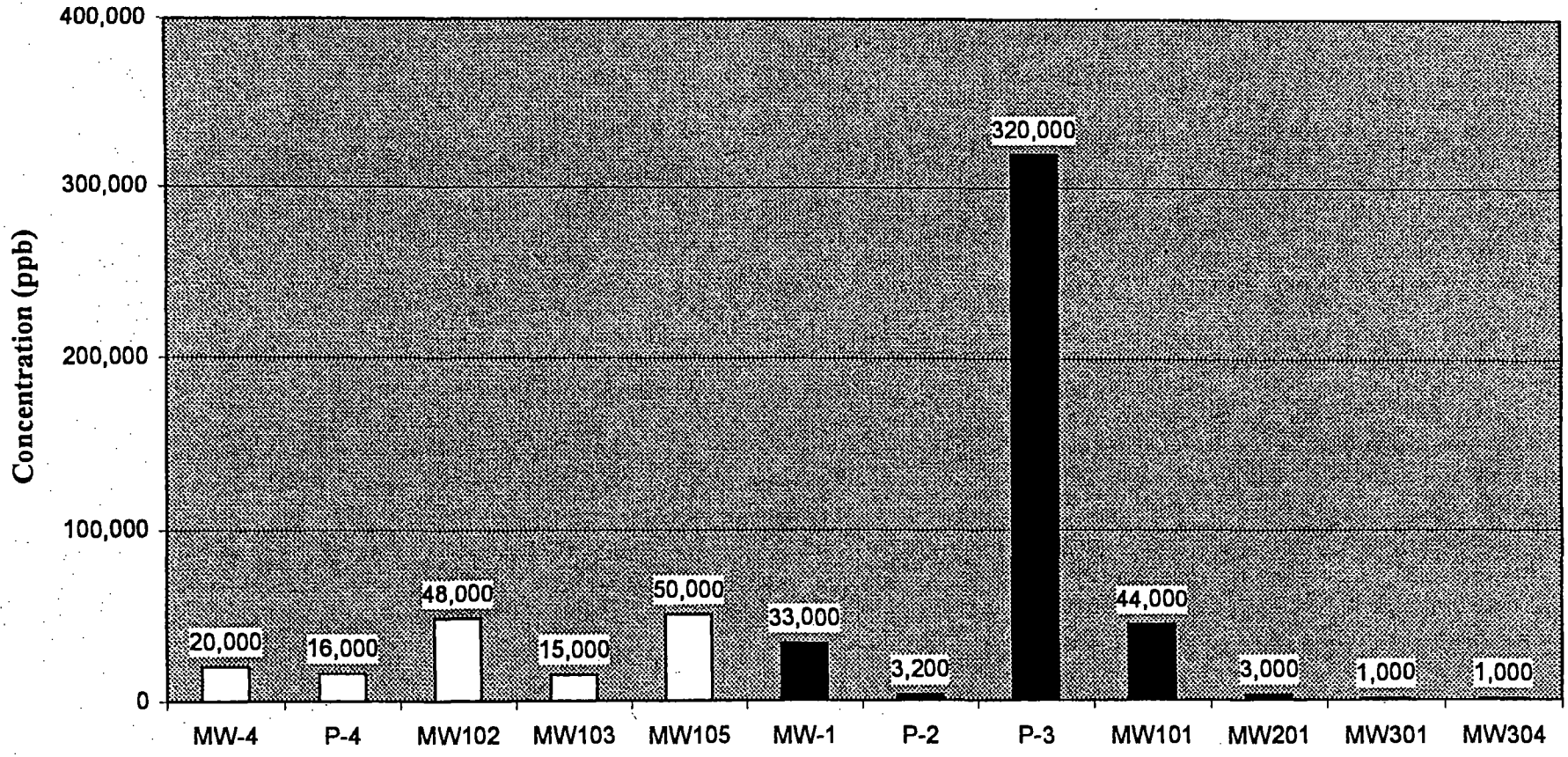
Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

Impacted Wells = MW-1, P-2, P-3, MW101, MW201, MW301 and MW304

DISSOLVED IRON DECEMBER 2001 KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 2-26-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 4

SULFATE
Non-Impacted Wells vs. Impacted Wells



KR059B030774

Monitoring Well ID

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

Impacted Wells = MW-1, P-2, P-3, MW101, MW201, MW301 and MW304

SULFATE DECEMBER 2001 KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 2-26-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 530

ATTACHMENT D
ANALYTICAL REPORT

KR059B030775

REC'D JAN 31 2002

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-251, Jackson

Date: January 30, 2002

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823B
- Sampling Dates of December 10 - 14, 2001

File Index: 530117-410-174
530117-410-198

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On December 12 & 14, 2001 the Chemistry Section (CHEM) of Laboratory Services received groundwater samples collected at the KALAMAZOO FORMER MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Dissolved Michigan 10 Metals
Available (OIA) and Free Cyanide
Dissolved Iron
Nitrate
Sulfate
Alkalinity

Analytical Notes: (1) Sulfate and dissolved metal determinations were performed by Brighton Analytical. All other determinations were performed by CHEM. (2) PAH and/or BTEX TDLs for samples P-2, MW-301, MW-1, Duplicate 2, MW-101D, and MW-101 were raised due to sample dilution.

Analytical results are attached for your review.

KR059B030776

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 or parameter specific recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Aromatic Volatile Organics (BTEX) - Method 8260, Volatile Organic Compounds By Gas Chromatography / Mass Spectrometry: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Free - Method ASTM-D4282-95, Determination Of Free Cyanide In Water And Wastewater By Micro-diffusion, ASTM.

Cyanide, Available - Method OIA-1677, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry. EPA-821-R-99-013.

Dissolved Metals Preparation – Waters (Mercury) – Method 7470, Mercury in Liquid Waste. SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	SW846 Method
Arsenic	6020
Barium	6020
Cadmium	6020
Chromium	6020
Copper	6020
Iron	6020
Lead	6020
Mercury	7470
Selenium	6020
Silver	6020
Zinc	6020

Inorganic Analytes

Analyte	Test Method
Nitrate	353.2
Sulfate	375.2; 300.0
Alkalinity	310.1

Methods For Chemical Analysis of Water and Wastes, USEPA, EMSL.

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-304
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-14-01
Control Number	012174-01

BTEX, Method 8260	ug/L	TDL
Benzene	260	1
Toluene	5	1
Ethylbenzene	150	1
m/p-Xylene	160	1
o-Xylene	50	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	98	88-110
4-Bromofluorobenzene	101	86-115

Sample Identification	MW-304
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-17-01
Analysis Date	01-03-02
Control Number	012174-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	20	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	101	33-141

KR059B030778

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-304	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-304D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-14-01
Control Number	012174-02

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	101	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-304D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-17-01
Analysis Date	01-03-02
Control Number	012174-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	89	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	98	33-141

KR059B030779

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-304D	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-303
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-14-01
Control Number	012174-03

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-303
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-17-01
Analysis Date	01-03-02
Control Number	012174-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	5	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	97	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	101	33-141

KR059B030780

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01/30/02

Data File	Kalamazoo
MW-303	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-302
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-14-01
Control Number	012174-04

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	102	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-302
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-17-01
Analysis Date	01-03-02
Control Number	012174-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	6	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	101	43-116
p-Terphenyl-d14	104	33-141

KR059B030781

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-302	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-302I
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-14-01
Control Number	012174-05

BTEX, Method 8260	ug/L	TDL
Benzene	110	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-302I
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-17-01
Analysis Date	01-03-02
Control Number	012174-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	102	33-141

KR059B030782

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-302I	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-201	Sample Identification	MW-201
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-10-01	Sample Date	12-10-01
Received Date	12-12-01	Received Date	12-12-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	12-17-01
Preservation Type	HCl	Analysis Date	01-03-02
Analysis Date	12-14-01		
Control Number	012174-06	Control Number	012174-06

BTEX, Method 8260	ug/L	TDL
Benzene	170	1
Toluene	nd	1
Ethylbenzene	40	1
m/p-Xylene	33	1
o-Xylene	17	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	99	76-114
Toluene-d8	99	88-110
4-Bromofluorobenzene	101	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	96	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	101	33-141

KR059B030783

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-201	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	Duplicate #1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-14-01
Control Number	012174-07

BTEX, Method 8260	ug/L	TDL
Benzene	150	1
Toluene	nd	1
Ethylbenzene	42	1
m/p-Xylene	29	1
o-Xylene	17	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	101	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	Duplicate #1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-17-01
Analysis Date	01-03-02
Control Number	012174-07

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	97	35-114
2-Fluorobiphenyl	101	43-116
p-Terphenyl-d14	102	33-141

KR059B030784

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
Duplicate #1	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-302D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-14-01
Control Number	012174-08

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-302D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-17-01
Analysis Date	01-03-02
Control Number	012174-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	99	33-141

KR059B030785

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-302D	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-4
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-14-01
Control Number	012174-09

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	102	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-4
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-17-01
Analysis Date	01-03-02
Control Number	012174-09

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	92	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	97	33-141

KR059B030786

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-4	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-4
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-14-01
Control Number	012174-10

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	102	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	P-4
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-17-01
Analysis Date	01-03-02
Control Number	012174-10

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	94	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	101	33-141

KR059B030787

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Ad* Date *01-30-02*

Data File	Kalamazoo
P-4	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-3
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-14-01
Control Number	012174-11

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	102	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	MW-3
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-17-01
Analysis Date	01-03-02
Control Number	012174-11

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	96	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	102	33-141

KR059B030788

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW-3	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-3D	Sample Identification	P-3D
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-11-01	Sample Date	12-11-01
Received Date	12-12-01	Received Date	12-12-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	12-17-01
Preservation Type	HCl	Analysis Date	01-03-02
Analysis Date	12-14-01		
Control Number	012174-12	Control Number	012174-12

BTEX, Method 8260	ug/L	TDL
Benzene	100	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	6	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	104	33-141

KR059B030789

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
P-3D	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-3	Sample Identification	P-3
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-11-01	Sample Date	12-11-01
Received Date	12-12-01	Received Date	12-12-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	12-17-01
Preservation Type	HCl	Analysis Date	01-04-02
Analysis Date	12-14-01		
Control Number	012174-13	Control Number	012174-13

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	99	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	102	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	94	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	105	33-141

KR059B030790

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
P-3	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-14-01
Control Number	012174-14

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	MW-2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-17-01
Analysis Date	01-04-02
Control Number	012174-14

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	97	35-114
2-Fluorobiphenyl	102	43-116
p-Terphenyl-d14	104	33-141

KR059B030791

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Ad* Date 01-30-02

Data File	Kalamazoo
MW-2	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-104
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-14-01
Control Number	012174-15

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	MW-104
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-17-01
Analysis Date	01-04-02
Control Number	012174-15

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	96	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	102	33-141

KR059B030792

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Acl* Date 01-20-02

Data File	Kalamazoo
MW-104	-

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05208

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-104D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-17-01
Control Number	012198-01

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	99	76-114
Toluene-d8	101	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-104D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-18-01
Analysis Date	01-04-02
Control Number	012198-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	104	33-141

KR059B030793

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-104D	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-2D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-17-01
Control Number	012198-02

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	P-2D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-18-01
Analysis Date	01-04-02
Control Number	012198-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	103	33-141

KR059B030794

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
P-2D	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-19-01
Control Number	012198-03

BTEX, Method 8260	ug/L	TDL
Benzene	530	10
Toluene	160	10
Ethylbenzene	570	10
m/p-Xylene	1,300	10
o-Xylene	600	10
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	98	88-110
4-Bromofluorobenzene	101	86-115

Sample Identification	P-2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-18-01
Analysis Date	01-04-02
Control Number	012198-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	480	5
2-Methylnaphthalene	35	5
Acenaphthylene	nd	5
Acenaphthene	34	5
Fluorene	17	5
Phenanthrene	32	5
Anthracene	6	5
Fluoranthene	5	5
Pyrene	5	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	94	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	98	33-141

KR059B030795

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
P-2	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-301
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-19-01
Control Number	012198-04

BTEX, Method 8260	ug/L	TDL
Benzene	3,400	50
Toluene	nd	50
Ethylbenzene	1,300	50
m/p-Xylene	900	50
o-Xylene	600	50
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	99	86-115

Sample Identification	MW-301
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-18-01
Analysis Date	01-11-02
Control Number	012198-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	5,000	50
2-Methylnaphthalene	250	50
Acenaphthylene	nd	50
Acenaphthene	60	50
Fluorene	nd	50
Phenanthrene	nd	50
Anthracene	nd	50
Fluoranthene	nd	50
Pyrene	nd	50
Benzo(a)anthracene	nd	50
Chrysene	nd	50
Benzo(b)fluoranthene	nd	50
Benzo(k)fluoranthene	nd	50
Benzo(a)pyrene	nd	50
Indeno(1,2,3-cd)pyrene	nd	50
Dibenzo(a,h)anthracene	nd	50
Benzo(g,h,i)perylene	nd	50
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	diluted out	35-114
2-Fluorobiphenyl	diluted out	43-116
p-Terphenyl-d14	diluted out	33-141

KR059B030796

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-301	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-19-01
Control Number	012198-05

BTEX, Method 8260	ug/L	TDL
Benzene	nd	50
Toluene	350	50
Ethylbenzene	3,500	50
m/p-Xylene	1,200	50
o-Xylene	900	50
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	98	86-115

Sample Identification	MW-1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-18-01
Analysis Date	01-04-02
Control Number	012198-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	150	5
2-Methylnaphthalene	20	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	102	33-141

KR059B030797

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-1	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	Duplicate # 2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-19-01
Control Number	012198-06

BTEX, Method 8260	ug/L	TDL
Benzene	580	10
Toluene	160	10
Ethylbenzene	730	10
m/p-Xylene	1,400	10
o-Xylene	800	10
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	99	86-115

Sample Identification	Duplicate # 2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-18-01
Analysis Date	01-04-02
Control Number	012198-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	440	5
2-Methylnaphthalene	30	5
Acenaphthylene	nd	5
Acenaphthene	25	5
Fluorene	13	5
Phenanthrene	34	5
Anthracene	5	5
Fluoranthene	6	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	92	35-114
2-Fluorobiphenyl	91	43-116
p-Terphenyl-d14	96	33-141

KR059B030798

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
Duplicate # 2	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-101D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-19-01
Control Number	012198-07

BTEX, Method 8260	ug/L	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	600	50
m/p-Xylene	2,300	50
o-Xylene	2,700	50
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	92	76-114
Toluene-d8	95	88-110
4-Bromofluorobenzene	97	86-115

Sample Identification	MW-101D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-18-01
Analysis Date	01-11-02
Control Number	012198-07

PAHs, Method 8270	ug/L	TDL
Naphthalene	6,800	50
2-Methylnaphthalene	380	50
Acenaphthylene	120	50
Acenaphthene	nd	50
Fluorene	nd	50
Phenanthrene	nd	50
Anthracene	nd	50
Fluoranthene	nd	50
Pyrene	nd	50
Benzo(a)anthracene	nd	50
Chrysene	nd	50
Benzo(b)fluoranthene	nd	50
Benzo(k)fluoranthene	nd	50
Benzo(a)pyrene	nd	50
Indeno(1,2,3-cd)pyrene	nd	50
Dibenzo(a,h)anthracene	nd	50
Benzo(g,h,i)perylene	nd	50
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	diluted out	35-114
2-Fluorobiphenyl	diluted out	43-116
p-Terphenyl-d14	diluted out	33-141

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NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-101D	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-202D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-17-01
Control Number	012198-08

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-202D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-18-01
Analysis Date	01-04-02
Control Number	012198-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	17	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	98	33-141

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NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW-202D	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-101
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-19-01
Control Number	012198-09

BTEX, Method 8260	ug/L	TDL
Benzene	nd	50
Toluene	2,200	50
Ethylbenzene	1,100	50
m/p-Xylene	1,600	50
o-Xylene	1,000	50
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	93	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	95	86-115

Sample Identification	MW-101
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-18-01
Analysis Date	01-11-02
Control Number	012198-09

PAHs, Method 8270	ug/L	TDL
Naphthalene	770	5
2-Methylnaphthalene	39	5
Acenaphthylene	20	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	94	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	97	33-141

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NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-101	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-103
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-17-01
Control Number	012198-10

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	102	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-103
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-18-01
Analysis Date	01-04-02
Control Number	012198-10

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	94	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	102	33-141

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NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-103	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-102
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-17-01
Control Number	012198-11

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-102
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-18-01
Analysis Date	01-04-02
Control Number	012198-11

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	97	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	101	33-141

KR059B030803

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-102	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-17-01
Control Number	012198-12

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	100	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	P-1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-18-01
Analysis Date	01-04-02
Control Number	012198-12

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	96	35-114
2-Fluorobiphenyl	98	43-116
p-Terphenyl-d14	103	33-141

KR059B030804

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
P-1	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-105	Sample Identification	MW-105
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-14-01	Sample Date	12-14-01
Received Date	12-14-01	Received Date	12-14-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	12-18-01
Preservation Type	HCl	Analysis Date	01-05-01
Analysis Date	12-17-01		
Control Number	012198-13	Control Number	012198-13

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	99	76-114
Toluene-d8	101	88-110
4-Bromofluorobenzene	103	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	104	33-141

KR059B030805

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Ad* Date *01-30-02*

Data File	Kalamazoo
MW-105	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-105D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-14-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-17-01
Control Number	012198-14

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-105D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-14-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Extraction Date	12-18-01
Analysis Date	01-05-01
Control Number	012198-14

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	94	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	102	33-141

KR059B030806

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-105D	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-304
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012174-01

METALS	ug/L	TDL
Iron (dissolved) - 6020	18,000	20

Sample Identification	MW-304
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012174-01

METALS	ug/L	TDL
Arsenic - 6020	28	5.0
Barium - 6020	180	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	4	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030807

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-304	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-304D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012174-02

METALS	ug/L	TDL
Iron (dissolved) - 6020	5,600	20

Sample Identification	MW-304D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012174-02

METALS	ug/L	TDL
Arsenic - 6020	22	5.0
Barium - 6020	270	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030808

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
MW-304D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-303
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012174-03

METALS	ug/L	TDL
Iron (dissolved) - 6020	7,200	20

Sample Identification	MW-303
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012174-03

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	150	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	8	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030809

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-303	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-302
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012174-04

METALS	ug/L	TDL
Iron (dissolved) - 6020	5,500	20

Sample Identification	MW-302
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012174-04

METALS	ug/L	TDL
Arsenic - 6020	8	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030810

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-302	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-302I	Sample Identification	MW-302I
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-10-01	Sample Date	12-10-01
Received Date	12-12-01	Received Date	12-12-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date	12-19-01	Preparation Date (Hg)	12-19-01
		Analysis Date, Start	12-19-01
		Analysis Date, End	12-19-01
Control Number	012174-05	Control Number	012174-05

METALS	ug/L	TDL
Iron (dissolved) - 6020	18,000	20

METALS	ug/L	TDL
Arsenic - 6020	20	5.0
Barium - 6020	1,200	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030811

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-302I	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-201
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012174-06

METALS	ug/L	TDL
Iron (dissolved) - 6020	10,000	20

Sample Identification	MW-201
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012174-06

METALS	ug/L	TDL
Arsenic - 6020	8	5.0
Barium - 6020	140	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030812

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-201	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	Duplicate #1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	no sample
Control Number	012174-07

METALS	ug/L	TDL
Iron (dissolved) - 6020	-	20

Sample Identification	Duplicate #1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	no sample
Analysis Date, Start	no sample
Analysis Date, End	no sample
Control Number	012174-07

METALS	ug/L	TDL
Arsenic - 6020	-	5.0
Barium - 6020	-	100.0
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5.0
Copper - 6020	-	25.0
Lead - 6020	-	3.0
Mercury - 7470	-	0.2
Selenium - 6020	-	5.0
Silver - 6020	-	0.5
Zinc - 6020	-	10.0
Metal Results Are Reported As	-	Dissolved

KR059B030813

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
Duplicate #1	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-302D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012174-08

METALS	ug/L	TDL
Iron (dissolved) - 6020	2,800	20

Sample Identification	MW-302D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012174-08

METALS	ug/L	TDL
Arsenic - 6020	26	5.0
Barium - 6020	180	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030814

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-302D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-4
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012174-09

METALS	ug/L	TDL
Iron (dissolved) - 6020	7,600	20

Sample Identification	MW-4
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012174-09

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030815

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-4	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-4
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012174-10

METALS	ug/L	TDL
Iron (dissolved) - 6020	nd	20

Sample Identification	P-4
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012174-10

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030816

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Acl* Date *01-30-02*

Data File	Kalamazoo
P-4	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-3
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012174-11

METALS	ug/L	TDL
Iron (dissolved) - 6020	160	20

Sample Identification	MW-3
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012174-11

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	13	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030817

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-3	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-3D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012174-12

METALS	ug/L	TDL
Iron (dissolved) - 6020	5,600	20

Sample Identification	P-3D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012174-12

METALS	ug/L	TDL
Arsenic - 6020	31	5.0
Barium - 6020	200	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	0.2	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	10	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030818

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
P-3D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-3	Sample Identification	P-3
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-11-01	Sample Date	12-11-01
Received Date	12-12-01	Received Date	12-12-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date	12-19-01	Preparation Date (Hg)	12-19-01
		Analysis Date, Start	12-19-01
		Analysis Date, End	12-19-01
Control Number	012174-13	Control Number	012174-13

METALS	ug/L	TDL
Iron (dissolved) - 6020	300	20

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	130	100.0
Cadmium - 6020	0.9	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	7	5.0
Silver - 6020	nd	0.5
Zinc - 6020	180	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030819

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
P-3	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012174-14

METALS	ug/L	TDL
Iron (dissolved) - 6020	6,700	20

Sample Identification	MW-2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012174-14

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	63	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030820

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
MW-2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-104
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012174-15

METALS	ug/L	TDL
Iron (dissolved) - 6020	5,200	20

Sample Identification	MW-104
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012174-15

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	140	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	64	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030821

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *AU* Date *01-30-02*

Data File	Kalamazoo
MW-104	

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-104D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012198-01

METALS	ug/L	TDL
Iron (dissolved) - 6020	5,200	20

Sample Identification	MW-104D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012198-01

METALS	ug/L	TDL
Arsenic - 6020	22	5.0
Barium - 6020	230	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030822

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
MW-104D	-

0023B

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-2D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012198-02

METALS	ug/L	TDL
Iron (dissolved) - 6020	3,000	20

Sample Identification	P-2D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012198-02

METALS	ug/L	TDL
Arsenic - 6020	7	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030823

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
P-2D	-

00239

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012198-03

METALS	ug/L	TDL
Iron (dissolved) - 6020	790	20

Sample Identification	P-2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012198-03

METALS	ug/L	TDL
Arsenic - 6020	5	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030824

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
P-2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-301
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012198-04

METALS	ug/L	TDL
Iron (dissolved) - 6020	15,000	20

Sample Identification	MW-301
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012198-04

METALS	ug/L	TDL
Arsenic - 6020	51	5.0
Barium - 6020	160	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	5	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030825

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
MW-301	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012198-05

METALS	ug/L	TDL
Iron (dissolved) - 6020	3,700	20

Sample Identification	MW-1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012198-05

METALS	ug/L	TDL
Arsenic - 6020	11	5.0
Barium - 6020	110	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	6	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030826

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
MW-1	-

00242

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	Duplicate # 2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	no sample
Control Number	012198-06

METALS	ug/L	TDL
Iron (dissolved) - 6020	-	20

Sample Identification	Duplicate # 2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	no sample
Analysis Date, Start	no sample
Analysis Date, End	no sample
Control Number	012198-06

METALS	ug/L	TDL
Arsenic - 6020	-	5.0
Barium - 6020	-	100.0
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5.0
Copper - 6020	-	25.0
Lead - 6020	-	3.0
Mercury - 7470	-	0.2
Selenium - 6020	-	5.0
Silver - 6020	-	0.5
Zinc - 6020	-	10.0
Metal Results Are Reported As	-	Dissolved

KR059B030827

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
Duplicate # 2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-101D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012198-07

METALS	ug/L	TDL
Iron (dissolved) - 6020	1,800	20

Sample Identification	MW-101D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012198-07

METALS	ug/L	TDL
Arsenic - 6020	25	5.0
Barium - 6020	280	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030828

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-101D	-

00244

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-202D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012198-08

METALS	ug/L	TDL
Iron (dissolved) - 6020	nd	20

Sample Identification	MW-202D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012198-08

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	160	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030829

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-202D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-101
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012198-09

METALS	ug/L	TDL
Iron (dissolved) - 6020	2,100	20

Sample Identification	MW-101
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012198-09

METALS	ug/L	TDL
Arsenic - 6020	5	5.0
Barium - 6020	190	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030830

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-101	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-103
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012198-10

METALS	ug/L	TDL
Iron (dissolved) - 6020	nd	20

Sample Identification	MW-103
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012198-10

METALS	ug/L	TDL
Arsenic - 6020	11	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	7	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030831

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
MW-103	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-102
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012198-11

METALS	ug/L	TDL
Iron (dissolved) - 6020	nd	20

Sample Identification	MW-102
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012198-11

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	8	5.0
Silver - 6020	nd	0.5
Zinc - 6020	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030832

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-102	-

00248

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	no sample
Control Number	012198-12

METALS	ug/L	TDL
Iron (dissolved) - 6020	-	20

Sample Identification	P-1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	no sample
Analysis Date, Start	no sample
Analysis Date, End	no sample
Control Number	012198-12

METALS	ug/L	TDL
Arsenic - 6020	-	5.0
Barium - 6020	-	100.0
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5.0
Copper - 6020	-	25.0
Lead - 6020	-	3.0
Mercury - 7470	-	0.2
Selenium - 6020	-	5.0
Silver - 6020	-	0.5
Zinc - 6020	-	10.0
Metal Results Are Reported As	-	Dissolved

KR059B030833

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
P-1	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-304D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection
Analysis Date, Nitrate	12-21-01
Analysis Date, Sulfate	12-18-01
Analysis Date, Alkalinity	12-17-01
Control Number	012174-02

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	69,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

Sample Identification	MW-304D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	12-20-01
Analysis Date, Free	12-21-01
Control Number	012174-02

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030834

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-304D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-105
Sample Depth, ft	-
Sample Type	water
Sample Date	12-14-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date	12-19-01
Control Number	012198-13

METALS	ug/L	TDL
Iron (dissolved) - 6020	nd	20

Sample Identification	MW-105
Sample Depth, ft	-
Sample Type	water
Sample Date	12-14-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preparation Date (Hg)	12-19-01
Analysis Date, Start	12-19-01
Analysis Date, End	12-19-01
Control Number	012198-13

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	nd	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	5	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	9	5.0
Silver - 6020	nd	0.5
Zinc - 6020	10	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030835

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
MW-105	-

INORG-1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-105D	Sample Identification	MW-105D
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-14-01	Sample Date	12-14-01
Received Date	12-14-01	Received Date	12-14-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date	12-19-01	Preparation Date (Hg)	12-19-01
		Analysis Date, Start	12-19-01
		Analysis Date, End	12-19-01
Control Number	012198-14	Control Number	012198-14

METALS	ug/L	TDL
Iron (dissolved) - 6020	nd	20

METALS	ug/L	TDL
Arsenic - 6020	nd	5.0
Barium - 6020	150	100.0
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5.0
Copper - 6020	nd	25.0
Lead - 6020	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5.0
Silver - 6020	nd	0.5
Zinc - 6020	180	10.0
Metal Results Are Reported As	Dissolved	Dissolved

KR059B030836

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-105D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-304
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection
Analysis Date, Nitrate	12-21-01
Analysis Date, Sulfate	12-18-01
Analysis Date, Alkalinity	12-17-01
Control Number	012174-01

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	390,000	-

Sample Identification	MW-304
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	12-20-01
Analysis Date, Free	12-21-01
Control Number	012174-01

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030837

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
MW-304	- -

00253

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-303	Sample Identification	MW-303
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-10-01	Sample Date	12-10-01
Received Date	12-12-01	Received Date	12-12-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012174-03	Control Number	012174-03

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	3,600	1,000
Alkalinity, as CaCO3 - 310.1	720,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030838

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
MW-303	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-302	Sample Identification	MW-302
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-10-01	Sample Date	12-10-01
Received Date	12-12-01	Received Date	12-12-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012174-04	Control Number	012174-04

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	5,400	1,000
Alkalinity, as CaCO3 - 310.1	330,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030839

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
MW-302	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-302I	Sample Identification	MW-302I
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-10-01	Sample Date	12-10-01
Received Date	12-12-01	Received Date	12-12-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012174-05	Control Number	012174-05

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	25,000	1,000
Alkalinity, as CaCO3 - 310.1	420,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030840

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-302I	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-201
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection
Analysis Date, Nitrate	12-21-01
Analysis Date, Sulfate	12-18-01
Analysis Date, Alkalinity	12-17-01
Control Number	012174-06

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	3,000	1,000
Alkalinity, as CaCO3 - 310.1	500,000	-

Sample Identification	MW-201
Sample Depth, ft	-
Sample Type	water
Sample Date	12-10-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	12-20-01
Analysis Date, Free	12-21-01
Control Number	012174-06

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030841

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-201	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	Duplicate #1	Sample Identification	Duplicate #1
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-10-01	Sample Date	12-10-01
Received Date	12-12-01	Received Date	12-12-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	no sample	Analysis Date, Available (OIA)	no sample
Analysis Date, Nitrate	no sample	Analysis Date, Free	no sample
Analysis Date, Sulfate	no sample		
Analysis Date, Alkalinity	no sample		
Control Number	012174-07	Control Number	012174-07

INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100
Sulfate - 375.2; 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B030842

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
Duplicate #1	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-302D	Sample Identification	MW-302D
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-11-01	Sample Date	12-11-01
Received Date	12-12-01	Received Date	12-12-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012174-08	Control Number	012174-08

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	23,000	1,000
Alkalinity, as CaCO3 - 310.1	330,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030843

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-302D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-4	Sample Identification	MW-4
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-11-01	Sample Date	12-11-01
Received Date	12-12-01	Received Date	12-12-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012174-09	Control Number	012174-09

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	20,000	1,000
Alkalinity, as CaCO3 - 310.1	380,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030844

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW-4	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-4
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection
Analysis Date, Nitrate	12-21-01
Analysis Date, Sulfate	12-18-01
Analysis Date, Alkalinity	12-17-01
Control Number	012174-10

INORGANICS	ug/L	TDL
Nitrate - 353.2	280	100
Sulfate - 375.2; 300.0	16,000	1,000
Alkalinity, as CaCO3 - 310.1	350,000	-

Sample Identification	P-4
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	12-20-01
Analysis Date, Free	12-21-01
Control Number	012174-10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030845

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
P-4	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-3	Sample Identification	MW-3
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-11-01	Sample Date	12-11-01
Received Date	12-12-01	Received Date	12-12-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012174-11	Control Number	012174-11

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	8,900	1,000
Alkalinity, as CaCO3 - 310.1	210,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030846

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-3	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-3D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection
Analysis Date, Nitrate	12-21-01
Analysis Date, Sulfate	12-18-01
Analysis Date, Alkalinity	12-17-01
Control Number	012174-12

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	350,000	-

Sample Identification	P-3D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	12-20-01
Analysis Date, Free	12-21-01
Control Number	012174-12

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030847

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
P-3D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-3
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection
Analysis Date, Nitrate	12-21-01
Analysis Date, Sulfate	12-18-01
Analysis Date, Alkalinity	12-17-01
Control Number	012174-13

INORGANICS	ug/L	TDL
Nitrate - 353.2	270	100
Sulfate - 375.2; 300.0	320,000	1,000
Alkalinity, as CaCO3 - 310.1	270,000	-

Sample Identification	P-3
Sample Depth, ft	-
Sample Type	water
Sample Date	12-11-01
Received Date	12-12-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	12-20-01
Analysis Date, Free	12-21-01
Control Number	012174-13

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030848

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
P-3	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-2	**Sample Identification**	MW-2
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-11-01	Sample Date	12-11-01
Received Date	12-12-01	Received Date	12-12-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012174-14	Control Number	012174-14

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2	100	100
Sulfate - 375.2; 300.0	740,000	1,000
Alkalinity, as CaCO3 - 310.1	82,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030849

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
MW-2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-104	Sample Identification	MW-104
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-11-01	Sample Date	12-11-01
Received Date	12-12-01	Received Date	12-12-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012174-15	Control Number	012174-15

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	29,000	1,000
Alkalinity, as CaCO3 - 310.1	450,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030850

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *AL* Date *01-30-02*

Data File	Kalamazoo
MW-104	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-104D	**Sample Identification**	MW-104D
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-12-01	Sample Date	12-12-01
Received Date	12-14-01	Received Date	12-14-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012198-01	Control Number	012198-01

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	70,000	1,000
Alkalinity, as CaCO3 - 310.1	320,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030851

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *All* Date *01-30-02*

Data File	Kalamazoo
MW-104D	-

09257

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-2D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection
Analysis Date, Nitrate	12-21-01
Analysis Date, Sulfate	12-18-01
Analysis Date, Alkalinity	12-17-01
Control Number	012198-02

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	110,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

Sample Identification	P-2D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-12-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	12-20-01
Analysis Date, Free	12-21-01
Control Number	012198-02

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030852

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
P-2D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-2	Sample Identification	P-2
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-12-01	Sample Date	12-12-01
Received Date	12-14-01	Received Date	12-14-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012198-03	Control Number	012198-03

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	3,200	1,000
Alkalinity, as CaCO3 - 310.1	450,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030853

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Nel* Date *01-30-02*

Data File	Kalamazoo
P-2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-301	Sample Identification	MW-301
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-12-01	Sample Date	12-12-01
Received Date	12-14-01	Received Date	12-14-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012198-04	Control Number	012198-04

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	410,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030854

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *AL* Date *01-30-02*

Data File	Kalamazoo
MW-301	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-1	Sample Identification	MW-1
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-12-01	Sample Date	12-12-01
Received Date	12-14-01	Received Date	12-14-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012198-05	Control Number	012198-05

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	33,000	1,000
Alkalinity, as CaCO3 - 310.1	470,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030855

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 01-30-02

Data File	Kalamazoo
MW-1	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	Duplicate # 2	Sample Identification	Duplicate # 2
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-12-01	Sample Date	12-12-01
Received Date	12-14-01	Received Date	12-14-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	no sample	Analysis Date, Available (OIA)	no sample
Analysis Date, Nitrate	no sample	Analysis Date, Free	no sample
Analysis Date, Sulfate	no sample		
Analysis Date, Alkalinity	no sample		
Control Number	012198-06	Control Number	012198-06

INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100
Sulfate - 375.2; 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B030856

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
Duplicate # 2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-101D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection
Analysis Date, Nitrate	12-21-01
Analysis Date, Sulfate	12-18-01
Analysis Date, Alkalinity	12-17-01
Control Number	012198-07

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	18,000	1,000
Alkalinity, as CaCO3 - 310.1	350,000	-

Sample Identification	MW-101D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	12-20-01
Analysis Date, Free	12-21-01
Control Number	012198-07

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030857

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-101D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-202D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection
Analysis Date, Nitrate	12-21-01
Analysis Date, Sulfate	12-18-01
Analysis Date, Alkalinity	12-17-01
Control Number	012198-08

INORGANICS	ug/L	TDL
Nitrate - 353.2	330	100
Sulfate - 375.2; 300.0	68,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

Sample Identification	MW-202D
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	12-20-01
Analysis Date, Free	12-21-01
Control Number	012198-08

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030858

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-202D	-

00274

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-101	Sample Identification	MW-101
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-13-01	Sample Date	12-13-01
Received Date	12-14-01	Received Date	12-14-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012198-09	Control Number	012198-09

INORGANICS	ug/L	TDL
Nitrate - 353.2	900	100
Sulfate - 375.2; 300.0	44,000	1,000
Alkalinity, as CaCO3 - 310.1	460,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030859

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-101	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-103	Sample Identification	MW-103
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-13-01	Sample Date	12-13-01
Received Date	12-14-01	Received Date	12-14-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012198-10	Control Number	012198-10

INORGANICS	ug/L	TDL
Nitrate - 353.2	720	100
Sulfate - 375.2; 300.0	15,000	1,000
Alkalinity, as CaCO3 - 310.1	480,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030860

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-103	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-102
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection
Analysis Date, Nitrate	12-21-01
Analysis Date, Sulfate	12-18-01
Analysis Date, Alkalinity	12-17-01
Control Number	012198-11

INORGANICS	ug/L	TDL
Nitrate - 353.2	1,100	100
Sulfate - 375.2; 300.0	48,000	1,000
Alkalinity, as CaCO3 - 310.1	320,000	-

Sample Identification	MW-102
Sample Depth, ft	-
Sample Type	water
Sample Date	12-13-01
Received Date	12-14-01
Report Date	01-30-02
Percent Solids, %w/w	-
Analysis Date, Available (OIA)	12-20-01
Analysis Date, Free	12-21-01
Control Number	012198-11

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030861

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-102	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	P-1	Sample Identification	P-1
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-13-01	Sample Date	12-13-01
Received Date	12-14-01	Received Date	12-14-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	no sample	Analysis Date, Available (OIA)	no sample
Analysis Date, Nitrate	no sample	Analysis Date, Free	no sample
Analysis Date, Sulfate	no sample		
Analysis Date, Alkalinity	no sample		
Control Number	012198-12	Control Number	012198-12

INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100
Sulfate - 375.2; 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B030862

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Ad* Date 01-30-02

Data File	Kalamazoo
P-1	-

00278

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-105	Sample Identification	MW-105
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-14-01	Sample Date	12-14-01
Received Date	12-14-01	Received Date	12-14-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012198-13	Control Number	012198-13

INORGANICS	ug/L	TDL
Nitrate - 353.2	940	100
Sulfate - 375.2; 300.0	50,000	1,000
Alkalinity, as CaCO3 - 310.1	420,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030863

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 01-30-02

Data File	Kalamazoo
MW-105	-

INORG-2

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Dates of December 10 - 14, 2001	Project Numbers CHEM-01-2174 CHEM-01-2198

Sample Identification	MW-105D	Sample Identification	MW-105D
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-14-01	Sample Date	12-14-01
Received Date	12-14-01	Received Date	12-14-01
Report Date	01-30-02	Report Date	01-30-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date (Nitrate)	at collection	Analysis Date, Available (OIA)	12-20-01
Analysis Date, Nitrate	12-21-01	Analysis Date, Free	12-21-01
Analysis Date, Sulfate	12-18-01		
Analysis Date, Alkalinity	12-17-01		
Control Number	012198-14	Control Number	012198-14

INORGANICS	ug/L	TDL
Nitrate - 353.2	770	100
Sulfate - 375.2; 300.0	74,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030864

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By JRC Date 01-30-02

Data File	Kalamazoo
MW-105D	-

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. OJALA

DATE SHIPPED: 12-12-01

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 2

SEND REPORT TO: PAT BARRASSE SITE-PLYMOUTH

PHONE: 734-454-9900

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 TICs	CYANIDE	FREE + AMENABLE	ALKALINITY	DISSOLVED IRON	REMARKS
01-2174-01	12-10	11:25	W	MW304	4-10.1	10 TOTAL *								
-02		2:00		MW304D	64.5-69.5	" " *								
-03		12:30		MW303	3.2-7.6	" " *								
-04		2:40		MW302	3.5-8.7	" " *								
-05		3:25		MW302I	9.8-24.8	" " *								
-06		4:10		MW201	3-7.5	" " *								
-07		—		DUPLICATE #1	—	3	X	X						

KR059B030865

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12-10-01 5:50 PM	SITE SAMPLE Room
SME	12/12/01 1:00	Gose Smith

COMMENTS
- MDEQ METHODS + MDLs
- CONTACT PAT. B. w/ QUESTIONS

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. [illegible]

DATE SHIPPED: 12-12-01

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 2

SEND REPORT TO: PAT BARRASSE SME-PLYMOUTH

PHONE: 734-454-5900

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE						REMARKS
01-2174-01	12-10	11:25	GW	MW304	4-10.1	*	X	X						
-02		2:00		MW304D	64.5-69.5	*	X	X						
-03		12:30		MW303	3.2-7.6	*	X	X						
-04		2:40		MW302	3.5-8.7	*	X	X						
-05		3:25		MW302I	19.8-24.8	*	X	X						
-06		4:10		MW201	3-7.5	*	X	X						

KR059B030866

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[illegible]	12-10-01 5:50 PM	SME SAMPLE Room
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 12/12/01 1:00	RECEIVED BY: (SIGNATURE) Gabe Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

- MDEQ METHODS & MDLS
- CONTACT PAT B. w/ QUESTIONS

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. OJALA

DATE SHIPPED: 12-12-01

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 2

SEND REPORT TO: PAT BARRATESE SME-PLYMOUTH

PHONE: 734-454-9900

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAHs	10 Add METALS	CYANIDE	FREE REMOVABLE	ALKALINITY	DISSOLVED IRON	REMARKS
01-2174-08	12-11	12:50	W	MW302D	55.3-60.3	10 TOTAL	X	X	X	X	X	X	X	
-09		9:35	W	MW-4	2.2-6.8		X	X	X	X	X	X	X	
-10		10:30		P-4	2.9-7.9		X	X	X	X	X	X	X	
-11		11:30		MW-3	2.9-7.8		X	X	X	X	X	X	X	
-12		2:30		P-3D	34.6-39.6		X	X	X	X	X	X	X	
-13		2:00		P-3	2.9-7.3		X	X	X	X	X	X	X	
-14		3:30		MW-2	4-7.7		X	X	X	X	X	X	X	
-15		4:40		MW-104	4.4-9.4		X	X	X	X	X	X	X	

KR059B030867

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12-11-01 6:00 PM	SME SAMPLE Room
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 12/12/01 1:00	RECEIVED BY: (SIGNATURE) Gabe Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

- MDEQ METHODS + MDLs
- CONTACT PAT. B. w/ QUESTIONS

ORIGINAL TO LAB COPY TO CUSTODY

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. ODALA

DATE SHIPPED: 12-12-01

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 2

SEND REPORT TO: PAT BARBASSE

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE						REMARKS
01-2174-08	12-11	12:50	W	MW302D	55.3-66.3	2 (PAPERoFIO)	X	X						
-09		9:35		MW-4	2.2-6.9		X	X						
-10		10:30		P-4	2.9-7.9		X	X						
-11		11:30		MW-3	2.8-7.8		X	X						
-12		2:30		P-3D	34.6-39.6		X	X						
-13		2:00		P-3	2.9-7.3		X	X						
-14		3:30		MW-2	4-7.7		X	X						
-15		4:40		MW104	4.4-9.4		X	X						

KR059B030868

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[illegible]	12-11-01 6:00 PM	SME SAMPLE Room
SME	12/12/01 1:00	Gabe Smith

COMMENTS
- NEED METHODS + MDLS
- CONTACT PAT B w/ QUESTIONS

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: R. OSAND

DATE SHIPPED: 12-14-01

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 2

SEND REPORT TO: PAT BARBASSE SME - PCS Bowl

PHONE: 734-454-9700

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 Most Intense	CYANIDE:	FREE/AVAILABLE	ALKALINITY	DISSOLVED IRON	REMARKS
01-2188-01	12-12	10:50	W	MW-104D	29.9-34.9	10 TOTAL	X	X	X	X	X	X	X	
-02		12:05		P-2D	35-40		X	X	X	X	X	X	X	
-03		12:35		P-2	7.6-12.1		X	X	X	X	X	X	X	
-04		2:35		MW301	4-10.1		X	X	X	X	X	X	X	
-05		3:30		MW-1	7.9-11.6		X	X	X	X	X	X	X	
-06	12-12	—	W	DUPLICATE #2	—	3	X	X						

KR059B030869

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[illegible]	12-12-01 4:30	SME SAMPLE ROOM
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 12/14/01	RECEIVED BY: (SIGNATURE) Bob Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

- MDEQ METHODS & MDLs
- CONTACT PAT B. W/ QUESTIONS

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Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. [illegible]

DATE SHIPPED: 12-14-01

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 2

SEND REPORT TO: PAT B. SME - PCB

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE						REMARKS
01-298-01	12-12	10:50	W	MW-104D	29.9-34.9	2 of 10	X	X						
-02		12:05		P-2D	35-40		X	X						
-03		12:35		P-2	7.6-12.1		X	X						
-04		2:35		MW-301	4-10.1		X	X						
-05		3:30		MW-1	7.9-11.6		X	X						

KR059B030870

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[illegible]	12-12-01 4:30	SME SAMPLE [illegible]
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 12/14/01 1:30	RECEIVED BY: (SIGNATURE) [illegible]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ METHODS + MDLs
- CONTACT PAT B. w/ QUESTIONS

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LABORATORY COMMERCIAL SERVICES

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE318236

SAMPLING TEAM: D. OJACK

DATE SHIPPED: 12-14-01

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 2

SEND REPORT TO: PAT BARRASSE, SME - PLYMOUTH, PHONE: 734-454-9900

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 Diff METALS	CYANIDE: FREE/AMENABLE	ALKALINITY	DISSOLVED IRON	REMARKS
01-2198-07	12-13	10:50	W	MW-101D	34.5-39.5	10 TOTAL	X	X	X	X	X	X	X	
-08		1:20		MW-202D	55.4-60.4		X	X	X	X	X	X	X	
-09		11:55		MW-101	12.2-16.9		X	X	X	X	X	X	X	
-10		2:45		MW-103	10.7-15.3		X	X	X	X	X	X	X	
-11		3:55		MW-102	10.3-14.9		X	X	X	X	X	X	X	
-12		4:30		P-1	9.3-11.1	3	X	X						

KR059B030871

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12-13-01 5:45	SME SAMPLE Room
SME	12/14/01 1:30	Gabe Smith

COMMENTS
- ADEQ METHODS & MDLS
- CONTACT PAT B. w/ QUESTIONS

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. OJALA

DATE SHIPPED: 12-14-01

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 2

SEND REPORT TO: PAT BARRESE

PHONE: SME - DLY

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE						REMARKS
01-2198-07	12-13	10:50	W	MW-101D	34.5-39.5	2 OF 10	X	X						
-08		1:20		MW-202D	55.4-60.4		X	X						
-09		11:55		MW-101	12.2-16.9		X	X						
-10		2:45		MW-103	10.7-15.3		X	X						
-11		3:55		MW-102	10.3-14.9		X	X						

KR059B030872

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12-13-01	SME SAMPLE ROOM
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 12/14/01 1330	RECEIVED BY: (SIGNATURE) [signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- NOTE METHODS + MDCS
- CALL PAT B. w/ QUESTIONS

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LABORATORY COMMERCIAL SERVICES

Consumers Energy

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. OJALA

DATE SHIPPED: 12-14-01

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 2

SEND REPORT TO: PAT BAPPASE, SME – PLYMOUTH

PHONE: 734-454-9900

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 Incl Phenols	CYANIDE	FREE/AVAILABLE	ALKALINITY	DISSOLVED IRON	REMARKS
01-2198-13	12-14	9:40	W	MW-105	10.8-15.3	10 TOTAL	X	X	X	X	X	X	X	
↓ -14	12-14	11:30	W	MW-105D	38.4-43.4	10 TOTAL	X	X	X	X	X	X	X	

KR059B030873

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12-14-01 1:30	SME SAMPLE ROOM
SME	12/14/01 1:30	[signature]

COMMENTS: ADEQ METHODS & MDCS
CALL PAT B. w/ QUESTIONS

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B

SAMPLING TEAM: D. OJACA

DATE SHIPPED: 12-14-01

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 2 OF 2

SEND REPORT TO: PAT B. SME – PLYMOUTH PHONE: 734-454-9900

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE						REMARKS
01-2198-13	12-14	9:40	W	MW-105	10.8-15.3	2 of 10	X	X						
↓ -14	12-14	11:30	W	MW-105D	38.4-43.4	2 of 10	X	X						
														KR059B030874

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12-14-01 1:30	SME SAMPLE ROOM
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 12/14/01 1:30	RECEIVED BY: (SIGNATURE) Gabe Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- ADEQ METHODS + MDLS
- LAB PAT B. w/ [illegible]

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SAMPLING SITE: Kalamazoo Former MGP

PROJECT NUMBER: S30117-410-174

SAMPLING TEAM: —

DATE SHIPPED: 12/17/01

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 3

SEND REPORT TO: G Cattell

PHONE: (517)788-2334

ANALYSIS REQUESTED

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	MI 10 Diss. metals	Diss. Iron	SO4					REMARKS
01-2174-1	12/10/01	1125	Aq.	MW304	—	2ea.	✓	✓	✓					
-2		1400		MW 304D										
-3		1230		MW303										
-4		1440		MW302										
-5		1525		MW302I										
-6		1610		MW201										
-7		—		~~Duplicate #1~~										NO SAMPLE AM 12/17/01
-8	12/11/01	1250		MW302D										
-9		0935		MW4										
-10		1030		P4										
-11		1130		MW3										KR059B030875
-12		1430		P3D										

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12/17/01	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

- metals were field filtered & HNO_3 preserved
- Reference RCRA methods for metals
- Routine turnaround. No fax
- Reference MDEQ op.mem.6 Rev.6 TDLs

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CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo former MGP

PROJECT NUMBER: 530117-410-1741, 530117-410-198

SAMPLING TEAM: —

DATE SHIPPED: 12/17/01

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 2 OF 3

SEND REPORT TO: (pg. 1)

PHONE:

ANALYSIS REQUESTED: MTI 10 Dis. metals; Dis. Iron; SO4

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	REMARKS
01-2174-13	12/11/01	1400	Aq.	P3	—	2 ea.	
-14		1530		MW2			
-15		1640		MW104			
01-2188-1	12/12/01	1050		MW104D			
-2		1205		P2D			
-3		1235		P2			
-4		2:35		MW301			
-5		3:30		MW1			
-6	—	—		— No Sample —			
-7	12/13/01	1050		MW10D			
-8		1:20		MW202D			
-9		1155		MW101			

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RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12/17/01	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS: (See pg. 1)

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CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo Former MGP

PROJECT NUMBER: 530117-410-178

SAMPLING TEAM: —

DATE SHIPPED: 12/17/01

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 3 OF 3

SEND REPORT TO: (PS.1)

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	ANALYSIS REQUESTED: MEI0 Arsenic	Ass. Iron	Sulfates					REMARKS
0K2198-10	12/13/01	2:45	Aq	MW-103	—	2ea	✓	✓	✓					
-11		3:55		-102	—									
-13	12/14/01	0940		-105	—									
-14		1130		-105D	—									
														KR059B030877

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12/17/01	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

(See PS.1)

4°C

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EXHIBIT MGP-10

Consumers Energy

A CMS Energy Company

Environmental & Lab Services
1945 West Parnall Road
Jackson, MI 49201-8643

Fax: 517 788-2329

June 26, 2002

WORKING COPY

Carol Weaver
Environmental Response Division
Michigan Department of Environmental Quality
Kalamazoo District
7953 Adobe Road
Kalamazoo, MI 49009-5026

GROUNDWATER MONITORING REPORT
CONSUMERS ENERGY FORMER
KALAMAZOO MANUFACTURED GAS PLANT SITE

Enclosed for review is a copy of a June 13, 2002 "Groundwater Monitoring Report" as prepared by our consultant, Soil and Materials Engineers (SME).

The enclosed report summarizes March 2002 groundwater monitoring activities on and off the former MGP property. The report indicates that the next quarterly groundwater monitoring was completed the week of June 10, 2002.

Our intent is to conduct quarterly groundwater sampling in 2002.

Should you have any questions concerning the enclosed report, please contact me on 517-788-0350.

Robert G Neumann PE
Senior Engineer/Kalamazoo MGP Site Manager

cc JMuller, Pharmacia w/2 copies
CRutland, City of Kalamazoo
JBosch, The Bosch Group, Kalamazoo
TEGriffiths, Consumers, Royal Oak
GLKelterborn, Consumers, P-24-605A w/o enclosure
JHerdus, Consumers, Kalamazoo
AMAurino, Consumers, Owosso
PBarrese, SME, Plymouth w/o enclosure

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00234

soil and materials engineers, inc.

43980 Plymouth Oaks Blvd. Plymouth, MI 48170-2584 (734) 454-9900 FAX (734) 454-0629

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R. Scott Steiner, CT
Michael J. Thelen, PE

June 13, 2002

WORKING COPY

Mr. Robert G. Neumann, P.E.
Environmental & Technical Services Department
Consumers Energy Company
1945 W. Parnall Road, Room P-22-520
Jackson, Michigan 49201

RE: Groundwater Monitoring Report
Kalamazoo MGP
Consumers Energy Company
Kalamazoo, Michigan
SME Project No. KE31823

Dear Mr. Neumann:

This letter presents the results for groundwater monitoring that SME conducted at the above referenced site on March 12 through 15, 2002. Groundwater monitoring is being conducted in accordance with the recommendations that were presented in the "Report of Third Phase of Remedial Investigation and Groundwater Monitoring Activities," dated November 12, 2001.

SCOPE OF SERVICES

The scope of services conducted for the groundwater monitoring event is presented below.

1. Gauged groundwater elevations at MW-1, MW-2, MW-3, MW-4, P-1, P-2, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW202D, MW301, MW302, MW302I, MW302D, MW303, MW304 and MW304D on March 12, 2002. Figure No. 1 of Attachment A depicts the locations of the wells at the site.

   A groundwater elevation was not gauged nor a groundwater sample collected at MW201 because it appeared that the well had apparently been destroyed since the last quarterly groundwater monitoring event conducted in December 2001. MW201R was installed to replace MW201 on April 12, 2002. MW201R was installed approximately 3 feet north of former MW201.

2. Collected groundwater samples from MW-1, MW-2, MW-3, MW-4, P-2, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW202D MW301, MW302, MW302I, MW302D, MW303, MW304 and MW304D on March 12 through 14, 2002 for laboratory analysis of benzene, toluene, ethylbenzene and xylene(s) (BTEX); polynuclear

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aromatic hydrocarbons (PAHs); Michigan 10 Metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc); and cyanide (available and free). The groundwater samples were also submitted for laboratory analysis of alkalinity (as $CaCO_3$), nitrate, dissolved iron and sulfate as part of the on-going evaluation of natural attenuation at the site.

Groundwater samples were evaluated in the field for pH, specific conductivity and dissolved oxygen (DO).

There was insufficient water present in P-1 to collect samples for the laboratory analysis of the Michigan 10 Metals, cyanide (available and free), dissolved iron, nitrate, sulfate and alkalinity (as $CaCO_3$). However, there was sufficient water in P-1 to collect groundwater samples for BTEX and PAH analysis.

3. Prepared this summary letter report which includes the following:

   a. a groundwater elevation diagram for March 12, 2002; and,

   b. analytical test results.

PROCEDURES

With the exception of the disposal of purge water, groundwater sampling and monitoring well installation procedures were consistent with those presented in the "Report of Third Phase of Remedial Investigation and Groundwater Monitoring Activities," dated November 12, 2001. Purge water collected from monitoring wells was returned to the corresponding well after sampling activities had been completed. Analytical methods and detection limits for BTEX, PAHs, the Michigan 10 Metals and cyanide (available and free) were also consistent with those presented in the "Report of Third Phase of Remedial Investigation and Groundwater Monitoring," dated November 12, 2001. Groundwater samples were submitted to Consumers Energy Company's (Consumers Energy's) Chemistry & Material Services Department (C&MSD) in Jackson, Michigan for analysis. Stearns Drilling Company of Dutton, Michigan conducted well installation services.

RESULTS

The results for the March 2002 groundwater monitoring event are discussed below. The discussion of the results is supported by the attached figures, tables and charts listed below.

- Figure No. 2 of Attachment A shows the groundwater elevation contours for groundwater levels gauged in site monitoring wells on March 12, 2002.
- Table 1 of Attachment B lists groundwater elevations gauged on March 12, 2002, as well as groundwater elevations gauged during previous groundwater monitoring events.
- Table 2 of Attachment B presents the analytical results for the March 2002 groundwater monitoring event, as well as analytical results from previous groundwater sampling events.

- Chart Nos. 1 through 5 of Attachment C present bar graph comparisons of natural attenuation parameters for impacted wells compared to non-impacted wells.

- Copies of analytical test results for the March 2002 groundwater monitoring event are presented in Attachment D.

Groundwater Elevations

For March 2002, groundwater was encountered at depths below ground surface ranging from approximately 2.9 feet at MW302D to approximately 12.9 feet at MW202D. Groundwater elevations for March 2002 were higher by approximately 0.7 to 1.3 feet compared with groundwater elevations gauged in December 2001.

For the northern portion of the site, where former MGP production components, storage structures and/or transfer lines had been located, groundwater flow appears to be to the east with a calculated horizontal hydraulic gradient of 0.004 feet per foot. This horizontal hydraulic gradient was calculated between the 758.2 and 760.4 contour lines on the north side of the site. For the southern portion of the site, groundwater flow also appears to be generally to the east with a calculated horizontal hydraulic gradient of 0.006 feet per foot. This horizontal hydraulic gradient was calculated between the 758.0 and 759.0 contour lines on the south side of the site. The interpreted groundwater flow direction and corresponding horizontal gradients are generally consistent with previous groundwater gauging events. Groundwater elevations gauged at P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D and MW304D were not used to interpret groundwater flow conditions at the water table because the well screens are set below the water table surface. Also, the groundwater elevation gauged at P4 was not used to interpret groundwater flow because the gauged elevation appeared to be anomalous compared to groundwater elevations previously gauged at P4.

Based on the March 2002 groundwater elevation data, it appears that groundwater at the water table in the vicinity of the site is discharging to Portage Creek since groundwater elevations at MW302 and MW304, 757.90 feet MSL and 757.86 feet MSL, respectively, were slightly higher than the gauged elevation of the creek, 757.76 feet MSL. MW302 and MW304 are located adjacent to Portage Creek and are screened at the water table.

Vertical hydraulic gradients were calculated for the following well pairs, P-2/P-2D, P-3/P-3D, MW101/MW202D, MW104/MW104D, MW105/MW105D, MW302/MW302D and MW304/MW304D. The following table summarizes the calculated vertical gradients.

Well Pair Location	Gradient (feet per foot) and Direction
P-2/P-2D	0.005 – Downward
P-3/P-3D	0.004 – Downward
MW101/MW202D	0.016 – Downward
MW104/MW104D	0.013 – Upward
MW105/MW105D	0.041 – Downward

Well Pair Location	Gradient (feet per foot) and Direction
MW302/MW302D	0.014 – Upward
MW304/MW304D	0.012 – Upward

The calculated vertical hydraulic gradients are generally consistent with those calculated for December 2001 groundwater elevation data. The calculated vertical gradients for well pairs located on the west side of Pitcher Street, P-2/P-2D, P-3/P-3D, MW101/MW202D and MW105/MW105D, are downward, however calculated vertical gradients for well pairs located on the east side of Pitcher Street, MW104/MW104D, MW302/MW302D and MW304/MW304D are upward.

Analytical Results – MGP Parameters

BTEX and PAHs concentrations for groundwater samples were less than the Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air Inhalation, Groundwater Contact, Flammability/Explosivity, Water Solubility and Acute Inhalation.

Comparisons of analytical results to Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI are discussed below.

BTEX

Benzene, toluene, ethylbenzene and/or xylene(s) concentrations at MW-1, P-3D, MW101D, MW301, MW302I and MW304 exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and/or GSI.

BTEX concentrations for other groundwater samples were less than the target detection limit (TDL).

PAHs

Naphthalene concentrations at MW-1, P-3, MW101D, MW301 and MW304 exceeded the Part 201 Commercial II Cleanup Criterion for GSI. Naphthalene concentrations at MW101D and MW301 also exceeded the Part 201 Commercial II Cleanup Criterion for Drinking Water. The concentrations of remaining PAH constituents at MW-1, P-3 and MW304 were either less than the TDL or Part 201 Commercial II Cleanup Criteria.

Acenaphthylene and fluorene concentrations at MW101D exceeded the Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI, respectively. At MW301, the acenaphthene concentration exceeded the Part 201 Commercial II Cleanup Criteria for GSI. Excluding naphthalene, the concentrations of remaining PAHs constituents at MW101D and MW301 were either less than the TDL or Part 201 Commercial II Cleanup Criteria.

PAH concentrations for other groundwater samples were either equal to or less than the TDL and Part 201 Commercial II Cleanup Criteria.

Michigan 10 Metals

Zinc concentration at P3 and MW105 slightly exceeded the Part 201 Commercial II Cleanup Criterion for GSI. Other metals concentrations for groundwater sample collected from these wells were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Metals concentrations for other groundwater samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Cyanide

Free and available cyanide concentrations for the groundwater samples were less than the TDLs.

Analytical Results – Natural Attenuation Parameters

The evaluation of natural attenuation parameters considered the analytical results from MW-4, P-4, MW102, MW103 and MW105 to be representative of non-impacted wells; while the analytical results from MW-1, P-2, P-3, MW101, MW201, MW301 and MW304 to be representative of wells impacted by MGP parameters. The rationale for these selections are presented in the "Report of Third Phase of Remedial Investigation and Groundwater Monitoring," dated November 12, 2001.

The evaluation of natural attenuation parameters for this quarter did not include impacted well MW201 since it was not sampled.

For the evaluation of natural attenuation data, concentrations reported as less than the TDL were set as equal to the TDL as a conservative assumption.

Dissolved Oxygen

DO concentrations for non-impacted wells for the March 2002 groundwater monitoring event ranged from 0.49 parts per million (ppm) at MW-4 to 5.33 ppm at MW103, with a mean value of 1.74 ppm. The elevated DO concentration at MW103 appears to be an outlier with respect to the recorded DO concentrations for the other non-impacted wells. If MW103 is not included with the non-impacted well data set then the discounted mean value is 0.84 ppm.

DO concentrations for impacted wells for the March 2002 groundwater monitoring event ranged from 0.40 ppm at P-2 and MW101 to 0.83 ppm at MW304, with a mean value of 0.53 ppm.

An indicator of natural attenuation is when DO concentrations for impacted wells are lower than DO concentrations for non-impacted wells. If you discount for the potential outlier value at MW103, then this trend is only slightly observed for the March 2002 groundwater monitoring event.

Alkalinity

Alkalinity concentrations for non-impacted wells for the March 2002 groundwater monitoring event ranged from 260,000 ppb at MW-4 to 400,000 ppb at MW105, with a mean value of 330,000 ppb.

Alkalinity concentrations for impacted wells for the March 2002 groundwater monitoring event ranged from 240,000 ppb at P-2 to 460,000 ppb at MW304, with a mean value of 371,667 ppb.

An indicator of natural attenuation is when alkalinity concentrations for impacted wells are higher than alkalinity concentrations for non-impacted wells. Generally, this trend was observed for the March 2002 groundwater monitoring event.

Nitrate

Nitrate concentrations for non-impacted wells for the March 2002 groundwater monitoring event ranged from 120 ppb at P-4 to 2,100 ppb at MW103, with a mean value of 820 ppb.

Nitrate concentrations for impacted wells for the March 2002 groundwater monitoring event ranged from less than the TDL (<100 ppb) at P-2, MW301 and MW304 to 1,900 ppb at MW101, with a mean value of 470 ppb.

An indicator of natural attenuation is when nitrate concentrations for impacted wells are lower than nitrate concentrations for non-impacted wells. Generally, this trend was observed for the December March 2002 groundwater monitoring event.

Dissolved Iron

Dissolved iron concentrations for non-impacted wells for the March 2002 groundwater monitoring event ranged from less than the TDL (<20ppb) at MW102 and MW105 to 210 ppb at MW-103, with a mean value of 74 ppb.

Dissolved iron concentrations for impacted wells for the March 2002 groundwater monitoring event ranged 37 ppb at MW101 to 37,000 ppb at MW304, with a mean value of 12,390 ppb.

An indicator of natural attenuation is when dissolved iron concentrations for impacted wells are higher than dissolved iron concentrations for non-impacted wells. This trend was observed for the March 2002 groundwater monitoring event.

Sulfate

Sulfate concentrations for non-impacted wells for the March 2002 groundwater monitoring event ranged from 15,000 ppb at P-4 to 110,000 ppb at MW103, with a mean value of 41,400 ppb.

Sulfate concentrations for impacted wells for the March 2002 groundwater monitoring event ranged from less than the TDL (<1,000 ppb) at MW301 and MW304 to 79,000 ppb at P-2, with a mean value of 39,500 ppb.

An indicator of natural attenuation is when sulfate concentrations for impacted wells are less than sulfate concentrations for non-impacted wells. This trend was slightly observed for the March 2002 groundwater monitoring event.

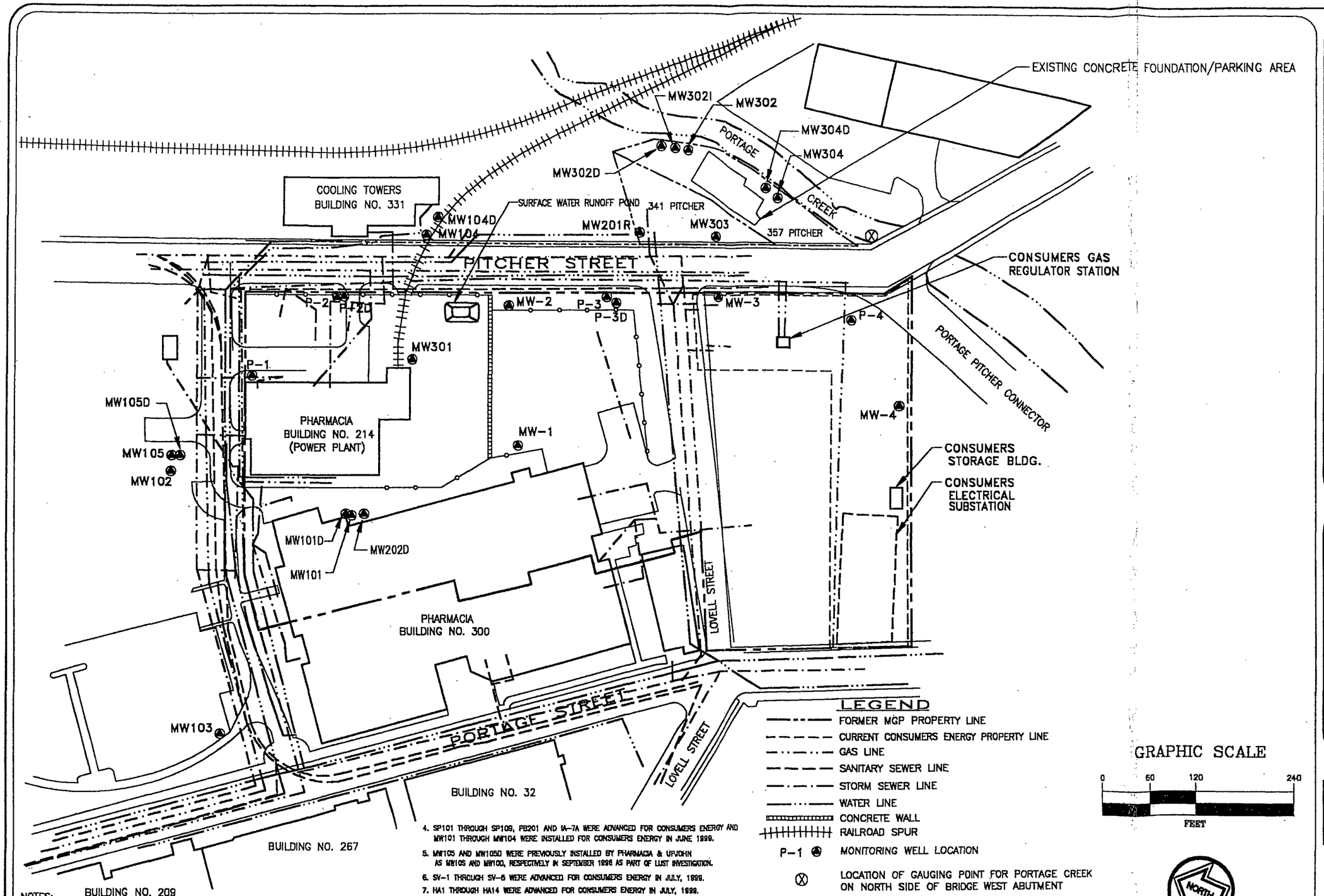
The observed relationships for nitrate and dissolved iron, as well as to some extent DO, are generally consistent with previous groundwater monitoring activities. However, alkalinity and sulfate data for the March 2002 groundwater monitoring event slightly indicated natural attenuation conditions which is not consistent with the April 2002 groundwater monitoring event.

ATTACHMENT A

FIGURES

Figure No. 1 - Monitoring Well Location Diagram
Figure No. 2 - Groundwater Elevation Contours, March 12, 2002

KR059B030886

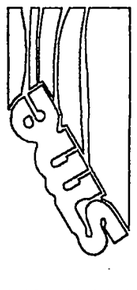


NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-6 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
9. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
10. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.

MONITORING WELL LOCATION DIAGRAM
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 5-25-01
SCALE: 1" = 120'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

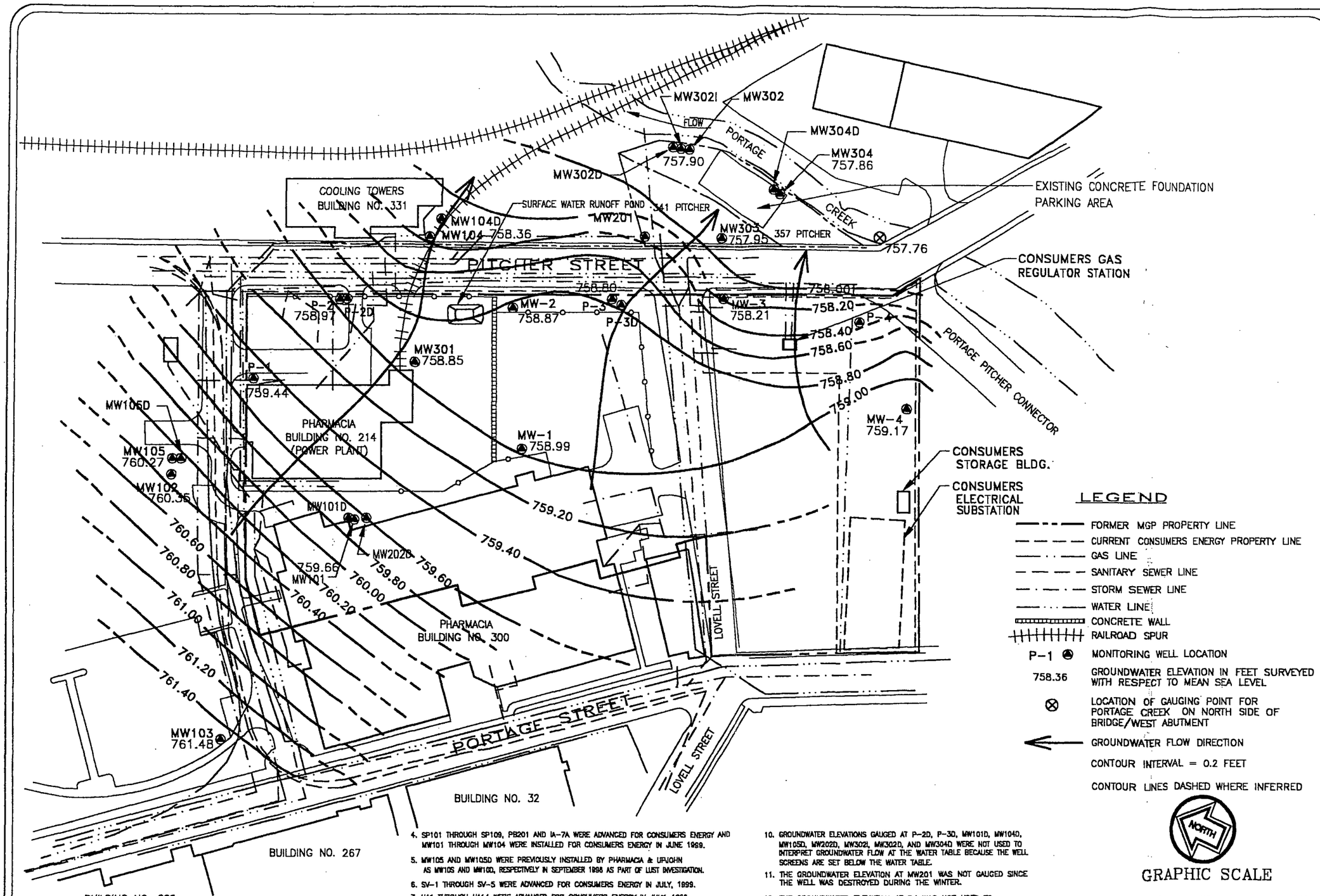


FILE NAME H:CECO\31823-11.DWG

KR059B030887

Figure No. 1

GROUNDWATER ELEVATION CONTOUR DIAGRAM
MARCH 12, 2002
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN



LEGEND

- FORMER MGP PROPERTY LINE
- CURRENT CONSUMERS ENERGY PROPERTY LINE
- GAS LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- WATER LINE
- CONCRETE WALL
- RAILROAD SPUR
- P-1 — MONITORING WELL LOCATION
- 758.36 — GROUNDWATER ELEVATION IN FEET SURVEYED WITH RESPECT TO MEAN SEA LEVEL
- LOCATION OF GAUGING POINT FOR PORTAGE CREEK ON NORTH SIDE OF BRIDGE/WEST ABUTMENT
- GROUNDWATER FLOW DIRECTION
- CONTOUR INTERVAL = 0.2 FEET
- CONTOUR LINES DASHED WHERE INFERRED

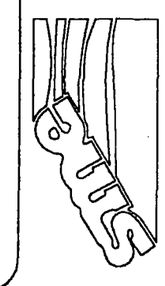
NORTH

GRAPHIC SCALE

0 60 120 240

FEET

DATE: 03-12-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823B-8



FILE NAME H:CECO\31823-14.DWG

NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1998 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
9. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
10. GROUNDWATER ELEVATIONS GAUGED AT P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D, AND MW304D WERE NOT USED TO INTERPRET GROUNDWATER FLOW AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.
11. THE GROUNDWATER ELEVATION AT MW201 WAS NOT GAUGED SINCE THE WELL WAS DESTROYED DURING THE WINTER.
12. THE GROUNDWATER ELEVATION AT P4 WAS NOT USED TO INTERPRET GROUNDWATER FLOW SINCE THE ELEVATION APPEARED TO BE ANOMALOUS.

KR059B030888

Figure No. 2

00303

ATTACHMENT B

TABLES

Table 1 - Groundwater Elevation Summary
Table 2 - Analytical Summary - Groundwater

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	2/8/1999 Depth to Water from TOC (ft.)	2/8/1999 Static Groundwater Elevation (ft.)	2/25/1999 Depth to Water from TOC (ft.)	2/25/1999 Static Groundwater Elevation (ft.)	6/22/1999 (See 5) Depth to Water from TOC (ft.)	6/22/1999 (See 5) Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	8.47	758.04	8.77	757.74	9.13	757.38
MW-2	763.00	762.56	759.6 - 754.6	4.89	757.67	5.27	757.29	5.66	756.90
MW-3	761.43	760.86	758.2 - 753.2	3.63	757.23	3.82	757.04	4.32	756.54
MW-4	761.70	760.99	759.2 - 754.2	2.68	758.31	3.02	757.97	3.45	757.54
P-1	768.91	768.38	762.4 - 757.4	NI	NI	10.44	757.94	10.50	757.88
P-2	766.95	766.35	759.4 - 754.4	8.17	758.18	8.38	757.97	8.87	757.48
P-2D	766.84	766.61	731.7 - 726.7	NI	NI	NI	NI	9.61	757.00
P-3	761.87	761.35	758.6 - 753.6	3.82	757.53	4.16	757.19	4.61	756.74
P-4	761.95	761.51	758.7 - 753.7	3.39	758.12	3.95	757.56	4.46	757.05
MW101	771.74	771.41	759.6 - 754.6	NI	NI	NI	NI	13.28	758.13
MW101D	771.59	770.91	736.5 - 731.5	NI	NI	NI	NI	13.19	757.72
MW102	770.02	769.88	760.1 - 755.1	NI	NI	NI	NI	11.32	758.56
MW103	771.99	771.52	761.3 - 756.3	NI	NI	NI	NI	11.42	760.10
MW104	763.07	762.74	758.4 - 753.4	NI	NI	NI	NI	6.04	756.70
MW104D	762.92	762.66	732.8 - 727.8	NI	NI	NI	NI	5.81	756.85
MW105	770.61	770.31	760.1 - 755.1	NG	NG	NG	NG	11.77 (5)	758.54
MW105D	770.61	770.20	731.9 - 726.9	NG	NG	NG	NG	12.85 (5)	757.35

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) NG = Groundwater elevation not gauged.
(5) Groundwater elevations for MW105 and MW105D were gauged on June 23, 1999.

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TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	2/15/2000 Depth to Water from TOC (ft.)	2/15/2000 Static Groundwater Elevation (ft.)	5/22/2000 Depth to Water from TOC (ft.)	5/22/2000 Static Groundwater Elevation (ft.)	11/6/2000 Depth to Water from TOC (ft.)	11/6/2000 Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	9.58	756.93	7.92	758.59	9.17	757.34
MW-2	763.00	762.56	759.6 - 754.6	6.04	756.52	4.24	758.32	5.44	757.12
MW-3	761.43	760.86	758.2 - 753.2	4.62	756.24	3.23	757.63	4.35	756.51
MW-4	761.70	760.99	759.2 - 754.2	3.78 (4)	757.21	2.52	758.47	3.38	757.61
P-1	768.91	768.38	762.4 - 757.4	DRY	DRY	9.27	759.11	10.57	757.81
P-2	766.95	766.35	759.4 - 754.4	8.94	757.41	7.54	758.81	8.35	758.00
P-2D	766.84	766.61	731.7 - 726.7	10.00	756.61	8.29	758.32	9.59	757.02
P-3	761.87	761.35	758.6 - 753.6	4.82	756.53	3.33	758.02	3.95	757.40
P-3D	762.58	762.16	727.6 - 722.6	NI	NI	3.49	758.67	—	—
P-3D (5)	761.81	761.39	727.6 - 722.6	—	—	—	—	4.52	756.87
P-4	761.95	761.51	758.7 - 753.7	4.42 (4)	757.09	3.30	758.21	4.45	757.06
MW101	771.74	771.41	759.6 - 754.6	13.80	757.61	12.24	759.17	13.16	758.25
MW101D	771.59	770.91	736.5 - 731.5	13.63	757.28	12.01	758.90	13.35	757.56
MW102	770.02	769.88	760.1 - 755.1	11.93	757.95	10.10	759.78	11.44	758.44
MW103	771.99	771.52	761.3 - 756.3	12.12	759.40	10.46	761.06	11.63	759.89
MW104	763.07	762.74	758.4 - 753.4	6.34	756.40	4.65	758.09	6.01	756.73
MW104D	762.92	762.66	732.8 - 727.8	6.18	756.48	4.46	758.20	5.80	756.86
MW105	770.61	770.31	760.1 - 755.1	12.42	757.89	10.62	759.69	11.92	758.39
MW105D	770.61	770.20	731.9 - 726.9	13.28	756.92	11.58	758.62	12.89	757.31
MW201	761.78	761.31	759.8 - 754.8	NI	NI	3.12	758.19	4.28	757.03
MW202D	771.89	771.53	716.1 - 711.1	NI	NI	13.07	758.46	14.35	757.18

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) Groundwater elevations for MW-4 and P-4 were gauged on February 22, 2000.
(5) Top of casing elevations for P3 and P3D were resurveyed as a result of landscaping surface modifications+A140.

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TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	5/29/2001 Depth to Water from TOC (ft.)	5/29/2001 Static Groundwater Elevation (ft.)	12/10/2001 Depth to Water from TOC (ft.)	12/10/2001 Static Groundwater Elevation (ft.)	3/18/2002 Depth to Water from TOC (ft.)	3/18/2002 Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	7.92	758.59	8.45	758.06	7.52	758.99
MW-2	763.00	762.56	759.6 - 754.6	4.00	758.56	4.69	757.87	3.69	758.87
MW-3	761.43	760.86	758.2 - 753.2	2.99	757.87	3.72	757.14	2.65	758.21
MW-4 (3)	763.08	762.42	759.2 - 754.2	3.64	758.78	4.50	757.92	3.25	759.17
P-1	768.91	768.38	762.4 - 757.4	9.38	759.00	9.82	758.56	8.94	759.44
P-2	766.95	766.35	759.4 - 754.4	7.61	758.74	8.09	758.26	7.38	758.97
P-2D	766.84	766.61	731.7 - 726.7	8.16	758.45	8.72	757.89	7.77	758.84
P-3	761.87	761.35	758.6 - 753.6	2.88	758.47	3.47	757.88	2.55	758.80
P-3D	761.81	761.39	727.6 - 722.6	3.06	758.33	3.66	757.73	2.70	758.69
P-4	761.95	761.51	758.7 - 753.7	2.93	758.58	3.94	757.57	– (5)	– (5)
MW101	771.74	771.41	759.6 - 754.6	12.26	759.15	12.60	758.81	11.75	759.66
MW101D	771.59	770.91	736.5 - 731.5	11.94	758.97	12.35	758.56	11.48	759.43
MW102	770.02	769.88	760.1 - 755.1	10.36	759.52	10.68	759.20	9.53	760.35
MW103	771.99	771.52	761.3 - 756.3	10.76	760.76	11.10	760.42	10.04	761.48
MW104	763.07	762.74	758.4 - 753.4	4.64	758.10	5.27	757.47	4.38	758.36
MW104D	762.92	762.66	732.8 - 727.8	4.34	758.32	4.94	757.72	3.96	758.70
MW105	770.61	770.31	760.1 - 755.1	10.84	759.47	11.17	759.14	10.04	760.27
MW105D	770.61	770.20	731.9 - 726.9	11.51	758.69	12.04	758.16	11.09	759.11
MW201 (4)	761.78	761.31	759.8 - 754.8	3.05	758.26	3.67	757.64	NG	NG
MW202D	771.89	771.53	716.1 - 711.1	12.96	758.57	13.50	758.03	12.55	758.98
MW301	762.93	762.54	757.4 - 752.4	4.02	758.52	4.63	757.91	3.69	758.85
MW302	761.48	761.07	757.4 - 752.4	3.48	757.59	4.14	756.93	3.17	757.90
MW302I	761.51	760.97	741.2 - 736.2	3.41	757.56	4.07	756.90	3.10	757.87
MW302D	761.49	761.19	705.9 - 700.9	2.95	758.24	3.56	757.63	2.59	758.60
MW303	761.25	760.78	758.2 - 753.2	3.18	757.60	3.79	756.99	2.83	757.95
MW304	761.96	761.54	756.4 - 751.4	4.00	757.54	4.67	756.87	3.68	757.86
MW304D	761.96	761.63	697.1 - 692.1	3.42	758.21	4.04	757.59	3.08	758.55
N. Side of Bridge / West Abutment	—	759.41	—	3.00	756.41	3.05	756.36	1.65	757.76

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) Top of casing and ground level elevations for MW-4 were resurveyed as a result of landscaping surface modifications.
(4) NG = Well not gauged. MW201 was destroyed and not sampled during March 2002 quarterly sampling event.
(5) The groundwater elevation gauged at P4 appeared to anmalous compared to historical elevation data.

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-1 7-12 2/8/99	MW-1 7-12 6/22/99	MW-1 7-12 2/15/00	MW-1 7-12 5/22/00	MW-1 7-12 11/7/00	MW-1 7-12 5/31/01	MW-1 7-12 12/12/01	MW-1 7-12 3/15/02
BTEX										
Benzene	35	200	13	10	16	12	ND	ND	ND	ND
Toluene	790	140	640	220	950	1,700	220	150	330	ND
Ethylbenzene	74	18	910	280	960	1,400	1,300	1,700	3,500	2,800
Xylenes	280	35	1,780	920	1,640	2,600	1,100	1,650	2,100	2,400
PAHs										
Naphthalene	1,500	13	120	50	27	260	200	250	150	53
2-Methylnaphthalene	750	ID	21	7	ND	ND	ND	17	20	5
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND
INORGANICS										
Arsenic	50	150	ND	8	13	ND	6	7	11	13
Barium	2,000	1,200	ND	190	130	160	220	290	110	200
Chromium	100	11**	ND	ND	ND	ND	7	ND	6	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS										
pH (ph Units)	NL	NL	NE	NE	7.26	7.1	--	7.11	7.31	7.28
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,920	1,960	3,590	1,482	1,208	2,210
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.65	0.35	0.38	0.4	0.3	0.48
Iron	300	NA	NE	NE	8,000	4,700	4,300	6,300	3,700	11,000
Nitrate	10,000	NA	NE	NE	ND	160	ND	270	ND	310
Sulfate	250,000	NA	NE	NE	33,000	110,000	61,000	73,000	33,000	36,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	470,000	420,000	400,000	470,000	390,000

SEE NOTES ON PAGE 28

KR059B030893

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-2 3-8 2/8/99	MW-2 3-8 6/22/99	MW-2 3-8 2/15/00	MW-2 3-8 5/22/00	MW-2 3-8 11/6/00	MW-2 3-8 5/31/01	MW-2 3-8 12/11/01	MW-2 3-8 3/13/02
BTEX										
Benzene	5	200	1	ND	ND	ND	ND	ND	ND	ND
Toluene	790	140	4	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND	ND	ND	ND	ND
Xylenes	280	35	7	ND	ND	ND	ND	ND	ND	ND
PAH										
Naphthalene	1,500	13	6	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND
INORGANICS										
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	16	ND	ND	ND
Zinc	5,000	270	ND	ND	100	30	60	46	63	57
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS										
pH (pH units)	NL	NL	NE	NE	5.5	6.59	6.50	6.43	6.19	6.51
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	3,050	860	2,110	1,267	939	1,890
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.84	0.51	0.40	0.52	0.37	0.48
Iron	300	NA	NE	NE	21,000	350	6,300	4,000	6,700	4,200
Nitrate	10,000	NA	NE	NE	140	1,100	600	850	100	490
Sulfate	250,000	NA	NE	NE	1,500,000	410,000	920,000	510,000	740,000	540,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	26,000	130,000	91,000	110,000	82,000	130,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-3 3-8 2/8/99	MW-3 3-8 6/22/99	MW-3 3-8 2/15/00	MW-3 3-8 5/24/00	MW-3 3-8 11/6/00	MW-3 3-8 5/30/01	MW-3 3-8 12/11/01	MW-3 3-8 3/12/02
Sample Location Screen Depth (feet) Date Collected										
VOLATILE ORGANICS										
Benzene	5	200	3	ND	ND	ND	ND	280	ND	ND
Toluene	790	140	1	ND	ND	ND	ND	13	ND	ND
Ethylbenzene	174	18	1	ND	ND	ND	ND	530	ND	ND
Xylenes	280	35	3	ND	ND	ND	ND	810	ND	ND
SEMI-VOLATILE PAHs										
Naphthalene	1,500	13	ND	ND	ND	ND	ND	61	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND
INORGANICS										
Arsenic	50	150	13	8	8	ND	7	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	13	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS										
pH (pH units)	NL	NL	NE	NE	7.27	7.7	7.22	7.71	7.43	7.86
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,290	1,380	860	473	362	167
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.53	0.7	0.48	0.85	0.63	0.72
Iron	300	NA	NE	NE	110	ND	410	64	160	22
Nitrate	10,000	NA	NE	NE	ND	ND	ND	1,300	ND	590
Sulfate	250,000	NA	NE	NE	33,000	26,000	25,000	17,000	8,900	5,700
Alkalinity (as CaCO3)	NL	NL	NE	NE	260,000	230,000	290,000	190,000	210,000	110,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-4 3-8 2/8/99	MW-4 3-8 6/22/99	MW-4 3-8 2/22/00	MW-4 3-8 5/24/00	MW-4 3-8 11/6/00	MW-4 3-8 5/30/01	MW-4 3-8 12/11/01	MW-4 3-8 3/13/02
BTEX										
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	280	35	2	ND	ND	ND	ND	ND	ND	ND
PAHs										
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND
INORGANICS										
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	ND	6	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	15	ND	40
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS										
pH (pH units)	NL	NL	NE	NE	NE	7.09	7.02	7.04	7.02	7.16
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	850	1,370	800	612	720
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.39	0.67	0.45	0.43	0.49
Iron	300	NA	NE	NE	8,700	5,900	8,900	20	7,600	91
Nitrate	10,000	NA	NE	NE	ND	230	ND	2,000	ND	1,200
Sulfate	250,000	NA	NE	NE	6,900	22,000	27,000	40,000	20,000	29,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	360,000	410,000	420,000	360,000	380,000	260,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-1 7-12 See (12)	P-1 7-12 6/22/99	P-1 7-12 5/22/00	P-1 7-12 See (13)	P-1 7-12 12/13/01	P-1 7-12 3/15/02
Sample Location / Screen Depth (feet) / Date Collected								
BTEX								
Benzene	5	200	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND
PAHs								
Naphthalene	1,500	13	ND	NE	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	NE	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	NE	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	NE	ND	ND	ND	ND
Fluorene	2,000	12	ND	NE	ND	ND	ND	ND
Phenanthrene	150	5	ND	NE	ND	ND	ND	ND
Anthracene	43	ID	ND	NE	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	NE	ND	ND	ND	ND
Pyrene	140	ID	ND	NE	ND	ND	ND	ND
INORGANICS								
Arsenic	50	150	ND	NE	ND	ND	NE	NE
Barium	2,000	1,200	ND	NE	100	140	NE	NE
Chromium (Total)	100	11 **	ND	NE	8	6	NE	NE
Selenium	50	5	ND	NE	ND	ND	NE	NE
Zinc	5,000	270	ND	NE	ND	ND	NE	NE
Cyanide (available)	200	20	NE	NE	ND	ND	NE	NE
Cyanide (amenable)	200	20	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	NE	ND	ND	NE	NE
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	NE	NE	NE	NE	NE	NE
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	NE	NE	NE
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	NE	NE	NE
Iron	300	NA	NE	NE	180	ND	NE	NE
Nitrate	10,000	NA	NE	NE	7,200	5,400	NE	NE
Sulfate	250,000	NA	NE	NE	84,000	57,000	NE	NE
Alkalinity (as CaCO3)	NL	NL	NE	NE	320,000	300,000	NE	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-2 8-13 2/8/99	P-2 8-13 6/23/99	P-2 8-13 2/16/00	P-2 8-13 5/23/00	P-2 8-13 11/8/00	P-2 8-13 6/4/01	P-2 8-13 12/12/01	P-2 8-13 3/14/02
Sample Location / Screen Depth (feet) / Date Collected										
BTEX										
Benzene	5	200	480	140	410	130	290	330	530	ND
Toluene	790	140	280	160	86	40	54	83	160	ND
Ethylbenzene	74	18	320	130	220	30	200	160	570	ND
Xylenes	280	35	1,590	610	690	450	530	670	1,900	ND
PAHs										
Naphthalene	1,500	13	2,900	200	410	ND	680	790	480	ND
2-Methylnaphthalene	750	ID	59	15	21	ND	16	27	35	ND
Acenaphthylene	150	ID	ND	8	5	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	65	38	30	13	58	71	34	ND
Fluorene	2,000	12	32	23	16	6	32	40	17	ND
Phenanthrene	150	5	46	24	5	ND	66	81	32	ND
Anthracene	43	ID	ND	8	5	ND	8	11	6	ND
Fluoranthene	210	16	ND	10	7	11	13	17	5	ND
Pyrene	140	ID	ND	5	ND	10	15	10	5	ND
INORGANICS										
Arsenic	50	150	8	8	9	8	13	11	5	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	5	4.6	ND	ND	ND	ND	4.9	ND	ND	ND
Chromium (Total)	100	11**	ND	ND	ND	5	13	ND	ND	ND
Lead	4	29	ND	ND	ND	ND	9	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	51	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS										
pH (pH units)	NL	NL	NE	NE	7.09	7.61	--	6.98	7.15	7.25
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	920	1,570	1,660	628	747	1,460
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.82	0.43	0.91	0.85	0.43	0.4
Iron	300	NA	NE	NE	440	12,000	940	11,000	790	2,700
Nitrate	10,000	NA	NE	NE	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	NE	32,000	47,000	14,000	12,000	3,200	79,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	530,000	360,000	550,000	340,000	450,000	240,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-2D 35-40 6/23/99	P-2D 35-40 2/16/00	P-2D 35-40 5/23/00	P-2D 35-40 11/8/00	P-2D 35-40 6/4/01	P-2D 35-40 12/12/01	P-2D 35-40 3/14/02
Sample Location Screen Depth (feet) Date Collected									
BTEX									
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND
PAHs									
Naphthalene	1,500	13	ND	ND	ND	6	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	5	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	6	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND
INORGANICS									
Arsenic	50	150	ND	8	5	6	9	7	8
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	110
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	21	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	7.34	7.02	--	7.01	7.36	7.33
Specific Conductivity (umhos/cm)	NL	NL	NE	990	1,170	2,100	858	928	1,610
Dissolved Oxygen (ppm)	NA	7	NE	3.04	2.64	1.62	2.01	0.56	0.38
Iron	300	NA	NE	3,400	3,100	3,200	3,400	3,000	4,100
Nitrate	10,000	NA	NE	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	86,000	93,000	110,000	100,000	110,000	100,000
Alkalinity (as CaCO3)	NL	NL	NE	300,000	300,000	310,000	300,000	300,000	310,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-3 3-8 2/8/99	P-3 3-8 6/22/99	P-3 3-8 2/15/00	P-3 3-8 5/22/00	P-3 3-8 11/6/00	P-3 3-8 5/30/01	P-3 3-8 12/11/01	P-3 3-8 3/13/02
BTEX										
Benzene	5	200	3	90	59	ND	25	ND	ND	ND
Toluene	790	140	5	21	5	ND	2	ND	ND	ND
Ethylbenzene	74		13	330	260	ND	67	ND	ND	ND
Xylenes	280	35	31	200	129	ND	65	ND	ND	ND
PAHs										
Naphthalene	1,500	13	24	24	180	ND	71	ND	ND	13
2-Methylnaphthalene	750	ID	ND	5	10	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	5	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	9	14	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	10	12	ND	ND	ND	ND	ND
Phenanthrene	150		ND	16	6	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	5	6	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	5	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND
INORGANICS										
Arsenic	50	150	ND	ND	6	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	150	290	ND	190	200	130	150
Cadmium	5	24	ND	ND	ND	0.5	4.7	0.8	0.9	0.7
Chromium (total)	100	41	ND	ND	ND	ND	12	ND	ND	ND
Lead	4	29	ND	ND	ND	ND	4	ND	ND	ND
Selenium	50		29	ND	ND	77	11	ND	27	ND
Zinc	5,000	270	ND	ND	ND	190	260	300	180	310
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	29	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS										
pH (pH units)	NL	NL	NE	NE	7.26	7.18	7.05	7.25	7.34	7.20
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	4,320	1,790	4,770	1,692	1,568	2,810
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.95	0.61	1.98	1.1	0.57	0.66
Iron	300	NA	NE	NE	9,400	210	1,000	300	300	5,600
Nitrate	10,000	NA	NE	NE	ND	3,200	600	500	270	310
Sulfate	250,000	NA	NE	NE	35,000	76,000	80,000	130,000	320,000	69,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	400,000	440,000	310,000	270,000	310,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-3D 35-40 5/22/00	P-3D 35-40 11/6/00	P-3D 35-40 5/31/01	P-3D 35-40 12/11/01	P-3D 35-40 3/13/02
Sample Location / Screen Depth (feet) / Date Collected							
VOLATILES							
Benzene	5	200	100	110	180	100	80
Toluene	790	140	2	2	2	ND	6
Ethylbenzene	74	18	1	2	2	ND	ND
Xylenes	280	35	10	9	7	ND	ND
PAH							
Naphthalene	1,500	16	28	28	58	6	5
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS							
Arsenic	50	150	27	30	35	31	33
Barium	2,000	1,200	190	200	200	200	200
Mercury	2	0.0001	ND	ND	ND	0.2	ND
Selenium	50	5	ND	ND	ND	ND	ND
Zinc	5,000	270	30	ND	ND	10	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	8.26	7.36	7.34	7.39	7.33
Specific Conductivity (umhos/cm)	NL	NL	1,630	1,740	1,021	850	1,500
Dissolved Oxygen (ppm)	NA	7	1.5	0.40	0.73	0.42	0.39
Iron	300	NA	6,000	6,300	6,700	5,600	6,100
Nitrate	10,000	NA	ND	ND	ND	ND	ND
Sulfate	250,000	NA	ND	ND	ND	ND	ND
Alkalinity (as CaCO3)	NL	NL	320,000	320,000	330,000	350,000	350,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	P-4 3-8 2/8/99	P-4 3-8 6/22/99	P-4 3-8 2/22/00	P-4 3-8 5/24/00	P-4 3-8 11/6/00	P-4 3-8 5/30/01	P-4 3-8 12/11/01	P-4 3-8 3/12/02
BTEX										
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	1	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	7	ND	ND	ND	ND	ND
PAHs*										
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND
INORGANICS*										
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	ND	9	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	12
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS										
pH (pH units)	NL	NL	NE	NE	NE	7.59	7.11	7.09	6.93	7.46
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	1,770	1,990	1,619	1,065	755
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.15	0.28	0.45	0.53	0.89
Iron	300	NA	NE	NE	4,800	ND	3,600	24	ND	28
Nitrate	10,000	NA	NE	NE	240	430	ND	490	280	120
Sulfate	250,000	NA	NE	NE	21,000	37,000	22,000	58,000	16,000	15,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	340,000	390,000	440,000	350,000	350,000	320,000

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KR059B030902

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW101 12-17 6/23/99	MW101 12-17 2/16/00	MW101 12-17 5/23/00	MW101 12-17 11/7/00	MW101 12-17 5/31/01	MW101 12-17 12/13/01	MW101 12-17 3/15/02
Sample Location / Screen Depth (feet) / Date Collected									
VOLATILE ORGANICS									
Benzene	5	200	62	80	39	110	62	ND	ND
Toluene	790	140	4,100	6,400	4,300	9,900	5,700	2,200	ND
Ethylbenzene	74	18	760	1,400	590	1,600	2,700	1,100	ND
Xylenes	280	35	5,600	6,000	5,600	18,000	20,700	2,600	ND
SEMI-VOLATILE PAHs									
Naphthalene	1,500	13	2,800	1,100	680	3,100	2,700	770	ND
2-Methylnaphthalene	750	ID	55	31	35	150	110	39	ND
Acenaphthylene	150	ID	75	33	ND	88	30	20	ND
Acenaphthene	3,800	19	ND	6	21	ND	51	ND	ND
Fluorene	2,000	12	25	11	ND	ND	ND	ND	ND
Phenanthrene	150	5	74	7	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	7	ND	ND	ND	ND	ND
Fluoranthene	210	16	ND	ND	ND	ND	11	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	17	ND	ND
INORGANICS									
Arsenic	50	150	7	9	6	6	5	5	ND
Barium	2,000	1,200	760	230	230	190	230	190	ND
Cadmium	5	4	ND	ND	0.5	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	7	ND	ND	ND
Selenium	50	25	ND	ND	15	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	7.34	7.44	--	7.28	7.32	7.59
Specific Conductivity (umhos/cm)	NL	NL	NE	1,420	3,040	2,350	2,890	1,483	2,230
Dissolved Oxygen (ppm)	NCA	7	NE	0.58	0.62	0.42	0.36	0.33	0.4
Iron	300	NA	NE	5,300	1,700	1,700	1,400	2,100	37
Nitrate	10,000	NA	NE	310	4,500	710	970	900	1,900
Sulfate	250,000	NA	NE	63,000	70,000	44,000	96,000	44,000	51,000
Alkalinity (as CaCO3)	NL	NL	NE	470,000	490,000	490,000	380,000	460,000	410,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW101D 35-40 6/23/99	MW101D 35-40 2/16/00	MW101D 35-40 5/23/00	MW101D 35-40 11/7/00	MW101D 35-40 6/1/01	MW101D 35-40 12/13/01	MW101D 35-40 3/14/02
Sample Location / Screen Depth (feet) / Date Collected									
BTEX									
Benzene	5	200	2	ND	ND	ND	ND	ND	ND
Toluene	790	140	12	5	ND	15	ND	ND	ND
Ethylbenzene	74	18	170	950	390	210	590	600	800
Xylenes	280	35	872	4,480	2,200	4,700	6,800	5,000	7,500
PAHs									
Naphthalene	1,500	13	3,100	4,500	4,600	5,100	9,800	6,800	5,100
2-Methylnaphthalene	750	ID	210	120	400	530	710	380	270
Acenaphthylene	150	ID	190	150	250	370	400	120	160
Acenaphthene	3,800	19	65	5	ND	ND	ND	ND	ND
Fluorene	2,000	12	25	23	29	52	ND	ND	60
Phenanthrene	150	5	ND	5	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	5	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND
INORGANICS									
Arsenic	50	150	16	23	23	23	27	25	25
Barium	2,000	1,200	420	450	430	390	330	280	330
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	1.4	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	7.34	8.04	--	7.42	7.40	7.63
Specific Conductivity (umhos/cm)	NL	NL	NE	1,970	2,510	3,090	1,217	1,256	1,780
Dissolved Oxygen (ppm)	NA	7	NE	2.59	1.27	0.65	0.68	0.31	0.33
Iron	300	NA	NE	3,300	3,000	2,300	2,000	1,800	2,300
Nitrate	10,000	NA	NE	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	15,000	15,000	15,000	11,000	18,000	10,000
Alkalinity (as CaCO3)	NL	NL	NE	330,000	410,000	340,000	360,000	350,000	360,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW102 10-15 6/22/99	MW102 10-15 2/16/00	MW102 10-15 5/22/00	MW102 10-15 11/7/00	MW102 10-15 6/4/01	MW102 10-15 12/13/01	MW102 10-15 3/15/02
BTEX									
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND
PAH									
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	9	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND
INORGANICS									
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	5	ND	ND	ND
Selenium	50	5	ND	6	ND	9	ND	8	ND
Zinc	5,000	270	ND	250	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	7.46	7.76	7.10	7.11	7.32	7.63
Specific Conductivity (umhos/cm)	NL	NL	NE	590	1,590	1,090	649	555	590
Dissolved Oxygen (ppm)	NA	7	NE	3.67	7.55	3.97	4.4	1.33	1.03
Iron	300	NA	NE	ND	ND	ND	ND	ND	ND
Nitrate	10,000	NA	NE	3,100	1,300	2,100	950	1,100	460
Sulfate	250,000	NA	NE	54,000	38,000	68,000	60,000	48,000	30,000
Alkalinity (as CaCO3)	NL	NL	NE	240,000	280,000	290,000	330,000	320,000	340,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW103 11-16 6/22/99	MW103 11-16 2/16/00	MW103 11-16 5/22/00	MW103 11-16 11/7/00	MW103 11-16 5/31/01	MW103 11-16 12/13/01	MW103 11-16 3/15/02
Sample Location / Screen Depth (feet) / Date Collected									
BTEX									
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	2	ND	ND	ND	ND	ND	ND
Xylenes	280	35	2	ND	ND	ND	ND	ND	ND
PAHs									
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND
INORGANICS									
Arsenic	50	150	ND	5	11	14	ND	11	ND
Barium	2,000	1,200	ND	ND	160	ND	480	ND	390
Chromium (total)	100	11**	ND	ND	ND	9	ND	7	ND
Selenium	50	5	ND	ND	36	ND	ND	ND	ND
Silver	98	70.7	ND	ND	ND	ND	0.6	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	7.84	8.65	7.64	7.37	7.79	7.77
Specific Conductivity (umhos/cm)	NL	NL	NE	2,370	6,370	2,390	4,680	1,608	1,389
Dissolved Oxygen (ppm)	NA	7	NE	1.38	1.5	1.85	1.9	1.12	5.33
Iron	300	NA	NE	ND	370	ND	100	ND	210
Nitrate	10,000	NA	NE	410	2,500	1,400	3,300	720	2,100
Sulfate	250,000	NA	NE	19,000	58,000	27,000	150,000	15,000	110,000
Alkalinity (as CaCO3)	NL	NL	NE	430,000	410,000	490,000	230,000	480,000	330,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW104 5-10 6/23/99	MW104 5-10 2/15/00	MW104 5-10 5/24/00	MW104 5-10 11/6/00	MW104 5-10 5/31/01	MW104 5-10 12/11/01	MW104 5-10 3/13/02
Sample Location / Screen Depth (feet) / Date Collected									
BTEX									
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND
PAHs*									
Naphthalene	1,500	13	ND	ND	ND	10	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND
INORGANICS*									
Arsenic	50	150	5	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	340	190	420	220	310	140	150
Cadmium	5	4	ND	ND	0.8	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	10.0	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	240	400	210	150	64	88
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	7.37	6.88	7.42	7.20	7.29	7.37
Specific Conductivity (umhos/cm)	NL	NL	NE	3,570	4,600	4,180	2,580	1,373	1,790
Dissolved Oxygen (ppm)	NA	7	NE	0.49	0.54	0.39	0.39	0.43	0.93
Iron	300	NA	NE	5,700	4,700	5,000	6,200	5,200	3,400
Nitrate	10,000	NA	NE	340	220	ND	ND	ND	460
Sulfate	250,000	NA	NE	18,000	43,000	16,000	45,000	29,000	48,000
Alkalinity (as CaCO3)	NL	NL	NE	490,000	440,000	590,000	380,000	450,000	320,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW104D 30-35 6/23/99	MW104D 30-35 2/15/00	MW104D 30-35 5/24/00	MW104D 30-35 11/6/00	MW104D 30-35 5/31/01	MW104D 30-35 12/12/01	MW104D 30-35 3/14/02
BTEX									
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND
Toluene	790	140	1	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND
PAHs									
Naphthalene	1,500	135	16	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND
INORGANICS									
Arsenic	50	150	16	28	27	25	25	22	24
Barium	2,000	1,200	230	260	250	270	240	230	270
Chromium (total)	100	11**	ND	ND	ND	5	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	28	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	7.34	7.44	7.52	7.34	7.34	7.35
Specific Conductivity (umhos/cm)	NL	NL	NE	1,540	1,090	1,660	742	721	1,100
Dissolved Oxygen (ppm)	NA	7	NE	3.5	2.42	1.18	1.52	0.46	0.52
Iron	300	NA	NE	5,800	5,700	5,900	5,500	5,200	6,500
Nitrate	10,000	NA	NE	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	77,000	71,000	76,000	71,000	70,000	71,000
Alkalinity (as CaCO3)	NL	NL	NE	280,000	320,000	320,000	310,000	320,000	310,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW105 11-16 6/24/99	MW105 11-16 2/16/00	MW105 11-16 5/22/00	MW105 11-16 11/7/00	MW105 11-16 6/1/01	MW105 11-16 12/14/01	MW105 11-16 3/14/02
BTEX									
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND
PAHs*									
Naphthalene	1,500	13	6	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND
INORGANICS									
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	7	ND	5	ND
Selenium	50	5**	ND	ND	ND	8	ND	9	ND
Silver	98	0.2	ND	ND	ND	1.4	ND	ND	ND
Zinc	5,000	270	ND	ND	160	ND	ND	10	360
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	7.50	8.43	7.24	7.48	7.44	7.44
Specific Conductivity (umhos/cm)	NL	NL	NE	730	1,690	1,460	878	662	600
Dissolved Oxygen (ppm)	NA	7	NE	2.76	5.84	2.10	3.25	1.07	0.94
Iron	300	NA	NE	ND	150	ND	ND	ND	ND
Nitrate	10,000	NA	NE	5,300	1,400	2,900	1,100	940	220
Sulfate	250,000	NA	NE	90,000	51,000	80,000	50,000	50,000	23,000
Alkalinity (as CaCO3)	NL	NL	NE	270,000	370,000	350,000	410,000	420,000	400,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW105D 39-44 6/24/99	MW105D 39-44 2/16/00	MW105D 39-44 5/22/00	MW105D 39-44 11/7/00	MW105D 39-44 6/1/01	MW105D 39-44 12/14/01	MW105D 39-44 3/14/02
Sample Location / Screen Depth (feet) / Date Collected									
BTEX									
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND
Xylenes	280	35	2	ND	ND	ND	ND	ND	ND
PAHs									
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND
INORGANICS									
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	150	150	150	180	160	150	170
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	210	200	230	180	110
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	NE	7.37	8.15	7.15	7.45	7.34	7.4
Specific Conductivity (umhos/cm)	NL	NL	NE	1,030	1,920	1,830	878	871	1,330
Dissolved Oxygen (ppm)	NA	7	NE	2.21	2.46	1.72	2.25	0.36	0.37
Iron	300	NA	NE	ND	540	200	52	ND	110
Nitrate	10,000	NA	NE	540	640	400	730	770	420
Sulfate	250,000	NA	NE	73,000	76,000	86,000	76,000	74,000	76,000
Alkalinity (as CaCO3)	NL	NL	NE	300,000	380,000	300,000	300,000	310,000	310,000

SEE NOTES ON PAGE 28

KR059B030910

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW201 3-8 5/23/00	MW201 3-8 11/6/2000	MW201 3-8 5/29/01	MW201 3-8 12/10/01
BTEX						
Benzene	[illegible]	200	150	20	ND	170
Toluene	790	140	5	ND	ND	ND
Ethylbenzene	[illegible]	[illegible]	80	16	ND	40
Xylenes	280	[illegible]	130	11	ND	50
PAHs						
Naphthalene	1,500	13	160	950	ND	ND
2-Methylnaphthalene	750	ID	10	27	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND
Acenaphthene	3,800	19	11	30	ND	ND
Fluorene	2,000	12	ND	8	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND
INORGANICS						
Arsenic	50	150	ND	ND	8	8
Barium	2,000	1,200	200	190	120	140
Chromium (total)	100	11**	ND	8	ND	ND
Selenium	50	5	ND	ND	ND	ND
Silver	98	0.2	ND	0.9	ND	ND
Zinc	5,000	270	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS						
pH (pH units)	NL	NL	6.59	7.07	7.17	7.10
Specific Conductivity (umhos/cm)	NL	NL	1,970	2,480	1,164	1,368
Dissolved Oxygen (ppm)	NA	7	0.35	0.34	0.41	0.38
Iron	300	NA	4,500	6,200	4,700	10,000
Nitrate	10,000	NA	ND	ND	100	ND
Sulfate	250,000	NA	34,000	ND	21,000	3,000
Alkalinity (as CaCO3)	NL	NL	490,000	450,000	440,000	500,000

SEE NOTES ON PAGE 28

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW202D 55-60 5/23/2000	MW202D 55-60 11/7/2000	MW202D 55-60 6/1/01	MW202D 55-60 12/13/01	MW202D 55-60 3/15/02
Sample Location Screen Depth (feet) Date Collected							
BTEX							
Benzene	5	200	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND
Xylenes	280	35	5	8	ND	ND	ND
PAHs							
Naphthalene	1,500	918	95	68	37	1.3	ND
2-Methylnaphthalene	750	ID	ND	6	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND
INORGANICS							
Arsenic	50	150	ND	ND	ND	ND	ND
Barium	2,000	1,200	170	180	170	160	170
Selenium	50	5	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	7.53	--	7.17	7.38	7.53
Specific Conductivity (umhos/cm)	NL	NL	1,720	1,770	877	843	1,190
Dissolved Oxygen (ppm)	NA	7	1.48	0.55	1.02	0.29	0.33
Iron	300	NA	310	170	39	ND	86
Nitrate	10,000	NA	560	300	540	330	170
Sulfate	250,000	NA	66,000	68,000	67,000	68,000	65,000
Alkalinity (as CaCO3)	NL	NL	310,000	330,000	300,000	300,000	310,000

SEE NOTES ON PAGE 28

KR059B030912

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW301 5-10 6/1/01	MW301 5-10 12/12/01	MW301 5-10 3/14/02
VOLATILES					
Benzene	5	200	190	1,400	2,200
Toluene	790	140	30	ND	ND
Ethylbenzene	925	18	1,100	1,100	930
Xylenes	280	35	950	50	130
SEMI-VOLATILES					
Naphthalene	1,500	3	3,300	3,000	3,800
2-Methylnaphthalene	750	ID	290	250	190
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	29	87	60	70
Fluorene	2,000	12	ND	ND	60
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	5	15	50
Barium	2,000	1,200	160	160	170
Chromium (total)	100	11**	ND	5	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	6.93	7.09	7.13
Specific Conductivity (umhos/cm)	NL	NL	968	852	1,410
Dissolved Oxygen (ppm)	NA	7	0.74	0.39	0.41
Iron	300	NA	14,000	13,000	20,000
Nitrate	10,000	NA	ND	ND	ND
Sulfate	250,000	NA	ND	ND	ND
Alkalinity (as CaCO3)	NL	NL	400,000	410,000	420,000

SEE NOTES ON PAGE 28

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW302 4-9 5/29/01	MW302 4-9 12/10/01	MW302 4-9 3/13/02
BTEX					
Benzene	5	200	ND	ND	ND
Toluene	790	140	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND
Xylenes	280	35	ND	ND	ND
PAH					
Naphthalene	1,500	13	ND	6	ND
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	9	8	ND
Barium	2,000	1,200	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	7.33	7.11	7.28
Specific Conductivity (umhos/cm)	NL	NL	750	526	1,410
Dissolved Oxygen (ppm)	NA	7	0.55	0.45	1.2
Iron	300	NA	6500	5,500	4,900
Nitrate	10,000	NA	ND	ND	210
Sulfate	250,000	NA	20,000	5,400	18,000
Alkalinity (as CaCO3)	NL	NL	230,000	330,000	270,000

SEE NOTES ON PAGE 28

KR059B030914

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW302I 20-25 5/29/01	MW302I 20-25 12/10/01	MW302I 20-25 3/13/02
		Sample Location Screen Depth (feet) Date Collected			
BTEX					
Benzene	5	200	ND	110	170
Toluene	790	140	ND	ND	ND
Ethylbenzene	74	18	ND	ND	59
Xylenes	280	33	ND	ND	97
PAHs					
Naphthalene	1,500	13	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	15	20	20
Barium	2,000	1,200	890	1,200	650
Chromium (total)	100	11**	ND	ND	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	7.33	7.11	7.23
Specific Conductivity (umhos/cm)	NL	NL	2,550	2,960	3,020
Dissolved Oxygen (ppm)	NA	7	0.52	0.45	0.50
Iron	10,000	NA	20,000	18,000	19,000
Nitrate	10,000	NA	ND	ND	ND
Sulfate	250,000	NA	32,000	25,000	14,000
Alkalinity (as CaCO3)	NL	NL	330,000	420,000	330,000

SEE NOTES ON PAGE 28

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW302D 55-60 5/29/01	MW302D 55-60 12/11/01	MW302D 55-60 3/13/02
Sample Location Screen Depth (feet) Date Collected					
BTEX					
Benzene	5	200	ND	ND	ND
Toluene	790	140	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND
Xylenes	280	35	ND	ND	ND
PAH					
Naphthalene	1,500	13	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	29	26	30
Barium	2,000	1,200	200	180	200
Chromium (total)	100	11**	ND	ND	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	7.5	7.34	7.33
Specific Conductivity (umhos/cm)	NL	NL	953	816	1,410
Dissolved Oxygen (ppm)	NA	7	0.76	0.56	0.55
Iron	300	NA	1006	2800	3400
Nitrate	10,000	NA	ND	ND	ND
Sulfate	250,000	NA	6,400	23,000	19,000
Alkalinity (as CaCO3)	NL	NL	330,000	330,000	330,000

SEE NOTES ON PAGE 28

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW303 3-8 5/29/01	MW303 3-8 12/10/01	MW303 3-8 3/12/02
Sample Location / Screen Depth (feet) / Date Collected					
BTEX					
Benzene	5	200	290	ND	ND
Toluene	790	140	10	ND	ND
Ethylbenzene	74	18	ND	ND	ND
Xylenes	280	20	ND	ND	ND
PAHs					
Naphthalene	1,500	10	ND	5	ND
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	ND	ND	ND
Barium	2,000	1,200	370	150	180
Chromium (total)	100	11**	ND	8	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	20	ND
Cyanide (free)	200	20	ND	10	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	6.94	6.9	7.23
Specific Conductivity (umhos/cm)	NL	NL	1,702	1,236	1,013
Dissolved Oxygen (ppm)	NA	7	0.67	0.85	0.89
Iron	300	NA	8,200	7,200	13,000
Nitrate	10,000	NA	ND	ND	ND
Sulfate	250,000	NA	130,000	3,600	53,000
Alkalinity (as CaCO3)	NL	NL	680,000	720,000	620,000

SEE NOTES ON PAGE 28

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW304 5-10 5/30/01	MW304 5-10 12/10/01	MW304 5-10 3/12/02
		Sample Location Screen Depth (feet) Date Collected			
VOLATILE ORGANICS					
Benzene	5	200	330	260	270
Toluene	790	140	7	5	5
Ethylbenzene	700	78	120	150	110
Xylenes	280	85	610	820	150
SEMI-VOLATILE PAHs					
Naphthalene	1,500	163	190	120	77
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	36	28	27
Barium	2,000	1,200	220	180	200
Chromium (total)	100	11**	ND	ND	ND
Lead	4	29	4.0	4.0	4.0
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	7.06	6.95	6.91
Specific Conductivity (umhos/cm)	NL	NL	1,079	1,595	787
Dissolved Oxygen (ppm)	NA	7	0.44	0.8	0.83
Iron	300	NA	27,000	18,000	37,000
Nitrate	10,000	NA	ND	ND	ND
Sulfate	250,000	NA	3,200	ND	ND
Alkalinity (as CaCO3)	NL	NL	380,000	390,000	460,000

SEE NOTES ON PAGE 28

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW304D 65-70 5/30/01	MW304D 65-70 12/10/01	MW304D 65-70 3/12/02
Constituent	Commercial II Drinking Water Criteria	GSI Criteria			
BTEX					
Benzene	5	200	ND	ND	ND
Toluene	790	140	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND
Xylenes	280	35	ND	ND	ND
PAHs					
Naphthalene	1,500	13	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
INORGANICS					
Arsenic	50	150	23	22	25
Barium	2,000	1,200	270	270	290
Chromium (total)	100	11**	ND	ND	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND
NATURAL ATTENUATION PARAMETERS					
pH (pH units)	NL	NL	7.4	7.37	7.37
Specific Conductivity (umhos/cm)	NL	NL	896	896	618
Dissolved Oxygen (ppm)	NA	7	0.58	0.7	0.83
Iron	300	NA	5,600	5,600	6,700
Nitrate	10,000	NA	ND	ND	ND
Sulfate	250,000	NA	68,000	69,000	67,000
Alkalinity (as CaCO3)	NL	NL	290,000	300,000	300,000

SEE NOTES ON PAGE 28

KR059B030919

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

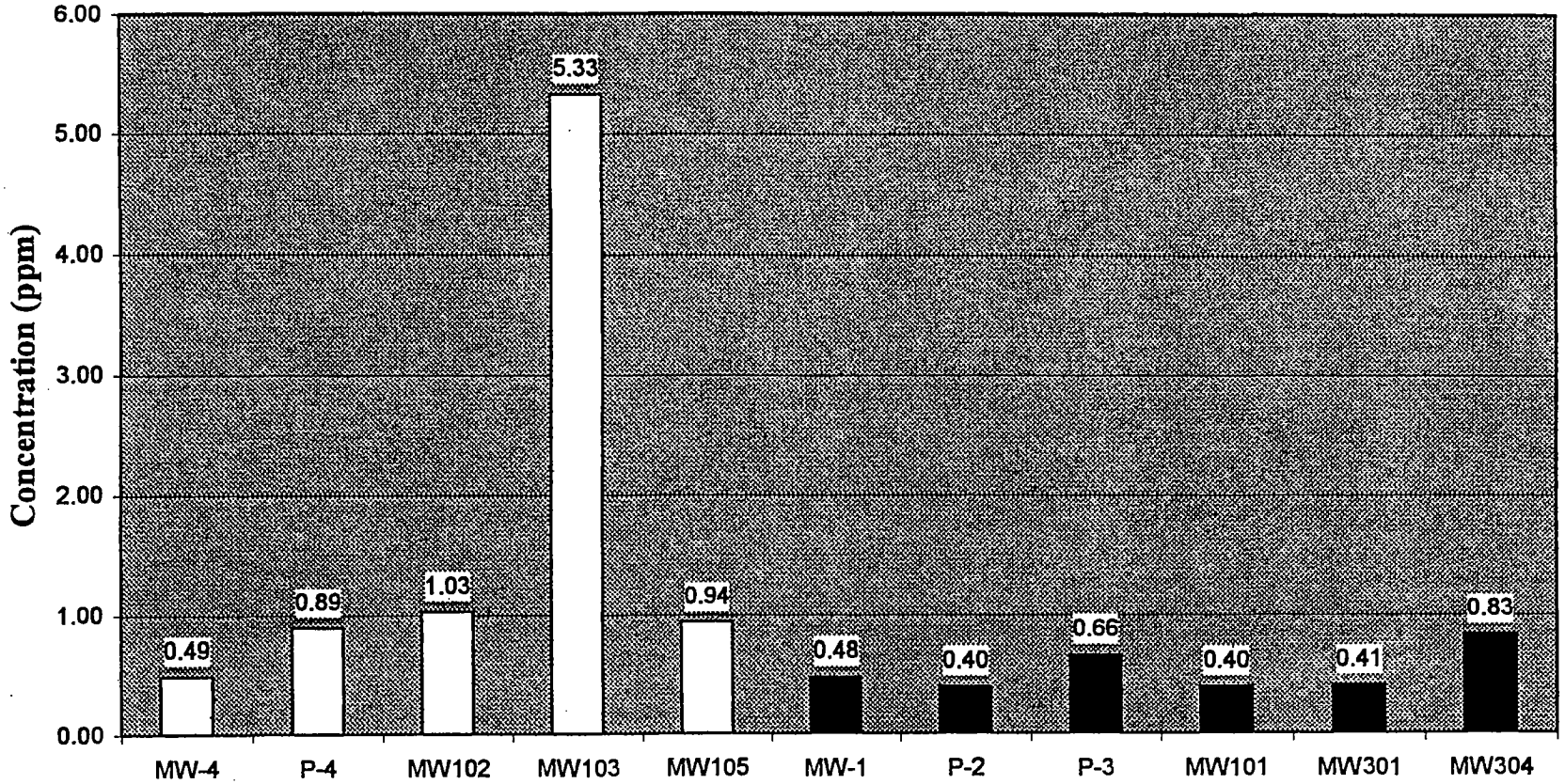
NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb) unless otherwise noted.
(2) ND= Analytical result was less than target detection limit.
(3) ID = Inadequate data to develop criterion.
(4) NA= Criterion or value is not available.
(5) NL = Not listed under Part 201 Generic Commercial II Cleanup Criteria dated June, 2000.
(6) NE = Chemical not evaluated by analytical laboratory.
(7) NS = Monitoring well not sampled.
(8) * = Constituents listed for PAHs and metals are limited to those constituents that indicated detectable concentrations for at least one sample.
(9) ** = GSI Criteria for Hexavalent Chromium.
(10) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(11) The above data was compared to criteria for volatilization to indoor air, groundwater contact, water solubility, flammability/explosivity and acute inhalation and the data did not exceed these criteria.
(12) Groundwater samples were collected on different dates due to insufficient recharge. BTEX and cyanide = 2/25/99. PAHs = 2/27/99. Metals = 3/1/99
(13) Groundwater samples were collected on different dates due to insufficient recharge. BTEX, PAHs and metals = 6/1/01. Other inorganics = 6/4/01

ATTACHMENT C

CHARTS

Chart No. 1 – Dissolved Oxygen: Non-Impacted Wells vs. Impacted Wells
Chart No. 2 - Alkalinity: Non-Impacted Wells vs. Impacted Wells
Chart No. 3 - Nitrate: Non-Impacted Wells vs. Impacted Wells
Chart No. 4 – Dissolved Iron: Non-Impacted Wells vs. Impacted Wells
Chart No. 5 - Sulfate: Non-Impacted Wells vs. Impacted Wells

DISSOLVED OXYGEN
March 2002
Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

Impacted Wells = MW-1, P-2, P-3, MW101, MW301 and MW304

KR059B030922

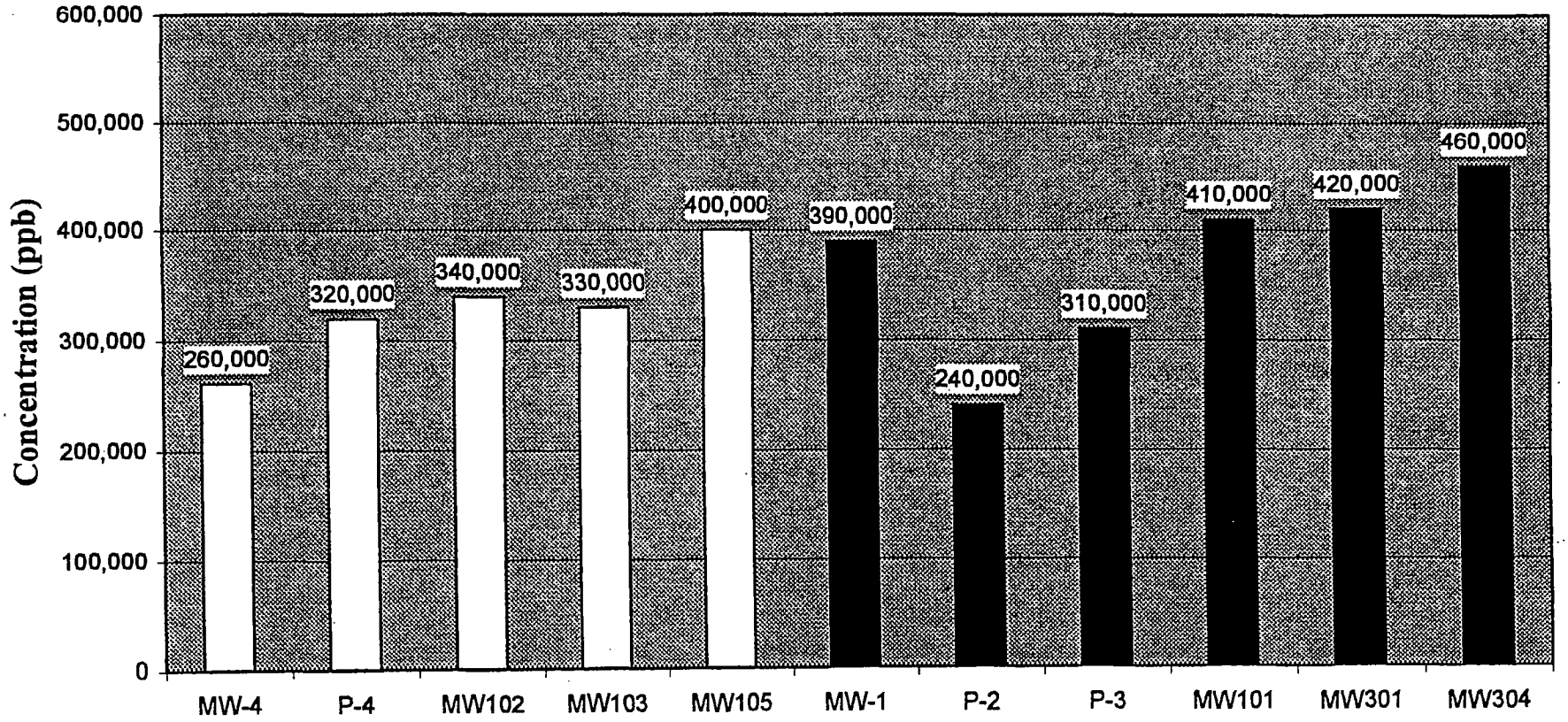
DISSOLVED OXYGEN KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 6-5-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 1

ALKALINITY

March 2002

Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

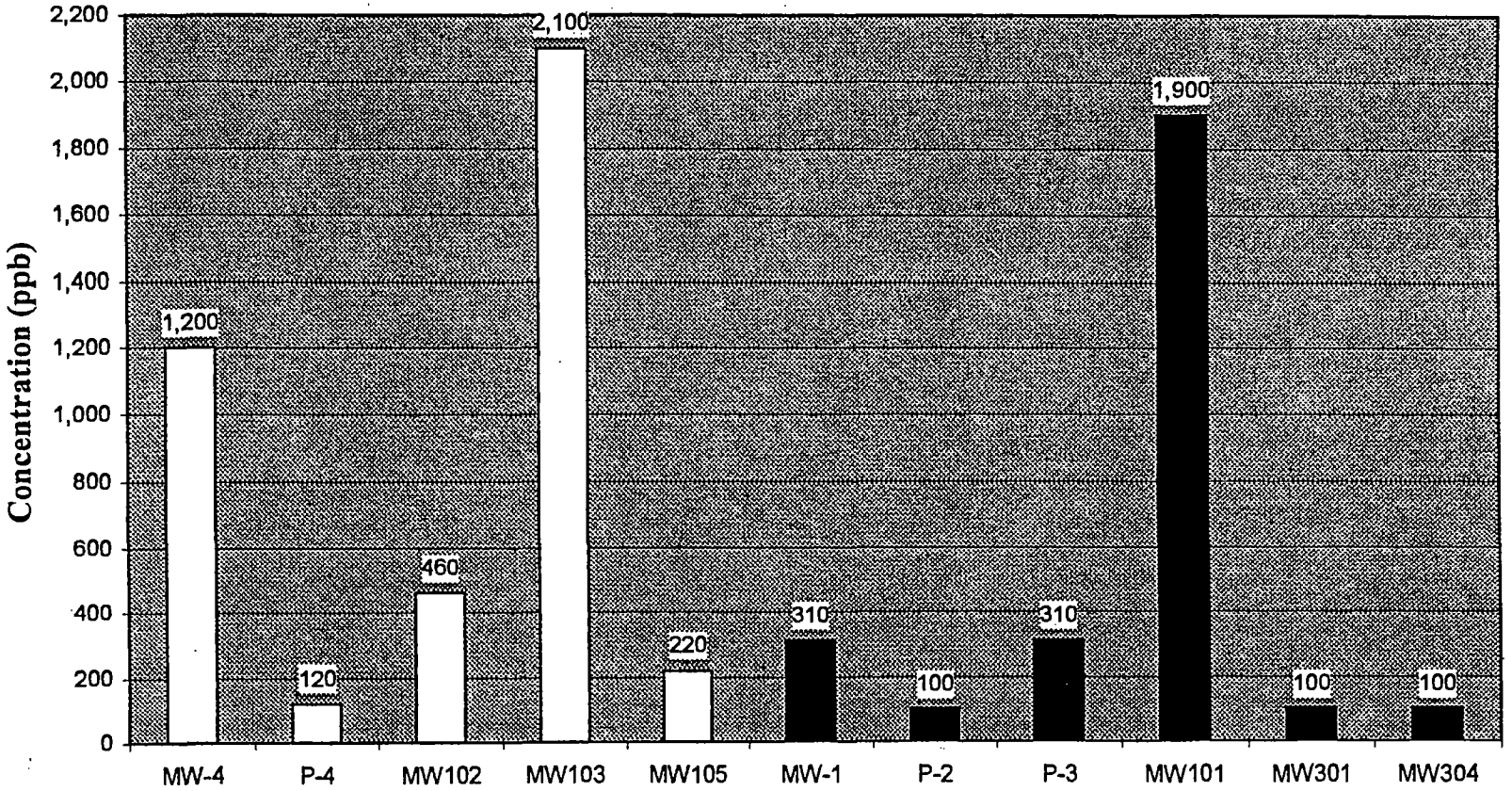
Impacted Wells = MW-1, P-2, P-3, MW101, MW301 and MW304

KR059B030923

ALKALINITY KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 6-5-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	smi soil and materials engineers, inc

Chart No. 2

NITRATE
March 2002
Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

Impacted Wells = MW-1, P-2, P-3, MW101, MW301 and MW304

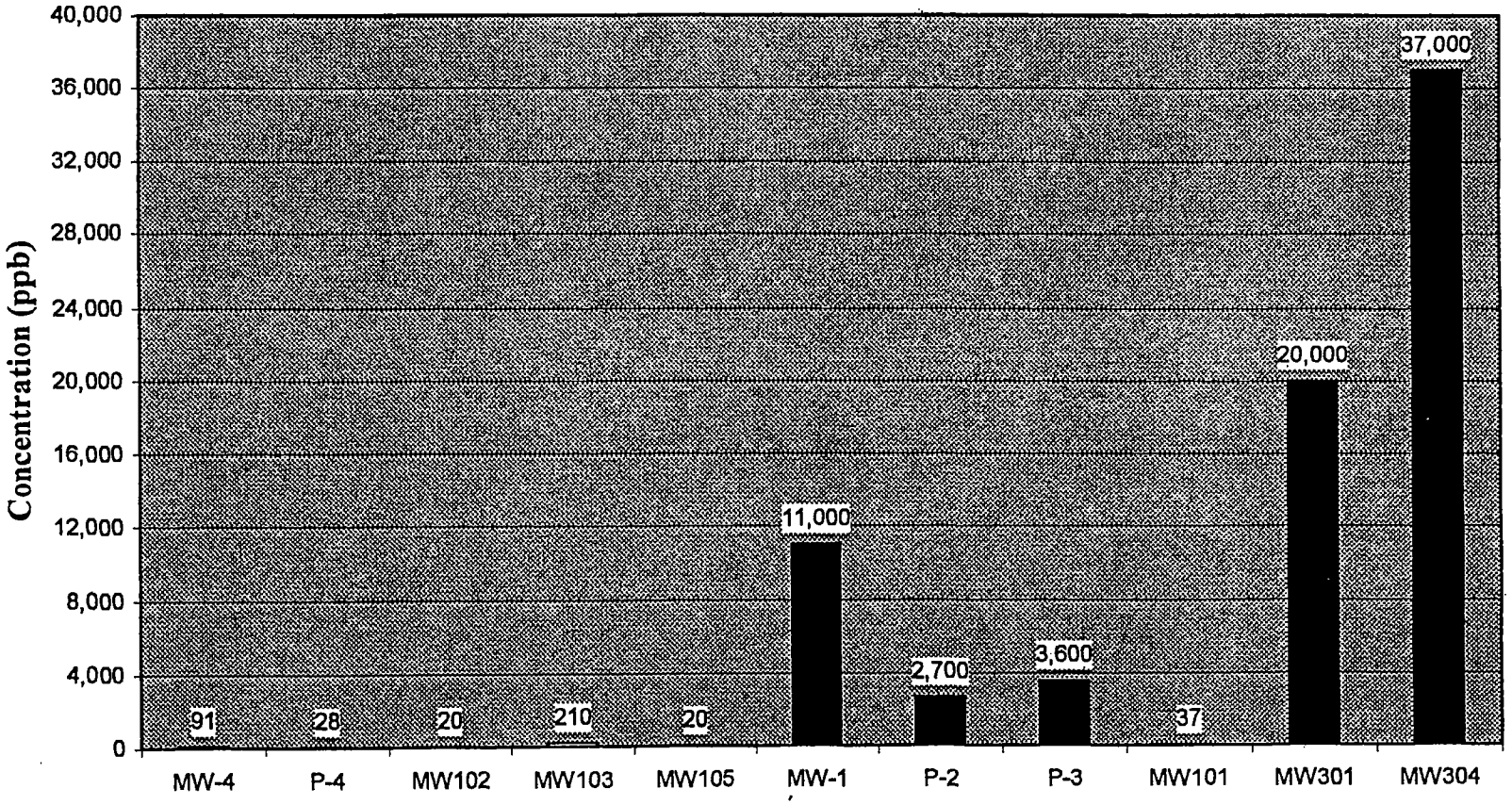
KR059B030924

NITRATE KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 6-5-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	smi soil and materials engineers, inc

Chart No. 3

00239

DISSOLVED IRON
March 2002
Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

Impacted Wells = MW-1, P-2, P-3, MW101, MW301 and MW304

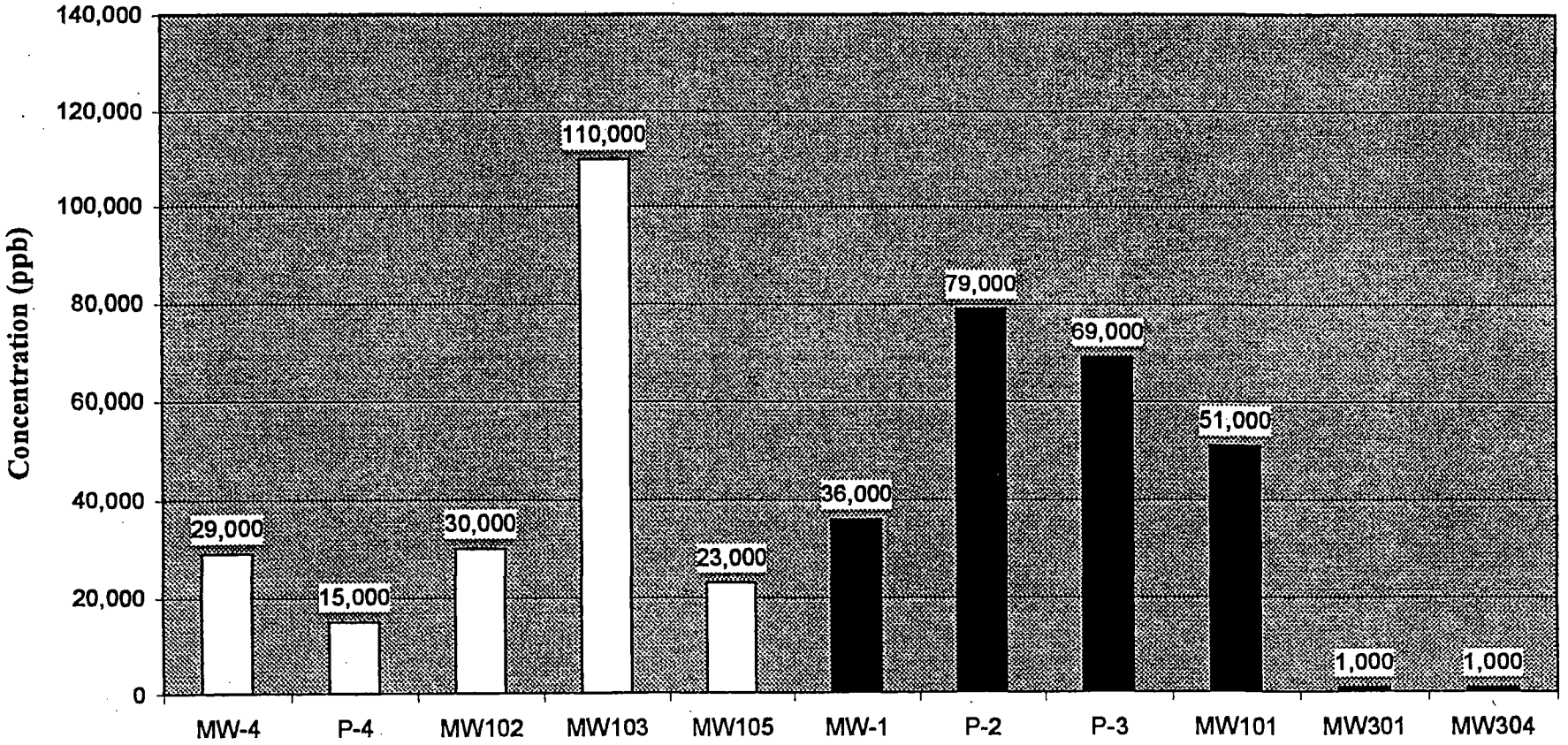
KR059B030925

DISSOLVED IRON KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 6-5-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 4

00348

SULFATE
March 2002
Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

KR059B030926

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105
Impacted Wells = MW-1, P-2, P-3, MW101, MW301 and MW304

SULFATE KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 6-5-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 5

05341

ATTACHMENT D
ANALYTICAL REPORT

KR059B030927

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-251, Jackson

Date: April 25, 2002

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823B-5
- Sampling Dates of March 12 - 15, 2002

File Index: 510217-410-403
510217-410-422

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On March 14 & 18, 2002 the Chemistry Section (CHEM) of Laboratory Services received groundwater samples collected at the KALAMAZOO FORMER MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Dissolved Michigan 10 Metals
Available (OIA) and Free Cyanide
Dissolved Iron
Nitrate
Sulfate
Alkalinity

Analytical Notes: (1) Sulfate, nitrate and dissolved metal determinations were performed by Brighton Analytical. All other determinations were performed by CHEM. (2) PAH and/or BTEX TDLs for samples MW-301, MW-1, and MW-101D were raised due to sample dilution.

Analytical results are attached for your review.

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 or parameter specific recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Aromatic Volatile Organics (BTEX) - Method 8260, Volatile Organic Compounds By Gas Chromatography / Mass Spectrometry: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Free - Method ASTM-D4282-95, Determination Of Free Cyanide In Water And Wastewater By Micro-diffusion, ASTM.

Cyanide, Available - Method OIA-1677, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry. EPA-821-R-99-013.

Dissolved Metals Preparation – Waters (Mercury) – Method 7470, Mercury in Liquid Waste. SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	EPA Method
Arsenic	200.8
Barium	200.8
Cadmium	200.8,6020
Chromium	200.8
Copper	200.8
Iron	200.8
Lead	200.8
Mercury	7470
Selenium	200.8,7740
Silver	200.8
Zinc	200.8

SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.
Methods For Chemical Analysis of Water and Wastes, USEPA, EMSL.

ANALYTICAL METHODS

Inorganic Analytes

Analyte	Test Method
Nitrate	353.2: 300.0
Sulfate	375.2; 300.0
Alkalinity	310.1

Methods For Chemical Analysis of Water and Wastes, USEPA, EMSL.

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-1
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-23-02
Control Number	020422-14

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	101	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	P-1
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-20-02
Analysis Date	04-10-02
Control Number	020422-14

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	97	33-141

KR059B030931

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
P-1	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-1	Sample Identification	P-1
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-15-02	Sample Date	03-15-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	no sample	Preservation Date	no sample
Preservation Type	no sample	Preservation Type	no sample
Preparation Date (Hg)	no sample	Analysis Date	no sample
Analysis Date, Start/End	no sample		
Control Number	020422-14	Control Number	020422-14

METALS	ug/L	TDL
Arsenic - 200.8	-	5.0
Barium - 200.8	-	100.0
Cadmium - 200.8, 6020	-	0.5
Chromium (total) - 200.8	-	5.0
Copper - 200.8	-	25.0
Lead - 200.8	-	3.0
Mercury - 7470	-	0.2
Selenium - 200.8, 7740	-	5.0
Silver - 200.8	-	0.5
Zinc - 200.8	-	10.0
Metal Results Are Reported As	-	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	-	20

KR059B030932

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date [signature]

Data File	Kalamazoo
P-1	-

INORG-1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-1
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	no sample
Analysis Date, Sulfate	no sample
Analysis Date, Alkalinity	no sample
Control Number	020422-14

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	-	100
Sulfate - 375.2; 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

Sample Identification	P-1
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date, Available (OIA)	no sample
Analysis Date, Free	no sample
Control Number	020422-14

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B030933

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
P-1	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-2
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-23-02
Control Number	020422-02

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	99	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	P-2
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-20-02
Analysis Date	04-10-02
Control Number	020422-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	97	33-141

KR059B030934

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
P-2	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-2	Sample Identification	P-2
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-14-02	Sample Date	03-14-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-21-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020422-02	Control Number	020422-02

METALS	ug/L	TDL
Arsenic - 200.8	nd	5.0
Barium - 200.8	nd	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	2,700	20

KR059B030935

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
P-2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-2
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	03-15-02
Analysis Date, Sulfate	03-15-02
Analysis Date, Alkalinity	03-19-02
Control Number	020422-02

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	79,000	1,000
Alkalinity, as CaCO3 - 310.1	240,000	-

Sample Identification	P-2
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	NaOH / PbCO3
Analysis Date, Available (OIA)	03-20-02
Analysis Date, Free	03-22-02
Control Number	020422-02

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030936

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *MH* Date *4-25-02*

Data File	Kalamazoo
P-2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-2D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-23-02
Control Number	020422-03

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	99	76-114
Toluene-d8	100	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	P-2D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-20-02
Analysis Date	04-10-02
Control Number	020422-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	86	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	98	33-141

KR059B030937

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalamazoo
P-2D	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-2D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Preparation Date (Hg)	03-21-02
Analysis Date, Start/End	03-25-02 / 03-25-02
Control Number	020422-03

METALS	ug/L	TDL
Arsenic - 200.8	8	5.0
Barium - 200.8	110	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	P-2D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date	03-25-02
Control Number	020422-03

METALS	ug/L	TDL
Iron (dissolved) - 200.8	4,100	20

KR059B030938

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
P-2D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-2D	Sample Identification	P-2D
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-14-02	Sample Date	03-14-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	03-15-02	Preservation Date	at collection
Analysis Date, Sulfate	03-15-02	Preservation Type	NaOH / PbCO3
Analysis Date, Alkalinity	03-19-02	Analysis Date, Available (OIA)	03-20-02
		Analysis Date, Free	03-22-02
Control Number	020422-03	Control Number	020422-03

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	100,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030939

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
P-2D	-

00354

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-3
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-20-02
Control Number	020403-08

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	102	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	P-3
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-19-02
Analysis Date	04-09-02
Control Number	020403-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	17	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	84	35-114
2-Fluorobiphenyl	92	43-116
p-Terphenyl-d14	97	33-141

KR059B030940

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
P-3	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-3
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Preparation Date (Hg)	03-20-02
Analysis Date, Start/End	03-25-02 / 03-25-02
Control Number	020403-08

METALS	ug/L	TDL
Arsenic - 200.8	nd	5.0
Barium - 200.8	150	100.0
Cadmium - 200.8, 6020	0.7	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	310	10.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	P-3
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date	03-25-02
Control Number	020403-08

METALS	ug/L	TDL
Iron (dissolved) - 200.8	3,600	20

KR059B030941

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
P-3	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-3
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	03-14-02
Analysis Date, Sulfate	03-14-02
Analysis Date, Alkalinity	03-19-02
Control Number	020403-08

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	310	100
Sulfate - 375.2; 300.0	69,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

Sample Identification	P-3
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	NaOH / PbCO3
Analysis Date, Available (OIA)	03-20-02
Analysis Date, Free	03-22-02
Control Number	020403-08

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030942

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
P-3	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-3D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-20-02
Control Number	020403-14

BTEX, Method 8260	ug/L	TDL
Benzene	80	1
Toluene	6	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	102	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	P-3D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-19-02
Analysis Date	04-09-02
Control Number	020403-14

PAHs, Method 8270	ug/L	TDL
Naphthalene	5	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	88	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	98	33-141

KR059B030943

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
P-3D	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-3D	Sample Identification	P-3D
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-13-02	Sample Date	03-13-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-20-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020403-14	Control Number	020403-14

METALS	ug/L	TDL
Arsenic - 200.8	33	5.0
Barium - 200.8	200	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	6,100	20

KR059B030944

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
P-3D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-3D	**Sample Identification**	P-3D
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-13-02	Sample Date	03-13-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	03-15-02	Preservation Date	at collection
Analysis Date, Sulfate	03-15-02	Preservation Type	NaOH / PbCO3
Analysis Date, Alkalinity	03-19-02	Analysis Date, Available (OIA)	03-20-02
		Analysis Date, Free	03-22-02
Control Number	020403-14	Control Number	020403-14

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	350,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030945

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
P-3D	-

00350

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-4
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-20-02
Control Number	020403-04

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	P-4
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-19-02
Analysis Date	04-09-02
Control Number	020403-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	86	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	96	33-141

KR059B030946

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4-25-02

Data File	Kalamazoo
P-4	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-4	Sample Identification	P-4
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-12-02	Sample Date	03-12-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-20-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020403-04	Control Number	020403-04

METALS	ug/L	TDL
Arsenic - 200.8	nd	5.0
Barium - 200.8	nd	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	12	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	28	20

KR059B030947

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
P-4	-

INORG-1

00362

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	P-4
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	03-14-02
Analysis Date, Sulfate	03-14-02
Analysis Date, Alkalinity	03-19-02
Control Number	020403-04

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	120	100
Sulfate - 375.2; 300.0	15,000	1,000
Alkalinity, as CaCO3 - 310.1	320,000	-

Sample Identification	P-4
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	NaOH / PbCO3
Analysis Date, Available (OIA)	03-20-02
Analysis Date, Free	03-22-02
Control Number	020403-04

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030948

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
P-4	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-1
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-23-02
Control Number	020422-09

BTEX, Method 8260	ug/L	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	2,800	50
m/p-Xylene	1,300	50
o-Xylene	1,100	50
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	99	88-110
4-Bromofluorobenzene	101	86-115

Sample Identification	MW-1
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-20-02
Analysis Date	04-10-02
Control Number	020422-09

PAHs, Method 8270	ug/L	TDL
Naphthalene	53	5
2-Methylnaphthalene	5	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	85	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	98	33-141

KR059B030949

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
MW-1	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-1
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Preparation Date (Hg)	03-21-02
Analysis Date, Start/End	03-25-02 / 03-25-02
Control Number	020422-09

METALS	ug/L	TDL
Arsenic - 200.8	13	5.0
Barium - 200.8	200	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW-1
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date	03-25-02
Control Number	020422-09

METALS	ug/L	TDL
Iron (dissolved) - 200.8	11,000	20

KR059B030950

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-1	-

00365

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-1	Sample Identification	MW-1
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-15-02	Sample Date	03-15-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	03-17-02	Preservation Date	at collection
Analysis Date, Sulfate	03-17-02	Preservation Type	NaOH / PbCO3
Analysis Date, Alkalinity	03-19-02	Analysis Date, Available (OIA)	03-20-02
		Analysis Date, Free	03-22-02
Control Number	020422-09	Control Number	020422-09

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	310	100
Sulfate - 375.2; 300.0	36,000	1,000
Alkalinity, as CaCO3 - 310.1	390,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030951

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Ad* Date *4-25-02*

Data File	Kalamazoo
MW-1	-

00365

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-2	**Sample Identification**	MW-2
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-13-02	Sample Date	03-13-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	03-19-02
Preservation Type	HCl	Analysis Date	04-09-02
Analysis Date	03-20-02		
Control Number	020403-12	Control Number	020403-12

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	101	88-110
4-Bromofluorobenzene	102	86-115

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	85	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	96	33-141

KR059B030952

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Acl Date 4/25/02

Data File	Kalamazoo
MW-2	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-2	Sample Identification	MW-2
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-13-02	Sample Date	03-13-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-20-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020403-12	Control Number	020403-12

METALS	ug/L	TDL
Arsenic - 200.8	nd	5.0
Barium - 200.8	nd	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	57	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	4,300	20

KR059B030953

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-2	-

00358

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-2	Sample Identification	MW-2
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-13-02	Sample Date	03-13-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	03-15-02	Preservation Date	at collection
Analysis Date, Sulfate	03-15-02	Preservation Type	NaOH / PbCO3
Analysis Date, Alkalinity	03-19-02	Analysis Date, Available (OIA)	03-20-02
		Analysis Date, Free	03-22-02
Control Number	020403-12	Control Number	020403-12

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	490	100
Sulfate - 375.2; 300.0	540,000	1,000
Alkalinity, as CaCO3 - 310.1	130,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030954

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4/25/02

Data File	Kalamazoo
MW-2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-3	Sample Identification	MW-3
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-12-02	Sample Date	03-12-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	03-19-02
Preservation Type	HCl	Analysis Date	04-09-02
Analysis Date	03-20-02		
Control Number	020403-03	Control Number	020403-03

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	102	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	85	35-114
2-Fluorobiphenyl	93	43-116
p-Terphenyl-d14	96	33-141

KR059B030955

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-3	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-3	Sample Identification	MW-3
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-12-02	Sample Date	03-12-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-20-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020403-03	Control Number	020403-03

METALS	ug/L	TDL
Arsenic - 200.8	nd	5.0
Barium - 200.8	nd	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	22	20

KR059B030956

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-3	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-3
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	03-14-02
Analysis Date, Sulfate	03-14-02
Analysis Date, Alkalinity	03-19-02
Control Number	020403-03

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	590	100
Sulfate - 375.2; 300.0	5,700	1,000
Alkalinity, as CaCO3 - 310.1	110,000	-

Sample Identification	MW-3
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	NaOH / PbCO3
Analysis Date, Available (OIA)	03-20-02
Analysis Date, Free	03-22-02
Control Number	020403-03

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030957

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
MW-3	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-4	Sample Identification	MW-4
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-13-02	Sample Date	03-13-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	03-19-02
Preservation Type	HCl	Analysis Date	04-09-02
Analysis Date	03-20-02		
Control Number	020403-07	Control Number	020403-07

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	85	35-114
2-Fluorobiphenyl	93	43-116
p-Terphenyl-d14	97	33-141

KR059B030958

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
MW-4	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-4	Sample Identification	MW-4
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-13-02	Sample Date	03-13-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-20-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020403-07	Control Number	020403-07

METALS	ug/L	TDL
Arsenic - 200.8	nd	5.0
Barium - 200.8	nd	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	40	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	91	20

KR059B030959

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/15/02

Data File	Kalamazoo
MW-4	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-4
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	03-14-02
Analysis Date, Sulfate	03-14-02
Analysis Date, Alkalinity	03-19-02
Control Number	020403-07

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	1,200	100
Sulfate - 375.2; 300.0	29,000	1,000
Alkalinity, as CaCO3 - 310.1	260,000	-

Sample Identification	MW-4
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	NaOH / PbCO3
Analysis Date, Available (OIA)	03-20-02
Analysis Date, Free	03-22-02
Control Number	020403-07

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030960

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW-4	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-101
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-23-02
Control Number	020422-10

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-101
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-20-02
Analysis Date	04-10-02
Control Number	020422-10

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	82	35-114
2-Fluorobiphenyl	92	43-116
p-Terphenyl-d14	96	33-141

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NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-101	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-101	Sample Identification	MW-101
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-15-02	Sample Date	03-15-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-21-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020422-10	Control Number	020422-10

METALS	ug/L	TDL
Arsenic - 200.8	nd	5.0
Barium - 200.8	nd	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	37	20

KR059B030962

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
MW-101	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-101
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	03-17-02
Analysis Date, Sulfate	03-17-02
Analysis Date, Alkalinity	03-19-02
Control Number	020422-10

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	1,900	100
Sulfate - 375.2; 300.0	51,000	1,000
Alkalinity, as CaCO3 - 310.1	410,000	-

Sample Identification	MW-101
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	NaOH / PbCO3
Analysis Date, Available (OIA)	03-20-02
Analysis Date, Free	03-22-02
Control Number	020422-10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030963

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW-101	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-101D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-23-02
Control Number	020422-06

BTEX, Method 8260	ug/L	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	800	50
m/p-Xylene	3,700	50
o-Xylene	3,800	50
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	99	86-115

Sample Identification	MW-101D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-20-02
Analysis Date	04-10-02
Control Number	020422-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	5,100	50
2-Methylnaphthalene	270	50
Acenaphthylene	160	50
Acenaphthene	nd	50
Fluorene	60	50
Phenanthrene	nd	50
Anthracene	nd	50
Fluoranthene	nd	50
Pyrene	nd	50
Benzo(a)anthracene	nd	50
Chrysene	nd	50
Benzo(b)fluoranthene	nd	50
Benzo(k)fluoranthene	nd	50
Benzo(a)pyrene	nd	50
Indeno(1,2,3-cd)pyrene	nd	50
Dibenzo(a,h)anthracene	nd	50
Benzo(g,h,i)perylene	nd	50
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	diluted out	35-114
2-Fluorobiphenyl	diluted out	43-116
p-Terphenyl-d14	diluted out	33-141

KR059B030964

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
MW-101D	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-101D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Preparation Date (Hg)	03-21-02
Analysis Date, Start/End	03-25-02 / 03-25-02
Control Number	020422-06

METALS	ug/L	TDL
Arsenic - 200.8	25	5.0
Barium - 200.8	330	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW-101D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date	03-25-02
Control Number	020422-06

METALS	ug/L	TDL
Iron (dissolved) - 200.8	2,300	20

KR059B030965

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-101D	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-101D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	03-15-02
Analysis Date, Sulfate	03-15-02
Analysis Date, Alkalinity	03-19-02
Control Number	020422-06

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	10,000	1,000
Alkalinity, as CaCO3 - 310.1	360,000	-

Sample Identification	MW-101D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	NaOH / PbCO3
Analysis Date, Available (OIA)	03-20-02
Analysis Date, Free	03-22-02
Control Number	020422-06

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030966

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4-25-02

Data File	Kalamazoo
MW-101D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-102
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-23-02
Control Number	020422-11

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	101	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-102
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-20-02
Analysis Date	04-10-02
Control Number	020422-11

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	97	33-141

KR059B030967

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-102	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-102	Sample Identification	MW-102
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-15-02	Sample Date	03-15-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-21-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020422-11	Control Number	020422-11

METALS	ug/L	TDL
Arsenic - 200.8	nd	5.0
Barium - 200.8	nd	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	nd	20

KR059B030968

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
MW-102	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-102
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	03-17-02
Analysis Date, Sulfate	03-17-02
Analysis Date, Alkalinity	03-19-02
Control Number	020422-11

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	460	100
Sulfate - 375.2; 300.0	30,000	1,000
Alkalinity, as CaCO3 - 310.1	340,000	-

Sample Identification	MW-102
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	NaOH / PbCO3
Analysis Date, Available (OIA)	03-20-02
Analysis Date, Free	03-22-02
Control Number	020422-11

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030969

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By - [illegible] Date 4-25-02

Data File	Kalamazoo
MW-102	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-103
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-23-02
Control Number	020422-13

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-103
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-20-02
Analysis Date	04-10-02
Control Number	020422-13

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	81	35-114
2-Fluorobiphenyl	90	43-116
p-Terphenyl-d14	93	33-141

KR059B030970

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-103	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-103	Sample Identification	MW-103
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-15-02	Sample Date	03-15-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-21-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020422-13	Control Number	020422-13

METALS	ug/L	TDL
Arsenic - 200.8	nd	5.0
Barium - 200.8	390	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	210	20

KR059B030971

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-103	-

00386

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-103	Sample Identification	MW-103
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-15-02	Sample Date	03-15-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	03-17-02	Preservation Date	at collection
Analysis Date, Sulfate	03-17-02	Preservation Type	NaOH / PbCO3
Analysis Date, Alkalinity	03-19-02	Analysis Date, Available (OIA)	03-20-02
		Analysis Date, Free	03-22-02
Control Number	020422-13	Control Number	020422-13

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	2,100	100
Sulfate - 375.2; 300.0	110,000	1,000
Alkalinity, as CaCO3 - 310.1	330,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030972

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Acl Date 4-25-02

Data File	Kalamazoo
MW-103	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-104
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-20-02
Control Number	020403-13

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-104
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-19-02
Analysis Date	04-09-02
Control Number	020403-13

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	95	33-141

KR059B030973

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-104	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-104	Sample Identification	MW-104
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-13-02	Sample Date	03-13-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-20-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020403-13	Control Number	020403-13

METALS	ug/L	TDL
Arsenic - 200.8	nd	5.0
Barium - 200.8	150	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	88	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	3,400	20

KR059B030974

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-104	-

00325

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-104
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	03-15-02
Analysis Date, Sulfate	03-15-02
Analysis Date, Alkalinity	03-19-02
Control Number	020403-13

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	460	100
Sulfate - 375.2; 300.0	48,000	1,000
Alkalinity, as CaCO3 - 310.1	320,000	-

Sample Identification	MW-104
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	NaOH / PbCO3
Analysis Date, Available (OIA)	03-20-02
Analysis Date, Free	03-22-02
Control Number	020403-13

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030975

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
MW-104	-

00390

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-104D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-23-02
Control Number	020422-01

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	MW-104D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-20-02
Analysis Date	04-10-02
Control Number	020422-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	86	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	96	33-141

KR059B030976

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-104D	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-104D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Preparation Date (Hg)	03-21-02
Analysis Date, Start/End	03-25-02 / 03-25-02
Control Number	020422-01

METALS	ug/L	TDL
Arsenic - 200.8	24	5.0
Barium - 200.8	270	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW-104D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date	03-25-02
Control Number	020422-01

METALS	ug/L	TDL
Iron (dissolved) - 200.8	6,500	20

KR059B030977

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
MW-104D	-

INORG-1

00392

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-104D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	03-15-02
Analysis Date, Sulfate	03-15-02
Analysis Date, Alkalinity	03-19-02
Control Number	020422-01

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	71,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

Sample Identification	MW-104D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	NaOH / PbCO3
Analysis Date, Available (OIA)	03-20-02
Analysis Date, Free	03-22-02
Control Number	020422-01

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030978

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4-25-02

Data File	Kalamazoo
MW-104D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-105	Sample Identification	MW-105
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-14-02	Sample Date	03-14-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	03-20-02
Preservation Type	HCl	Analysis Date	04-10-02
Analysis Date	03-23-02		
Control Number	020422-07	Control Number	020422-07

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	88	35-114
2-Fluorobiphenyl	93	43-116
p-Terphenyl-d14	94	33-141

KR059B030979

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-105	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-105	Sample Identification	MW-105
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-14-02	Sample Date	03-14-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-21-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020422-07	Control Number	020422-07

METALS	ug/L	TDL
Arsenic - 200.8	nd	5.0
Barium - 200.8	nd	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	360	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	nd	20

KR059B030980

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
MW-105	-

INORG-1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-105	Sample Identification	MW-105
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-14-02	Sample Date	03-14-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	03-15-02	Preservation Date	at collection
Analysis Date, Sulfate	03-15-02	Preservation Type	NaOH / PbCO3
Analysis Date, Alkalinity	03-19-02	Analysis Date, Available (OIA)	03-20-02
		Analysis Date, Free	03-22-02
Control Number	020422-07	Control Number	020422-07

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	220	100
Sulfate - 375.2; 300.0	23,000	1,000
Alkalinity, as CaCO3 - 310.1	400,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030981

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4-25-02

Data File	Kalamazoo
MW-105	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-105D	Sample Identification	MW-105D
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-14-02	Sample Date	03-14-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	03-20-02
Preservation Type	HCl	Analysis Date	04-10-02
Analysis Date	03-23-02		
Control Number	020422-04	Control Number	020422-04

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	88	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	96	33-141

KR059B030982

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-105D	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-105D	Sample Identification	MW-105D
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-14-02	Sample Date	03-14-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-21-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020422-04	Control Number	020422-04

METALS	ug/L	TDL	METALS	ug/L	TDL
Arsenic - 200.8	nd	5.0	Iron (dissolved) - 200.8	110	20
Barium - 200.8	170	100.0			
Cadmium - 200.8, 6020	nd	0.5			
Chromium (total) - 200.8	nd	5.0			
Copper - 200.8	nd	25.0			
Lead - 200.8	nd	3.0			
Mercury - 7470	nd	0.2			
Selenium - 200.8, 7740	nd	5.0			
Silver - 200.8	nd	0.5			
Zinc - 200.8	110	10.0			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B030983

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-105D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-105D	Sample Identification	MW-105D
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-14-02	Sample Date	03-14-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	03-15-02	Preservation Date	at collection
Analysis Date, Sulfate	03-15-02	Preservation Type	NaOH / PbCO3
Analysis Date, Alkalinity	03-19-02	Analysis Date, Available (OIA)	03-20-02
		Analysis Date, Free	03-22-02
Control Number	020422-04	Control Number	020422-04

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	420	100
Sulfate - 375.2; 300.0	76,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030984

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4/25/02

Data File	Kalamazoo
MW-105D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-202D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-23-02
Control Number	020422-12

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	102	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-202D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-20-02
Analysis Date	04-10-02
Control Number	020422-12

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	86	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	96	33-141

KR059B030985

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
MW-202D	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-202D	Sample Identification	MW-202D
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-15-02	Sample Date	03-15-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-21-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020422-12	Control Number	020422-12

METALS	ug/L	TDL
Arsenic - 200.8	nd	5.0
Barium - 200.8	170	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	86	20

KR059B030986

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date [signature]

Data File	Kalamazoo
MW-202D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-202D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	03-17-02
Analysis Date, Sulfate	03-17-02
Analysis Date, Alkalinity	03-19-02
Control Number	020422-12

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	170	100
Sulfate - 375.2; 300.0	65,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

Sample Identification	MW-202D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-15-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	NaOH / PbCO3
Analysis Date, Available (OIA)	03-20-02
Analysis Date, Free	03-22-02
Control Number	020422-12

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030987

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4-25-02

Data File	Kalamazoo
MW-202D	-

00402

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-301
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-23-02
Control Number	020422-05

BTEX, Method 8260	ug/L	TDL
Benzene	2,200	50
Toluene	nd	50
Ethylbenzene	990	50
m/p-Xylene	800	50
o-Xylene	590	50
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	94	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	99	86-115

Sample Identification	MW-301
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-20-02
Analysis Date	04-10-02
Control Number	020422-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	3,800	50
2-Methylnaphthalene	190	50
Acenaphthylene	nd	50
Acenaphthene	70	50
Fluorene	60	50
Phenanthrene	nd	50
Anthracene	nd	50
Fluoranthene	nd	50
Pyrene	nd	50
Benzo(a)anthracene	nd	50
Chrysene	nd	50
Benzo(b)fluoranthene	nd	50
Benzo(k)fluoranthene	nd	50
Benzo(a)pyrene	nd	50
Indeno(1,2,3-cd)pyrene	nd	50
Dibenzo(a,h)anthracene	nd	50
Benzo(g,h,i)perylene	nd	50
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	diluted out	35-114
2-Fluorobiphenyl	diluted out	43-116
p-Terphenyl-d14	diluted out	33-141

KR059B030988

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-301	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-301	Sample Identification	MW-301
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-14-02	Sample Date	03-14-02
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-21-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020422-05	Control Number	020422-05

METALS	ug/L	TDL
Arsenic - 200.8	50	5.0
Barium - 200.8	170	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	20,000	20

KR059B030989

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-301	-

INORG-1

00494

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-301
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	03-15-02
Analysis Date, Sulfate	03-15-02
Analysis Date, Alkalinity	03-19-02
Control Number	020422-05

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	420,000	-

Sample Identification	MW-301
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	NaOH / PbCO3
Analysis Date, Available (OIA)	03-20-02
Analysis Date, Free	03-22-02
Control Number	020422-05

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030990

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalamazoo
MW-301	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-302	Sample Identification	MW-302
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-13-02	Sample Date	03-13-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	03-19-02
Preservation Type	HCl	Analysis Date	04-09-02
Analysis Date	03-20-02		
Control Number	020403-09	Control Number	020403-09

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	100	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	88	35-114
2-Fluorobiphenyl	96	43-116
p-Terphenyl-d14	98	33-141

KR059B030991

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
MW-302	-

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00486

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-302	Sample Identification	MW-302
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-13-02	Sample Date	03-13-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-20-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020403-09	Control Number	020403-09

METALS	ug/L	TDL
Arsenic - 200.8	nd	5.0
Barium - 200.8	nd	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	4,300	20

KR059B030992

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
MW-302	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-302	**Sample Identification**	MW-302
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-13-02	Sample Date	03-13-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	03-14-02	Preservation Date	at collection
Analysis Date, Sulfate	03-14-02	Preservation Type	NaOH / PbCO3
Analysis Date, Alkalinity	03-19-02	Analysis Date, Available (OIA)	03-20-02
		Analysis Date, Free	03-22-02
Control Number	020403-09	Control Number	020403-09

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	210	100
Sulfate - 375.2; 300.0	18,000	1,000
Alkalinity, as CaCO3 - 310.1	270,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030993

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-302	-

00488

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-302D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-20-02
Control Number	020403-10

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	MW-302D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-19-02
Analysis Date	04-09-02
Control Number	020403-10

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	86	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	98	33-141

KR059B030994

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25-02

Data File	Kalamazoo
MW-302D	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-302D	Sample Identification	MW-302D
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-13-02	Sample Date	03-13-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-20-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020403-10	Control Number	020403-10

METALS	ug/L	TDL
Arsenic - 200.8	30	5.0
Barium - 200.8	200	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	3,400	20

KR059B030995

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Acl* Date 4-25-02

Data File	Kalamazoo
MW-302D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-302D	**Sample Identification**	MW-302D
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-13-02	Sample Date	03-13-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	*Percent Solids, %w/w*	-
Analysis Date, Nitrate	03-15-02	Preservation Date	at collection
Analysis Date, Sulfate	03-15-02	Preservation Type	NaOH / PbCO3
Analysis Date, Alkalinity	03-19-02	Analysis Date, Available (OIA)	03-20-02
		Analysis Date, Free	03-22-02
Control Number	020403-10	Control Number	020403-10

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	19,000	1,000
Alkalinity, as CaCO3 - 310.1	330,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030996

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 04-25-02

Data File	Kalamazoo
MW-302D	-

00411

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-302I
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-20-02
Control Number	020403-11

BTEX, Method 8260	ug/L	TDL
Benzene	170	1
Toluene	nd	1
Ethylbenzene	59	1
m/p-Xylene	71	1
o-Xylene	21	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	99	76-114
Toluene-d8	101	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-302I
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-19-02
Analysis Date	04-09-02
Control Number	020403-11

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	85	35-114
2-Fluorobiphenyl	97	43-116
p-Terphenyl-d14	98	33-141

KR059B030997

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
MW-302I	-

ORG

00412

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-302I	Sample Identification	MW-302I
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-13-02	Sample Date	03-13-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-20-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020403-11	Control Number	020403-11

METALS	ug/L	TDL
Arsenic - 200.8	20	5.0
Barium - 200.8	650	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	19,000	20

KR059B030998

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-302I	-

INORG-1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-302I
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	03-15-02
Analysis Date, Sulfate	03-15-02
Analysis Date, Alkalinity	03-19-02
Control Number	020403-11

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	14,000	1,000
Alkalinity, as CaCO3 - 310.1	330,000	-

Sample Identification	MW-302I
Sample Depth, ft	-
Sample Type	water
Sample Date	03-13-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	NaOH / PbCO3
Analysis Date, Available (OIA)	03-20-02
Analysis Date, Free	03-22-02
Control Number	020403-11

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B030999

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25-02

Data File	Kalamazoo
MW-302I	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-303
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-20-02
Control Number	020403-02

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	101	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-303
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-19-02
Analysis Date	04-09-02
Control Number	020403-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	85	35-114
2-Fluorobiphenyl	94	43-116
p-Terphenyl-d14	97	33-141

KR059B031000

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-303	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-303	Sample Identification	MW-303
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-12-02	Sample Date	03-12-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-20-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020403-02	Control Number	020403-02

METALS	ug/L	TDL
Arsenic - 200.8	nd	5.0
Barium - 200.8	180	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	11,000	20

KR059B031001

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-303	-

0041E

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-303
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	03-14-02
Analysis Date, Sulfate	03-14-02
Analysis Date, Alkalinity	03-19-02
Control Number	020403-02

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	53,000	1,000
Alkalinity, as CaCO3 - 310.1	620,000	-

Sample Identification	MW-303
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	NaOH / PbCO3
Analysis Date, Available (OIA)	03-20-02
Analysis Date, Free	03-22-02
Control Number	020403-02

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031002

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date [signature]

Data File	Kalamazoo
MW-303	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-304
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-20-02
Control Number	020403-01

BTEX, Method 8260	ug/L	TDL
Benzene	270	1
Toluene	5	1
Ethylbenzene	110	1
m/p-Xylene	120	1
o-Xylene	47	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	99	76-114
Toluene-d8	98	88-110
4-Bromofluorobenzene	99	86-115

Sample Identification	MW-304
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-19-02
Analysis Date	04-09-02
Control Number	020403-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	22	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	87	35-114
2-Fluorobiphenyl	94	43-116
p-Terphenyl-d14	97	33-141

KR059B031003

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/15/02

Data File	Kalamazoo
MW-304	-

ORG

0041B

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-304	Sample Identification	MW-304
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-12-02	Sample Date	03-12-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Preparation Date (Hg)	03-20-02	Analysis Date	03-25-02
Analysis Date, Start/End	03-25-02 / 03-25-02		
Control Number	020403-01	Control Number	020403-01

METALS	ug/L	TDL
Arsenic - 200.8	27	5.0
Barium - 200.8	200	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	4	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	37,000	20

KR059B031004

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-304	-

INORG-1

06419

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-304	**Sample Identification**	MW-304
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-12-02	Sample Date	03-12-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	03-14-02	Preservation Date	at collection
Analysis Date, Sulfate	03-14-02	Preservation Type	NaOH / PbCO3
Analysis Date, Alkalinity	03-19-02	Analysis Date, Available (OIA)	03-20-02
		Analysis Date, Free	03-22-02
Control Number	020403-01	Control Number	020403-01

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	460,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031005

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4-25-02

Data File	Kalamazoo
MW-304	-

INORG-2

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-304D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-20-02
Control Number	020403-05

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	102	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-304D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-19-02
Analysis Date	04-09-02
Control Number	020403-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	86	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	98	33-141

KR059B031006

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
MW-304D	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-304D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Preparation Date (Hg)	03-20-02
Analysis Date, Start/End	03-25-02 / 03-25-02
Control Number	020403-05

METALS	**ug/L**	**TDL**
Arsenic - 200.8	25	5.0
Barium - 200.8	290	100.0
Cadmium - 200.8, 6020	nd	0.5
Chromium (total) - 200.8	nd	5.0
Copper - 200.8	nd	25.0
Lead - 200.8	nd	3.0
Mercury - 7470	nd	0.2
Selenium - 200.8, 7740	nd	5.0
Silver - 200.8	nd	0.5
Zinc - 200.8	nd	10.0
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW-304D
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date	03-25-02
Control Number	020403-05

METALS	**ug/L**	**TDL**
Iron (dissolved) - 200.8	6,700	20

KR059B031007

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
MW-304D	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	MW-304D	**Sample Identification**	MW-304D
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-12-02	Sample Date	03-12-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	03-14-02	Preservation Date	at collection
Analysis Date, Sulfate	03-14-02	Preservation Type	NaOH / PbCO3
Analysis Date, Alkalinity	03-19-02	Analysis Date, Available (OIA)	03-20-02
		Analysis Date, Free	03-22-02
Control Number	020403-05	Control Number	020403-05

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2; 300.0	nd	100
Sulfate - 375.2; 300.0	67,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031008

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
MW-304D	-

00423

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	no sample
Analysis Date, Sulfate	no sample
Analysis Date, Alkalinity	no sample
Control Number	020422-15

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	-	100
Sulfate - 375.2; 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	-
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date, Available (OIA)	no sample
Analysis Date, Free	no sample
Control Number	020422-15

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B031009

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25/02

Data File	Kalamazoo
Trip Blank	-

00424

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	Dup 2
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	no sample
Analysis Date, Sulfate	no sample
Analysis Date, Alkalinity	no sample
Control Number	020422-08

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	-	100
Sulfate - 375.2; 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

Sample Identification	Dup 2
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date, Available (OIA)	no sample
Analysis Date, Free	no sample
Control Number	020422-08

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B031010

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4/25/02

Data File	Kalamazoo
Dup 2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	Dup 1	Sample Identification	Dup 1
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-12-02	Sample Date	03-12-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	no sample	Preservation Date	no sample
Analysis Date, Sulfate	no sample	Preservation Type	no sample
Analysis Date, Alkalinity	no sample	Analysis Date, Available (OIA)	no sample
		Analysis Date, Free	no sample
Control Number	020403-06	Control Number	020403-06

INORGANICS	ug/L	TDL
Nitrate - 353.2; 300.0	-	100
Sulfate - 375.2; 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B031011

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date [signature]

Data File	Kalamazoo
Dup 1	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	Trip Blank	**Sample Identification**	Trip Blank
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	-	Sample Date	-
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	no sample	Preservation Date	no sample
Preservation Type	no sample	Preservation Type	no sample
Preparation Date (Hg)	no sample	Analysis Date	no sample
Analysis Date, Start/End	no sample		
Control Number	020422-15	Control Number	020422-15

METALS	**ug/L**	**TDL**
Arsenic - 200.8	-	5.0
Barium - 200.8	-	100.0
Cadmium - 200.8, 6020	-	0.5
Chromium (total) - 200.8	-	5.0
Copper - 200.8	-	25.0
Lead - 200.8	-	3.0
Mercury - 7470	-	0.2
Selenium - 200.8, 7740	-	5.0
Silver - 200.8	-	0.5
Zinc - 200.8	-	10.0
Metal Results Are Reported As	-	Dissolved

METALS	**ug/L**	**TDL**
Iron (dissolved) - 200.8	-	20

KR059B031012

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
Trip Blank	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	Dup 2
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Preparation Date (Hg)	no sample
Analysis Date, Start/End	no sample
Control Number	020422-08

METALS	ug/L	TDL
Arsenic - 200.8	-	5.0
Barium - 200.8	-	100.0
Cadmium - 200.8, 6020	-	0.5
Chromium (total) - 200.8	-	5.0
Copper - 200.8	-	25.0
Lead - 200.8	-	3.0
Mercury - 7470	-	0.2
Selenium - 200.8, 7740	-	5.0
Silver - 200.8	-	0.5
Zinc - 200.8	-	10.0
Metal Results Are Reported As	-	Dissolved

Sample Identification	Dup 2
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date	no sample
Control Number	020422-08

METALS	ug/L	TDL
Iron (dissolved) - 200.8	-	20

KR059B031013

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
Dup 2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	Dup 1	Sample Identification	Dup 1
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-12-02	Sample Date	03-12-02
Received Date	03-14-02	Received Date	03-14-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	no sample	Preservation Date	no sample
Preservation Type	no sample	Preservation Type	no sample
Preparation Date (Hg)	no sample	Analysis Date	no sample
Analysis Date, Start/End	no sample		
Control Number	020403-06	Control Number	020403-06

METALS	ug/L	TDL
Arsenic - 200.8	-	5.0
Barium - 200.8	-	100.0
Cadmium - 200.8, 6020	-	0.5
Chromium (total) - 200.8	-	5.0
Copper - 200.8	-	25.0
Lead - 200.8	-	3.0
Mercury - 7470	-	0.2
Selenium - 200.8, 7740	-	5.0
Silver - 200.8	-	0.5
Zinc - 200.8	-	10.0
Metal Results Are Reported As	-	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 200.8	-	20

KR059B031014

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4-25-02

Data File	Kalamazoo
Dup 1	-

INORG-1

00429

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	Trip Blank	Sample Identification	Trip Blank
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	-	Sample Date	-
Received Date	03-18-02	Received Date	03-18-02
Report Date	04-25-02	Report Date	04-25-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	no sample
Preservation Type	HCl	Analysis Date	no sample
Analysis Date	03-23-02		
Control Number	020422-15	Control Number	020422-15

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	101	88-110
4-Bromofluorobenzene	102	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	1
Chrysene	-	5
Benzo(b)fluoranthene	-	2
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	2
Indeno(1,2,3-cd)pyrene	-	2
Dibenzo(a,h)anthracene	-	2
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

KR059B031015

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/25-02

Data File	Kalamazoo
Trip Blank	-

ORG

00430

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	Dup 2
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-23-02
Control Number	020422-08

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	1
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	99	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	Dup 2
Sample Depth, ft	-
Sample Type	water
Sample Date	03-14-02
Received Date	03-18-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-20-02
Analysis Date	04-10-02
Control Number	020422-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	88	35-114
2-Fluorobiphenyl	94	43-116
p-Terphenyl-d14	97	33-141

KR059B031016

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
Dup 2	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of March 12 - 15, 2002	Project Numbers CHEM-02-0403 CHEM-02-0422

Sample Identification	Dup 1
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-20-02
Control Number	020403-06

BTEX, Method 8260	ug/L	TDL
Benzene	230	1
Toluene	5	1
Ethylbenzene	98	1
m/p-Xylene	110	1
o-Xylene	51	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	101	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	Dup 1
Sample Depth, ft	-
Sample Type	water
Sample Date	03-12-02
Received Date	03-14-02
Report Date	04-25-02
Percent Solids, %w/w	-
Extraction Date	03-19-02
Analysis Date	04-09-02
Control Number	020403-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	20	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	88	35-114
2-Fluorobiphenyl	95	43-116
p-Terphenyl-d14	95	33-141

KR059B031017

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-25-02

Data File	Kalamazoo
Dup 1	-

ORG

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: ~~3-14-02~~ 3/14/02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARASSE, SME - PLYMOUTH

PHONE: —

ANALYSIS REQUESTED

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 Pt Metals	CYANIDE:	FREE/AVAILABLE	ALKALINITY	DISSOLVED IRON	REMARKS
02-0403-01	~~12~~ 3/12	1:45	W	MW304	4-10.1	8	X	X	X	X	X	X	X	
-02		2:55		MW303	32-7.6	8	X	X	X	X	X	X	X	
-03		4:15		MW3	2.9-7.8	8	X	X	X	X	X	X	X	
-04		5:30		P-4	2.9-7.9	8	X	X	X	X	X	X	X	
-05		5:40		MW304D	64.5-69.5	8	X	X	X	X	X	X	X	
-06		—		DUPLICATE #1	—	3	X	X						

KR059B031018

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3-12-02 7:30 PM	SME Refrigerator (Sample Room)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
SME Storage	3/14/02 11:00AM	Gabe Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ METHODS + MDLS
- CONTACT PAT B w/ QUESTIONS

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CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-S

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 3-14-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BOLLASSE SITE - PLYMOUTH

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PDAS	10 TL METALS	CYANIDE: FREE/AVAILABLE	ALKALINITY	DISSOLVED IRON	REMARKS
02-0403-07	~~[illegible]~~ 3/13/02	9:45	W	MW4	22-6.8	8	X	X	X	X	X	X	
-08		10:45		P-3	2.9-7.3		X	X	X	X	X	X	
-09		12:00		MW302	3.5-8.7		X	X	X	X	X	X	
-10		12:55		MW302D	55.3-60.3		X	X	X	X	X	X	
-11		2:30		MW302I	19.8-24.8		X	X	X	X	X	X	
-12		3:35		MW2	4.7.7		X	X	X	X	X	X	
-13		4:50		MW104	4.4-9.4		X	X	X	X	X	X	
-14		5:45		P-3D	34.6-39.6		X	X	X	X	X	X	

KR059B031019

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3-13-02 7:30	SITE REFRIGERATOR (SAMPLE basin)
RELINQUISHED BY: (SIGNATURE) SMC [redacted] storage	DATE / TIME 3/14/02 11:00 AM	RECEIVED BY: (SIGNATURE) Gabe Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

- NDEQ METHODS + MDLS
- CALL PAT B. w/ QUESTIONS

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LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO RGP

PROJECT NUMBER: KE31823B-S

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 3-18-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASE SME - PLYMOUTH

PHONE: —

ANALYSIS REQUESTED

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAHS	10 PL METALS	CYANIDE:	FREE/AVAILABLE	ALKALINITY	DISSOLVED IRON	REMARKS
02-0422-01	3-14-02	10:55	W	MW104D	29.9-34.9	8	X	X	X	X	X	X	X	
-02		12:00		PZ	7.6-12.1	8	X	X	X	X	X	X	X	
-03		12:35		PZD	35-40	8	X	X	X	X	X	X	X	
-04		2:45		MW105D	38.4-43.4	8	X	X	X	X	X	X	X	
-05		3:50		MW301	4-10.1	8	X	X	X	X	X	X	X	
-06		4:25		MW101D	34.5-39.5	8	X	X	X	X	X	X	X	
-07		6:00		MW105	10.8-15.3	8	X	X	X	X	X	X	X	
-08		—		DUPLICATE #2	—	3	X	X						

KR059B031020

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3-14-02 7:30	SME Refrigerator/Sample Room
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
SME	3/18/02 9:30	Gabe Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ METHODS + MQLS
- CALL PAT B. w/ QUESTIONS

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 3-15-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARCASE SME - PLYMOUTH

PHONE: —

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAS	MI 10 METALS	CYANIDE: FREE/AVAILABLE	ALKALINITY	DISSOLVED IRON	REMARKS
02-0422-09	3-15-02	9:45	W	MW1	7.9-11.6	8	X	X	X	X	X	X	
-10		11:25		MW101	12.2-16.9	8	X	X	X	X	X	X	
-11		12:40		MW102	10.3-14.9	8	X	X	X	X	X	X	
-12		1:30		MW202D	55.4-60.4	8	X	X	X	X	X	X	
-13		3:00		MW103	10.7-15.3	8	X	X	X	X	X	X	
-14		3:45		P-1	9.3-11.1	3	X	X					
-15				TRIP BLANK									

KR059B031021

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
DAVIN OJALA	3-15-02 5:00 PM	SME Refrigerator (SAMPLE Room)
SME	3/18/02 9:30	Gabe Smith

COMMENTS
- MDEQ METHODS + MDLS
- CALL PAT B. w/ QUESTIONS

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Consumers Energy

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-S

SAMPLING TEAM: DAVIN K. ODALA

DATE SHIPPED: 3-13-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASE, SITE - PLYMOUTH

PHONE: —

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE						REMARKS
8168	3/12/02	1:45	W	MW304	4-10.1	1	X	X						
69		2:55		MW303	3.2-7.6	1	X	X						INVOICE:
70		4:15		MW3	2.9-7.8	1	X	X						CONSUMERS POWER
71		5:30		P-4	2.9-7.9	1	X	X						GORDON CATTELL
72		5:40		MW304D	64.5-69.5	1	X	X						

Original to Consumers + fax copy to Pat @ SME-Plymouth per G. Cattell. [illegible] 3/13/02

KR059B031022

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[illegible]	3-12-02 7:30 PM	SITE REFRIGERATOR (SAMPLE Room)
RELINQUISHED BY: (SIGNATURE) SME Refrigerator	DATE / TIME 3/13/02	RECEIVED BY: (SIGNATURE) [illegible]
RELINQUISHED BY: (SIGNATURE) [illegible]	DATE / TIME 3/13/02 2:30	RECEIVED BY: (SIGNATURE) Laurie Reed

COMMENTS
- MODIFIED TOOLS + METHODS
- CALL PAT B. w/ QUESTIONS

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 3-13-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASSE SITE - PLYMOUTH

PHONE: —

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE						REMARKS
8173	3-13	9:45	w	MW-4	2.2-6.8	1	X	X						
74	3-13	10:45	w	P-3	2.9-7.3	1	X	X						INVOICE:
75	3-13	12:00	w	MW302	3.5-8.7	1	X	X						CONSUMERS ENERGY
														GORDON CATELL
														Original to Consumers & fax copy to P. Barrasse at SMI Plymouth per G Catell
														KR059B031023

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3-13-02 11:45	[signature]
[signature]	3/13/02 2:30	[signature]

COMMENTS
- MDEQ METHODS + MDLs
- CALL PAT B. w/ QUESTIONS

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-S

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 3-14-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT B. SME - PLYMOUTH

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE						REMARKS
8343	3-13-02	12:55	W	MW302D	55.3 - 60.3	1	X	X						
44		2:30		MW302 I	19.8 - 24.8	1	X	X						
45		3:35		MW2	4 - 7.7	1	X	X						SEND REPORT +
46		4:50		MW104	4.4 - 9.4	1	X	X						INVOICE TO
47		5:45		P-3D	34.6 - 39.6	1	X	X						CONSUMERS ENERGY
														GORDON CATELL
														FAX TO SME PLY
														KR059B031024

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3-13-02 7:30	SME REFRIGERATOR (SAMPLE ROOM)
RELINQUISHED BY: (SIGNATURE) SME REFRIGERATOR	DATE / TIME 3-14-02	RECEIVED BY: (SIGNATURE) [signature]
RELINQUISHED BY: (SIGNATURE) [signature]	DATE / TIME 3/14/02 12:45	RECEIVED BY: (SIGNATURE) Laurie Reed

COMMENTS
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- CALL PAT. B. w/ QUESTIONS

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN L. OJALA

DATE SHIPPED: 3-15-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASE SRE-PLYMOUTH

PHONE:

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE						REMARKS
8552	3-14-02	10:55	W	MW104D	29.9-34.9	1	X	X						
53		12:00		PZ	7.6-12.1	1	X	X						INVOICE
54		12:35		PZD	35-40	1	X	X						CONSUMERS
55		2:45		MW105D	38.4-43.4	1	X	X						GORDON CATELL
56		3:50		MW301	4-10.1	1	X	X						
57		4:25		MW101D	34.5-39.5	1	X	X						
58		6:00		MW105	10.8-15.3	1	X	X						

KR059B031025

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3-14-02 7:30	SITE REFRIGERATOR/SAMPLE ROOM
SITE REFRIGERATOR	3-15-02	[signature]
[signature]	3/15/02 1:30	[signature]

COMMENTS
- MDEQ METHODS + MDLS
- CALL PAT B. w/ QUESTIONS

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K OJALA

DATE SHIPPED: 3-15-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

ANALYSIS REQUESTED

PAGE 1 OF 1

SEND REPORT TO: PAT BARLAGE SAE - PLYMOUTH

PHONE:

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	NITRATE	SULFATE						REMARKS
Y 8582	3-15-02	9:45	W	MW1	7.9-11.6	1	X	X						
83		11:25		MW101	12.2-16.9	1	X	X						
84		12:40		MW102	10.3-14.9	1	X	X						
85		1:30		MW202A	55.4-60.4	1	X	X						
86		3:00		MW103	10.7-15.3	1	X	X						

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RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
DAVIN OJALA	3-15-02 5:00	SAE COOLER FEDEX SHIPMENT
FEDEX	3/16/02 10:45AM	Albin Topolski

COMMENTS
- MDEQ METHODS + MDLS
- CALL PAT B. w/ QUESTIONS

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CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: 03-0403

SAMPLING TEAM: N/A

DATE SHIPPED: 03-22-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 2

SEND REPORT TO: J A Decker

PHONE: 517 788 1728

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	As Ba Cd	Cr Cu Pb	Se Ag Zn	Fe				REMARKS
0403-1	3/12			AY 9260		1	✓	✓	✓	✓				Analyze as is
0403-2				61		1	✓	✓	✓	✓				
0403-3				62		1	✓	✓	✓	✓				
0403-4				63		1	✓	✓	✓	✓				
0403-5				64		1	✓	✓	✓	✓				
0403-7	3/13			65		1	✓	✓	✓	✓				
0403-8				66		1	✓	✓	✓	✓				
0403-9				67		1	✓	✓	✓	✓				
0403-10				68		1	✓	✓	✓	✓				
0403-11				69		1	✓	✓	✓	✓				KR059B031027
0403-12				70		1	✓	✓	✓	✓				
0403-13				71		1	✓	✓	✓	✓				

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
J A Decker	3/22/02	[illegible]
[illegible]	3/22/02 2:10	Laurie Breed
[illegible]		

COMMENTS: See pg 2 of 2 Field Filtered. Dissolved metals.

return samples upon completion

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Consumers Energy

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: 02-0403

SAMPLING TEAM: NA

DATE SHIPPED: 03-22-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 2

SEND REPORT TO: JA DECKER

PHONE: 517-788-1728

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	As Ba Cd Cr	Cu Pb Se Ag	Zn Fe	REMARKS
0403-14	3/13			9272		1	✓	✓	✓	Analyze Sample(s)
0403-14	DUP			73						As 1S
0403-14	MS			74						MDL Needed:
0403-14	MSD			75						As-5 ug/L
										Ba-100
										Cd-0.5
										Cr-5
										Cu-25
										Pb-3
										Se-5
										Ag-0.5
										Zn-10
										Fe-20
										KR059B031028

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3/22/02	[signature]
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[signature]	3/22/02 2:10	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

SELECT ONE SAMPLE DUP

SELECT ONE SAMPLE MS/MSD

~~FAX DATA~~ BY 4/2/02 4°C

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: 02-0422

SAMPLING TEAM: NA

DATE SHIPPED: 03-22-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: JADECKER

PHONE: 517 788 1728

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	As Ba Cd	Cr Cu Pb	Se Ag Zn	Fe				REMARKS
0422-1	3/14			Ay 9248		1	✓	✓	✓	✓				Analyze As is
0422-2	↓			9249		1	✓	✓	✓	✓				MDL ug/L
0422-3				9250		1	✓	✓	✓	✓				As 5 Ba 100
0422-4				9251		1	✓	✓	✓	✓				Cd 0.5 Cr 5
0422-5				9252		1	✓	✓	✓	✓				Cu 25 Pb 3
0422-6				9253		1	✓	✓	✓	✓				Se 5 Ag 0.5
0422-7	✓			9254		1	✓	✓	✓	✓				Zn 10 Fe 20
0422-9	3/15			9255		1	✓	✓	✓	✓				
0422-10	↓			9256		1	✓	✓	✓	✓				Dissolved metals.
0422-11				9257		1	✓	✓	✓	✓				Field Filtered.
0422-12				9258		1	✓	✓	✓	✓				
0422-13	✓			9259		1	✓	✓	✓	✓				

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
J A Decker	3/22/02	[illegible]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[illegible]	3/22/02 2:10	Laurie Reed
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

KR059B031029

COMMENTS

RETURN SAMPLES upon Completion

FAX DATA BY 4/3/02

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EXHIBIT MGP-11

Consumers Energy

A CMS Energy Company

Environmental & Lab Services
1945 West Parnall Road
Jackson, MI 49201-8643

Fax: 517 788 2329
www.consumersenergy.com

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January 17, 2003

Carol Weaver
Environmental Response Division
Michigan Department of Environmental Quality
Kalamazoo District
7953 Adobe Road
Kalamazoo, MI 49009-5026

50111.3

GROUNDWATER MONITORING REPORT
CONSUMERS ENERGY FORMER
KALAMAZOO MANUFACTURED GAS PLANT SITE

Enclosed for review is a copy of a January 13, 2003 "Fourth Phase pf Remedial Investigation and Groundwater Monitoring Activities" as prepared by our consultant, Soil and Materials Engineers (SME).

The enclosed report summarizes additional site investigation and groundwater monitoring activities related to the former MGP. The report conclusions indicate that additional groundwater delineation and monitoring is required.

Our intent is to submit, under separate cover, a work plan to address the findings presented in the enclosed report. Generally, it is anticipated that the work plan will present a reduction in the number of established monitoring wells that would be sampled, a reduction in sampling parameters, and additional vertical and downgradient groundwater delineation activities.

Should you have any questions concerning the enclosed report, please contact me on 517-788-0350.

Robert G Neumann PE
Senior Engineer/Kalamazoo MGP Site Manager

KR059B031031

00103-17.RGN

cc JMuller, Pharmacia w/3 copies
CRutland, City of Kalamazoo
JBosch, The Bosch Group, Kalamazoo
JHerdus, Consumers, Kalamazoo
TEGriffiths, Consumers, Royal Oak w/o enclosure
GLKelterborn, Consumers, P-24-605A w/o enclosure
AMAurino, Consumers, Owosso w/o enclosure
PBarrese, SME, Plymouth w/o enclosure

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REPORT OF
FOURTH PHASE OF REMEDIAL INVESTIGATION
AND
GROUNDWATER MONITORING ACTIVITIES

CONSUMERS ENERGY
KALAMAZOO MGP SITE
KALAMAZOO, MICHIGAN

JANUARY 13, 2003
SME PROJECT NO. KE31823

KR059B031033

Consultants in the geosciences, materials and the environment

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- *Geophysical Survey*
- *Geosynthetics*
- *Ground Modification*
- *Instrumentation*
- *Settlement Analysis*
- *Site Condition Assessment*
- *Slope Stability*
- *Building Restoration*
- *Coatings*
- *Concrete*
- *Condition Survey*
- *Construction Materials Services*
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- *Air Quality*
- *Asbestos/Lead Based Paint*
- *Baseline Environmental Assessment*
- *Due Care Analysis*
- *Environmental Site Assessment*
- *Hydrogeologic Evaluation*
- *Industrial Hygiene*
- *Landfill Services*
- *Pollution Prevention*
- *Regulatory Compliance*
- *Remediation*
- *Risk Assessment*
- *Storm Water Discharge*
- *Underground Storage Tanks*

00447

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APPENDIX D **GROUNDWATER ELEVATION CHART**

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APPENDIX F **LABORATORY ANALYTICAL REPORT FOR SOIL SAMPLES COLLECTED IN AUGUST 2002**

APPENDIX G **LABORATORY ANALYTICAL REPORT FOR GROUNDWATER SAMPLES COLLECTED DURING VERTICAL SAMPLING IN AUGUST 2002**

APPENDIX H **LABORATORY ANALYTICAL REPORT FOR GROUNDWATER SAMPLES COLLECTED FROM WELLS IN JUNE AND SEPTEMBER 2002**

EXECUTIVE SUMMARY

SME conducted a fourth phase of remedial investigation and groundwater monitoring activities at Consumers Energy Company's (Consumers Energy's) Kalamazoo former manufactured gas plant (MGP). The Kalamazoo MGP is located in the City of Kalamazoo, Kalamazoo County, Michigan. Field activities for the remedial investigation were conducted in August 2002, while field activities for groundwater monitoring were conducted in June and September 2002.

Generally, the results of remedial investigation and groundwater monitoring activities were consistent with the results of previous remedial investigation and groundwater monitoring activities conducted at the site. However, the results of the fourth phase of remedial investigation indicate groundwater impact, at concentrations exceeding Part 201 Commercial II Cleanup Criteria for Drinking Water, as well as Part 201 Cleanup Criteria for GSI, is present at depths of approximately 71 and 80 feet based on analytical results for groundwater samples collected at monitoring wells MW401D and MW404D.

A more detailed presentation of the remedial investigation and groundwater monitoring results is presented below.

Former Creek Channel

Sand fill material encountered at soil probes conducted in the former creek channel was not distinguishable from sand fill material encountered at other soil probe and soil boring locations conducted at the former MGP. In addition, the characteristics of the impacted soil conditions encountered at one soil probe location was also not significantly distinguishable from other soil impact encountered at soil probes and soil borings conducted on the north side of the former MGP site. However, the presence of deeper sand fill encountered at one soil boring location may be indicative of the former creek channel.

Coal Tar Impact

Coal tar was not encountered at soil probe and soil boring locations conducted in the fourth phase of remedial investigation. Based on previous remedial investigation activities conducted at the site, coal tar impact to fill material appears to be limited to 3 areas located on the south side of the Power Plant (Building No. 214) in the current coal storage area.

MGP Impact to Groundwater

1. BTEX and PAH concentrations for groundwater samples collected from site monitoring wells in September 2002 did not exceed Part 201 Generic Commercial II Cleanup Criteria for Volatilization to Indoor Air, as well as Part 201 Cleanup Criteria for Water Solubility and Acute Inhalation Screening Levels, where applicable. In addition, dissolved metals concentrations for groundwater samples collected from site monitoring wells in June and September 2002 did not exceed Part 201 Cleanup Criteria for Groundwater Contact.

2. Free and available cyanide concentrations were less than the TDL at each site monitoring well for both the June and September 2002 groundwater monitoring events. Available and free cyanide have not been detected in site monitoring wells above the TDL since analysis for these parameters was implemented in February 2000. Therefore, it appears that cyanide is not a constituent of concern in groundwater at the site.

3. BTEX and/or PAH concentrations at various monitoring wells exceeded Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI. In addition at MW401, the benzene concentration exceeded the Part 201 Cleanup Criterion for Groundwater Contact and the toluene concentration exceeded the Part 201 Cleanup Criterion for Flammability and Explosivity Screening Level.

   The direction of migration for BTEX and PAH impact to shallow groundwater within the former MGP site is indicated to be influenced by the presence of an existing foundation in the subsurface corresponding to the former coke ovens for the MGP. The depth of the base of the foundation is unknown.

   BTEX and PAH impact to groundwater at the water table is present at Portage Creek based on analytical results for groundwater samples collected at MW304 and MW403. The source of the impact could be due to historical activities at the properties adjacent to Portage Creek and/or the migration of impact from the former MGP site.

   Benzene, xylenes and naphthalene impact to groundwater is present at depth within the aquifer at MW401D and MW404D. MW401D is screened from approximately 66 feet to 71 feet BG, while MW404D is screened from approximately 75 feet to 80 feet BG. These analytical results indicate that the vertical extent of impact has not been delineated.

4. No NAPLs were encountered in site monitoring wells during groundwater monitoring activities.

5. Arsenic, selenium and/or zinc were detected at some monitoring wells for the June and/or September 2002 groundwater monitoring events at concentrations greater than the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water and/or the Part 201 Cleanup Criterion for GSI.

Natural Attenuation Parameters

Based on 8 groundwater monitoring events, analytical results continue to suggest natural attenuation may be occurring within the plume of impacted groundwater based on DO, nitrate, dissolved iron and alkalinity concentrations for impacted wells.

The summary presented above is general in nature and should not be considered apart from the entire text of the report with all the qualifications and considerations mentioned therein. Details of our findings and recommendations are discussed in the following sections and in the appendices of this report.

1. INTRODUCTION

This document presents the results of the fourth phase of remedial investigation activities conducted at Consumers Energy Company's (Consumers Energy's) Kalamazoo former manufactured gas plant (MGP). The Kalamazoo MGP is located between Pitcher Street and Portage Street at Lovell Street in the City of Kalamazoo, Kalamazoo County, Michigan. Figure No. 1 of Appendix A is a site location diagram. Remedial investigation and groundwater monitoring activities were conducted at the site in June, August and September 2002. The remedial investigation activities were recommended in the "Report of Third Phase of Remedial Investigation and Groundwater Monitoring Activities," dated November 12, 2001 and "Work Plan to Implement Continued Remedial Investigation Activities," dated June 28, 2002. Both documents were prepared by SME. It should be noted that the proposed limited excavation activities presented as Item 2 in the recommendations of the "Report of Third Phase of Remedial Investigation and Groundwater Monitoring Activities," dated November 12, 2001 were not implemented and may be re-evaluated based on the results of additional site characterization data.

Previous remedial investigation activities were conducted at the site in 1999, 2000 and 2001. These remedial investigation activities were documented in the reports listed below.

- "Interim Report of Remedial Investigation," dated December 28, 1999
- "Report of Second Phase of Remedial Investigation and Groundwater Monitoring Activities," dated September 21, 2000
- "Groundwater Monitoring Report," dated February 19, 2001
- "Report of Third Phase of Remedial Investigation and Groundwater Monitoring Activities," dated November 12, 2001
- "Groundwater Monitoring Report," dated April 19, 2002
- "Groundwater Monitoring Report," dated June 13, 2002

Project information detailing the former MGP operations and a current site description are presented in the "Report of Second Phase of Remedial Investigation and Groundwater Monitoring Activities." However, Figures No. 2 and 3 of Appendix A show the layout of the former MGP operations in 1937 and the current site features, respectively.

2. SCOPE OF SERVICES

The scope of services for the remedial investigation and groundwater monitoring activities conducted in June, August and September 2002 is presented below. Figure Nos. 4 and 5 of Appendix A show the locations of previous and new soil probes, soil borings and monitoring wells.

1. Gauged groundwater elevations at MW-1 through MW-4, P-1, P-2, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW201R, MW202D, MW301, MW302, MW302I, MW302D, MW303, MW304, MW304D and Gauging Station No. 1 on June 11, 2002 to evaluate seasonal variations in groundwater flow.

2. Collected groundwater samples from MW-1 through MW-4, P-2, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW201R, MW202D, MW301, MW302, MW302I, MW302D, MW303, MW304 and MW304D on June 12, 13, 14 and 17, 2002 to evaluate seasonal variations in the concentrations of MGP parameters in groundwater. A groundwater sample was not collected from P-1 due to insufficient recharge.

3. Advanced 7 soil probes, SP601 through SP607 on August 5, 2002. The purpose of SP601 through SP605 was to further evaluate the extent of coal tar impact to the subsurface previously identified within the coal storage area south of Building No. 214 (Power Plant). The purpose of SP606 and SP607 was to evaluate potential MGP impact to the subsurface associated with the backfilling of a former creek channel. The location and backfilling of the former creek channel were identified on a Sanborn map for the site dated 1896.

4. Conducted vertical groundwater sampling at B401 through B404 on August 6 through 9, 2002. The purpose of the vertical groundwater sampling was to further evaluate the extent of MGP impact to the aquifer within the former MGP property boundaries, as well as downgradient of the former MGP.

5. Installed 10 monitoring wells identified as MW401/MW401I/MW401D, MW402/MW402D, MW403/MW403D and MW404/MW404I/MW404D on August 19 through 23 and 26, 2002. The purpose of the wells is to further evaluate seasonal variations in groundwater elevations, as well as potential seasonal variations in concentrations of MGP parameters both at the water table and at depth below the water table.

6. Installed Gauging Station No. 2 in Portage Creek at a location approximately 25 feet east of MW304/MW304D. The purpose of the gauging station is to provide creek level elevations that will be used to evaluate whether or not the upper portion of the aquifer is either losing or gaining with respect to Portage Creek.

7. Surveyed ground elevation and top-of-casing elevations at MW401/MW401I/MW401D, MW402/MW402D, MW403/MW403D and MW404/MW404I/MW404D. In addition, the elevation of the top of Gauging Station No. 2 and the bottom elevation in Portage Creek at Gauging Station No. 2 were also surveyed.

8. Gauged groundwater elevations at MW-1 through MW-4, P-1, P-2, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW201R, MW202D, MW301, MW302, MW302I, MW302D, MW303, MW304, MW304D, MW401, MW401I, MW401D, MW402, MW402D, MW403, MW403D, MW404, MW404I, MW404D and Gauging Station Nos. 1 and 2 on September 16, 2002 to evaluate seasonal variations in groundwater flow.

9. Collected groundwater samples from MW-1 through MW-4, P-2, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW201R, MW202D, MW301, MW302, MW302I, MW302D, MW303, MW304, MW304D, MW401, MW401I, MW401D, MW402, MW402D, MW403, MW403D, MW404, MW404I and MW404D on September 17 through 20, 23, 24 and 26, 2002 to evaluate seasonal variations in the concentrations of MGP parameters in groundwater. A groundwater sample was not collected from P-1 due to insufficient recharge.

Byre Environmental Soil Testing (BEST) of Okemos, Michigan provided soil probe services. Stearns Drilling of Dutton, Michigan provided soil boring, vertical sampling and monitoring well installation services. Brave Controls & Engineering of Battle Creek, Michigan provided surveying services. Consumers Energy's Chemistry Section - Environmental & Laboratory Services Department of Jackson, Michigan provided laboratory analytical services for soil and groundwater samples.

3. PROCEDURES

3.1 Soil Probes

SP601 through SP607 were advanced with an ATV-mounted, pneumatically driven, direct-push coring device. Soil samples were collected continuously from grade to the termination depth of the soil probes, which ranged from approximately 5.5 feet below grade (BG) at SP607 to approximately 15 feet at SP603 and SP604.

Soil samples from the direct-push coring device were collected using a 48-inch long, 2-inch outside diameter (OD) Geoprobe ® Macro Sampler lined with a disposable acetate liner. Soil samples were collected from the acetate liner by cutting open the liner with a utility knife and transferring the soil to a pre-cleaned geotechnical jar. Soil samples collected from the soil probes were classified in the field in general accordance with the Unified Soil Classification System (USCS) and recorded on probe logs by the SME field staff. Copies of soil probe logs are presented in Appendix B.

No soil samples collected from SP601 through SP605 were submitted for laboratory analysis.

Select soil samples from SP606 and SP607 were submitted for laboratory analysis of benzene, toluene, ethylbenzene and xylene(s) (BTEX), polynuclear aromatic hydrocarbons (PAHs), the 10 Michigan Metals and amenable cyanide. The basis for soil sample selection

for laboratory analysis was sample depth, as well as soil characteristics, i.e. soil type, odors, staining, etc. Analytical methods, detection limits and corresponding containers with appropriate preservatives were consistent with those presented in the "Report of Third Phase of Remedial Investigation and Groundwater Monitoring Activities," dated November 12, 2001 and prepared by SME.

Soil cuttings generated from the soil probes were returned to the corresponding soil probe hole after sampling activities were completed. The remaining space in the soil probe holes was then be backfilled with bentonite chips to the extent possible. Acetate liners and any excess soil cuttings that can not be returned to the soil probe holes were containerized in labeled, Michigan Department of Transportation (MDOT) approved, 55-gallon drums. A detailed description of decontamination and waste disposal procedures is presented in Sections 3.7 and 3.8, respectively.

3.2 Vertical Groundwater Sampling

Soil borings for B401 through B404 were advanced with a truck-mounted drill rig using 4.25-inch inner diameter (ID) hollow stem augers. Soil samples at each soil boring were collected semi-continuously in the upper 10 feet and at 5-foot intervals to the termination depth of the soil borings which was approximately 55 feet at each soil boring location. Soil samples were collected using a 24-inch long split-barrel sampler that was driven into undisturbed soil ahead of the augers. Soil samples were collected from the split-barrel sampler and containerized in 8-ounce glass jars. Soil samples were classified in the field in general accordance with the USCS and recorded on boring logs by the SME field staff. Soil samples were not submitted for laboratory analysis. Copies of soil boring logs are presented in Appendix B.

Vertical groundwater sampling was conducted at each soil boring. At each soil boring, groundwater samples were collected at or near the water table, which occurred at depths ranging from approximately 5 to 6 feet BG, and at depth intervals of approximately 20 to 25 feet BG, 35 to 40 feet BG and 50 to 55 feet BG. Vertical groundwater samples were collected using a 5-foot long, 4.25–inch ID slotted hollow stem auger. Groundwater samples were collected by advancing the slotted lead auger to the desired depth for sample collection. At the water table, groundwater samples were obtained by lowering a Keck® Sampling Pump to the slotted interval of the auger and pumping through 0.5-inch ID polyethylene tubing. Below the water table, groundwater samples were obtained by lowering the Keck® Sampling Pump with an overlying inflatable packer to the slotted interval. The inflated packer was then placed directly above the pump and slotted portion of the auger to prevent downward migration of groundwater within the augers. The groundwater samples were

collected by pumping through 0.5-inch ID polyethylene tubing. Approximately three casing volumes were purged prior to sampling at each sampling interval.

It should be noted that vertical groundwater samples were not collected from B401 and B402 at the water table due to insufficient recharge during purging activities. However, at B401 a vertical groundwater sample was collected at a depth interval of 10 to 15 feet BG which is approximately 4 below the water table.

Vertical groundwater samples were submitted for laboratory analysis of BTEX and naphthalene. Analytical methods, detection limits and corresponding containers with appropriate preservatives will be consistent with those presented in the "Report of Third Phase of Remedial Investigation and Groundwater Monitoring Activities," dated November 12, 2001 and prepared by SME.

The analytical laboratory supplied pre-cleaned containers with appropriate preservatives (for groundwater samples only). After sample collection, the containerized samples were kept cool, i.e. refrigerated, until delivery to the analytical laboratory. SME field staff followed chain of custody procedures documenting the sample handling sequence.

At the completion of soil sampling and vertical groundwater sampling activities, each soil boring was backfilled to grade with a cement/bentonite grout.

Soil cuttings generated from the soil borings, and groundwater generated from purging during vertical groundwater sampling, were containerized in labeled, MDOT approved, 55-gallon drums. A detailed description of decontamination and waste disposal procedures is presented in Sections 3.7 and 3.8, respectively.

3.3 Monitoring Well Installation

Monitoring well clusters MW401/MW401I/MW401D, MW402/W402D, MW403/MW403D and MW404/MW404I/MW404D were installed at locations corresponding to B401, B402, B403 and B404, respectively. Soil borings to facilitate installation of these wells were advanced with a truck-mounted drill rig using 4.25-inch ID hollow stem augers.

Soil samples were not collected from the soil borings corresponding to the installation of MW401, MW401I, MW402, MW403, MW404 and MW404I. Soil descriptions at these locations were based on soil descriptions at corresponding soil borings B401 through B404. However, at MW401D, MW402D, MW403D and MW404D, additional soil samples were collected for USCS classification at 5-foot intervals from approximately 55 feet BG to the termination depth of the soil borings, which ranged from approximately 65 feet BG at MW403D to approximately 80 feet BG at MW404D. Soil sample collection methods and field classifications were consistent with those presented previously in Section 3.2. Copies of soil boring logs with well construction summaries are presented in Appendix B.

With the exception of MW401, each monitoring well was constructed with a 5-foot long, 2-inch ID, schedule 40 PVC well screen and 2-inch ID, schedule 40 PVC riser pipe. At MW401, well materials also consisted of 2-inch ID PVC materials, however the well screen was 10-feet long. A 10-foot long well screen was installed at MW401 to evaluate for the potential presence of both light and dense non-aqueous phase liquids (NAPLs). The well screens were machine slotted with a slot size of 0.010 inch. For monitoring wells with the well screen set at the water table surface (MW401, MW402, MW403 and MW404), an attempt was made to set the well screen such that the water table was within the screened interval. For monitoring wells with well screens set at depth below the water table (MW401I, MW401D, MW402D, MW403D, MW404I and MW404D) screen interval depths were based on the analytical laboratory results of previously conducted vertical groundwater sampling. The annular space surrounding the well screens for each of the monitoring wells was packed with washed silica sand to a level approximately 2 feet above the top of the screens. At MW401, MW402, MW403 and MW404, a hydrated bentonite pellet seal was set above the sand pack to approximately 1 foot BG since the top of the sand pack was within 5 feet of grade. At MW401I, MW401D, MW402D, MW403D, MW404I and MW404D, a hydrated bentonite pellet seal approximately 1 to 2 feet in thickness was set above the sand pack; while the remaining annular space was backfilled with a cement/bentonite grout to approximately 1 foot BG. MW402, MW402D, MW403, MW403D, MW404, MW404I and MW404D, were completed at grade with a water-tight, traffic-rated, flush-mount well guard installed in concrete. MW401, MW401I and MW401D were completed above grade with locking, water-tight stand-up casings. Each well casing was capped with a water-tight, locking lid at the completion of well construction activities.

Monitoring wells were developed by intermittent surging of the screened interval with a surge block followed by pumping of the screened interval with a down-hole pump. The wells were developed until a minimum of six casing volumes of water had been removed and/or the development water was judged to be sufficiently clear.

SME field staff documented the final completion depths for the monitoring wells, as well as the associated sand packs and seals. SME field staff also documented the condition of the well development water, i.e. odors, turbidity, etc., as well as final volume of development water.

Soil cuttings generated from the soil borings were containerized in labeled, MDOT approved, 55-gallon drums. A detailed description of decontamination and waste disposal procedures is presented in Sections 3.7 and3.8, respectively.

3.4 Gauging Staff Installation

Gauging Station No. 2 was installed in Portage Creek at a location approximately 25 feet east of MW304/MW304D. The gauging station consists of a stream level gauging staff approximately 3 feet in length which is graduated to hundredths of a foot and marked every foot and tenth of a foot. The base of the gauging staff was manually driven into the creek bottom using a slide hammer.

3.5 Surveying

A registered surveyor surveyed the ground surface and top-of-casing elevations for MW401, MW401I, MW401D, MW402, MW402D, MW403, MW403D, MW404, MW404I and MW404D relative to mean sea level with an accuracy of +/-0.01 feet. In addition, the registered surveyor surveyed the top of the gauging staff at Gauging Station No. 2 and the creek bottom at Gauging Station No. 2 also relative to mean sea level with an accuracy of +/-0.01.

3.6 Groundwater Monitoring

Groundwater samples were collected from MW-1 through MW-4, P-2, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW201R, MW202D, MW301, MW302, MW302I, MW302D, MW303, MW304 and MW304D during and June and September of 2002. For the September 2002 groundwater monitoring event, groundwater samples were also collected from MW401, MW401I, MW401D, MW402, MW402D, MW403, MW403D, MW404, MW404I and MW404D. A groundwater sample was not collected from P-1 in both June and September 2002 due to insufficient recharge.

Prior to conducting monitoring well purging and sampling, well caps at each monitoring well were removed to allow the water level within the well casing to equilibrate with respect to atmospheric pressure for a minimum of 15 minutes. The depth to water and total well depth were then gauged and referenced to the top-of-casing using an electronic water level meter incremented to 0.01 feet.

Groundwater sampling was conducted using low-flow (minimal drawdown) sampling methodology. The procedures presented in the EPA Ground Water Issue document, "Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures," Puls R.W. and Barcelona, M.J., April 1996, EPA/540/S-95/504 were used to guide SME's sampling protocol.

After gauging the depth to water and total well depth, each well was purged using a variable flow rate, portable peristaltic pump with 3/8-inch ID silicone tubing, or equivalent, at a low flow pumping rate of 100 to 400 milliliters per minute (ml/min). For monitoring wells screened at the water table, the pump tubing inlet was lowered to a level approximately one

to two feet below the water table. For monitoring wells screened below the water table, the pump tubing inlet was lowered to a level approximately in the middle of the screened interval. During purging, effluent groundwater was monitored periodically for pH, temperature, specific conductivity and dissolved oxygen (DO) using field instrumentation. Purging was continued until pH, specific conductivity and DO values were stable.

After purging was completed, groundwater samples were collected at the same flow rate for the following parameters in the order presented: PAHs, the 10 Michigan Metals, cyanide (available and free), and BTEX. During sample collection at each monitoring well, the pump intake was slowly moved through the portion of the screened interval at and below the water table in order to collect a representative groundwater sample. Groundwater samples collected for PAHs and free cyanide were pumped directly from the pump outlet into the appropriate containers with no preservatives. Groundwater samples collected for metals were pumped directly into the appropriate container with preservative directly from the pump outlet after passing through a 0.45 micron filter that was inserted into the pump outlet. Groundwater samples collected for available cyanide were first pumped directly into a container containing a pre-measured amount of lead carbonate, then withdrawn from the container with a syringe and field filtered into a second container with preservative. Groundwater samples collected for BTEX analysis were collected by crimping the silicone, or equivalent, tubing at grade, and withdrawing the tubing from the well. The groundwater samples was then gravity drained from the influent end of the pump tubing into the appropriate container with preservative to minimize negative pressure effects from the peristaltic pump. Analytical methods, detection limits and corresponding containers with preservatives were consistent with those presented in the "Report of Second Phase of Remedial Investigation and Groundwater Monitoring Activities," dated September 21, 2000 and prepared by SME.

Groundwater samples collected from site monitoring wells were also submitted for laboratory analysis of various inorganic parameters to evaluate the potential for natural attenuation occurring on the site. The parameters, analytical methods, detection limits and sample containers are presented below.

Analytical Parameter	EPA Method Number	Target Detection Limits	Container w/ Preservative
Alkalinity As CaCO3	310.1	--	40 ml VOA/NP
Nitrate	353.2;300.0	100	250 ml plastic/NP
Iron	7380	20	250 ml plastic/HNO3
Sulfate	375.2;300.0	1,000	250 ml plastic/NP

Notes:
1. TDLs are presented in parts per billion (ppb or micrograms per Liter (ug/L)).
2. NP = No preservative.

As a quality assurance/quality control measure duplicate groundwater samples were collected from MW101 and MW201R for the June and September 2002 groundwater monitoring events and submitted to the analytical laboratory for BTEX and PAH analysis only.

The analytical laboratory supplied pre-cleaned containers with appropriate preservatives for groundwater samples. After sample collection, the containerized samples were kept cool, i.e. refrigerated, until delivery to the analytical laboratory.

Field instrumentation for pH, specific conductivity and DO were calibrated daily per manufacturer's recommendations.

SME field staff followed chain of custody procedures documenting the sample handling sequence. In addition, SME field staff documented the depths to groundwater, total well depths, purge volumes, field descriptions of purge water condition (i.e. color, odors, etc.) and other relevant information, i.e. pH, specific conductivity and DO values, associated with the sampling activities.

Purge water from monitoring well sampling activities was discharged into the corresponding well from where the purge water was removed. A detailed description of decontamination and waste disposal procedures is presented in Sections 3.7 and 3.8, respectively.

3.7 Decontamination

Downhole soil probe and drilling tools, i.e. augers, drill rod, probe-rods, etc., were decontaminated with a high pressure/temperature wash prior to conducting each soil probe. Downhole and reusable soil sampling equipment, i.e. Macro Samplers, split-barrel samplers, stainless steel putty knives, etc., were decontaminated with a laboratory grade detergent and rinsed with distilled water prior to each use. Downhole and reusable groundwater sampling equipment, i.e. Keck pump, temporary well screens, water level meter, etc., were decontaminated with a laboratory grade detergent and rinsed with distilled water prior to each use. For groundwater sampling, new polyethylene or silicone tubing, as well as new groundwater filter elements were used at each monitoring well location.

Monitoring well materials were either be pre-cleaned and wrapped in plastic from the manufacturer or cleaned on-site with a high pressure/temperature wash.

Waste water generated from decontamination activities was containerized in labeled MDOT approved 55-gallon drums. A more detailed description of waste disposal procedures is presented under Section 3.8.

3.8 Solid and Liquid Disposal

As previously stated, residual soil and acetate liners generated from soil probe activities; soil cuttings generated during soil boring activities; groundwater generated during soil probe sampling; well development water and wash water generated during the decontamination of soil and groundwater sampling equipment was containerized in labeled, MDOT approved 55-gallon drums.

SME's subcontractors provided the MDOT approved 55-gallon drums. Consumers Energy provided drum labels. The drum labels were marked using a water-proof, indelible pen with the following information:

- Contents: Type of material, i.e. soil cuttings, acetate liners, purge water and/or decon water.
- Origin of Materials: Source of material, i.e. MW202D.
- Address: 1945 W. Parnall Road/Jackson, MI
- Contact: Robert Neumann
- SME Project No.: KE31823
- Date: Date material was placed in drum.

Consumers Energy has disposed of the soil and liquid wastes generated during the remedial investigation activities at licensed disposal facilities.

4. GEOLOGY/HYDROGEOLOGY

4.1 Soil Stratigraphy

The site is located within the Kalamazoo River Valley. Unconsolidated sediments within the Kalamazoo River Valley range in thickness from about 50 to 100 feet and generally consist of interbedded sands and silts. The deposition of the unconsolidated sediments can be primarily attributed to alluvial processes, i.e. stream and river action. The underlying bedrock unit is the Coldwater Shale. A more detailed presentation of site stratigraphy is presented below.

Generally, the soil conditions encountered during remedial investigation activities conducted in August 2002 were consistent with soil conditions encountered during previous remedial investigation activities conducted in 1999, 2000 and 2001.

At SP601, surficial material consisted of approximately 4 inches of asphaltic concrete over 2 inches of sand and gravel subgrade material. At SP602, SP603, SP604, SP606, B401, B402 and B403, surficial material consisted of top soil ranging in thickness from approximately 4 to 8 inches. At SP605, surficial material consisted of approximately 3 inches of coal. At SP607 and B404, surficial material consisted of sand fill.

Below surficial material, the soil stratigraphy at the site is characterized as follows:

Stratum A: Fill. Fill consisting predominantly of sand was encountered beneath the surficial materials at each soil probe and soil boring location. The sand fill varied in grain size and contained various amounts of silt, clay and gravel. The fill also contained varying amounts of coal, cinders, root fibers, brick fragments, slag and concrete fragments. At SP604, the sand fill was underlain by approximately 2 inches of coal fill material. The fill extended to depths varying from approximately 5.3 feet at SP604 to approximately 19 feet at B402. At SP601, SP602, SP606 and SP607 the sand fill extended to the termination depth of the soil probe.

Stratum B: Fibrous Peat. Fibrous peat was encountered at SP605 over a depth interval of approximately 10 to 10.8 feet. The peat was encountered either beneath fill of Stratum A. A trace sand and root fibers were encountered within the peat.

Stratum C: Native Sands and Silts. Natural sand and/or sandy silt layers were encountered either beneath the fill of Stratum A or the fibrous peat of Stratum B at SP603, SP604, SP605 and B401/MW401D through B404/MW404D. The native sand layers were assorted in grain size and contained variable amounts of gravel and/or silt. The native sandy silt layers included some clay. At SP603, SP604, SP605 and B401/MW401D through B404/MW404D, the soil probes or soil borings terminated in the native sands or silts of Stratum C at depths ranging from 11 feet at SP605 to 80 feet at B404/MW404D.

Figure No. 6 of Appendix A is a site map showing the location of the section lines for geologic cross sections A-A', B-B' and C-C'. Figure Nos. 7, 8 and 9 of Appendix A are geologic cross sections A-A', B-B' and C-C', respectively, which show the interpreted correlation of the soil stratigraphy described above. The soil stratigraphy is consistent with the depositional environment of the area, as well as soil conditions encountered at previous soil probes and soil borings conducted at the site.

Odors were noted at SP602, SP603, SP604, SP605 and B401 through B404. Black staining was observed in soil samples collected from SP605, SP607 and B401. In addition, a hydrocarbon sheen was observed on soil samples collected from B401 over a depth interval of approximately 6 to 14.5 feet BG. No coal tar was encountered during remedial investigation activities conducted in August 2002. A discussion of the extent of coal tar impact is presented in Section 5.

4.2 Groundwater Conditions

During soil probe, soil boring and monitoring well installation activities conducted in August 2002 groundwater was encountered at depths ranging from approximately 5 feet BG to 12 feet BG.

Figure Nos. 10 and 11 of Appendix A show the groundwater elevation contours for groundwater levels gauged in site monitoring wells on June 11, 2002 and September 16, 2002 respectively. Table 1 of Appendix C lists groundwater elevation data for June 11, 2002 and September 16, 2002, as well as previous groundwater monitoring events.

Groundwater elevations gauged at P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D, MW304D, MW401I, MW401D, MW402D, MW403D, MW404I and MW404D were not used to interpret groundwater flow conditions at the water table because the well screens are set below the water table surface. In addition, for the September 2002 groundwater monitoring event, the groundwater elevation gauged at MW402 was not used to interpret groundwater flow conditions at the water table because the groundwater elevation appeared to be anomalous.

4.2.1 June 2002

For June 2002, groundwater was encountered at depths below ground surface ranging from approximately 3.7 feet at P-4 to approximately 13.9 feet at MW202D. Groundwater elevations for June 2002 were lower by approximately 0.5 to 1.4 feet compared with groundwater elevations gauged in March 2002.

For the northern portion of the site, where former MGP production components, storage structures and/or transfer lines had been located, groundwater flow appears to be to the east with a calculated horizontal hydraulic gradient of 0.003 feet per foot. This horizontal hydraulic gradient was calculated between the 757.4 and 759.0 contour lines on the north side of the site. For the southern portion of the site, groundwater flow also appears to be generally to the east with a calculated horizontal hydraulic gradient of 0.005 feet per foot. This horizontal hydraulic gradient was calculated between the 757.0 and 758.6 contour lines on the south side of the site. The interpreted groundwater flow direction and corresponding horizontal gradients are generally consistent site topography, as well as with previous groundwater gauging events.

For June 2002, groundwater elevations at MW302 and MW304, which are located adjacent to Portage Creek and are screened at the water table, were higher than the gauged elevation of the creek.

Vertical hydraulic gradients were calculated for the following well pairs, P-2/P-2D, P-3/P-3D, MW101/MW202D, MW104/MW104D, MW105/MW105D, MW302/MW302D and MW304/MW304D. The following table summarizes the calculated vertical gradients.

Well Pair Location	Gradient (feet per foot) and Direction
P-2/P-2D	0.013 – Downward
P-3/P-3D	0.011 – Downward
MW101/MW202D	0.021 – Downward
MW104/MW104D	0.016 – Downward
MW105/MW105D	0.039 – Downward
MW302/MW302D	0.012 – Upward
MW304/MW304D	0.011 – Upward

The calculated vertical hydraulic gradients are slightly higher and in the same direction at P-2/P-2D, P-3/P-3D and MW101/MW202D compared with those calculated for March 2002 groundwater elevation data. The calculated vertical gradients MW105/MW105D, MW302/MW302D and MW304/MW304D are consistent with those calculated for March 2002 groundwater elevation data. However, at MW104/MW104D, the vertical calculated hydraulic is downward for June 2002 compared with a calculated upward component for March 2002. The calculated vertical gradients for well pairs located on the west side and immediately east of Pitcher Street are downward, however calculated vertical gradients for well pairs located along Portage Creek are upward.

4.2.2 September 2002

For September 2002, groundwater was encountered at depths below ground surface ranging from approximately 4.0 feet at P4 to approximately 13.8 feet at MW101D. Where comparative data is available, with the exception of MW202D, groundwater elevations for September 2002 were lower by approximately 0.2 to 1.0 feet compared with groundwater elevations gauged in June 2002. At MW202D, the groundwater elevation for September 2002 was 0.2 feet higher compared to the groundwater elevation gauged in June 2002.

For the northern portion of the site, where former MGP production components, storage structures and/or transfer lines had been located, groundwater flow appears to be to the east with a calculated horizontal hydraulic gradient of 0.004 feet per foot. This horizontal hydraulic gradient was calculated between the 756.6 and 758.2 contour lines on the north side of the site. For the southern portion of the site, groundwater flow also appears to be generally to the east with a calculated horizontal hydraulic gradient of 0.006 feet per foot. This horizontal hydraulic gradient was calculated between the 756.4 and 758.4 contour lines

on the south side of the site. The interpreted groundwater flow direction and corresponding horizontal gradients are generally consistent site topography, as well as with previous groundwater gauging events.

For September 2002, groundwater elevations at MW302, MW304, MW403 and MW404, which are located adjacent to Portage Creek and are screened at the water table, were higher than the gauged elevation of the creek.

Vertical hydraulic gradients were calculated for the following well pairs, P-2/P-2D, P-3/P-3D, MW101/MW202D, MW104/MW104D, MW105/MW105D, MW302/MW302D, MW304/MW304D, MW401/MW401D, MW402/MW402D, MW403/MW403D and MW404/MW404D. The following table summarizes the calculated vertical gradients.

Well Pair Location	Gradient (feet per foot) and Direction
P-2/P-2D	0.025 – Downward
P-3/P-3D	0.032 – Downward
MW101/MW202D	No Apparent Gradient
MW104/MW104D	0.004 – Upward
MW105/MW105D	0.041 – Downward
MW302/MW302D	0.007 – Upward
MW304/MW304D	0.005 – Upward
MW401/MW401D	0.006 – Downward
MW402/MW402D	0.001 – Downward
MW403/MW403D	0.003 – Upward
MW404/MW404D	0.005 – Upward

The calculated vertical hydraulic gradients are slightly higher and in the same direction at P-2/P-2D and P-3/P-3D compared with those calculated for June 2002 groundwater elevation data. The calculated vertical gradients MW105/MW105D, MW302/MW302D and MW304/MW304D are consistent with those calculated for June 2002 groundwater elevation data. However, at MW104/MW104D, the vertical calculated hydraulic is slightly upward for September 2002 compared with a slightly downward component for June 2002, while there was no appreciable vertical gradient for MW101/MW202D. The calculated vertical gradients for well pairs located on the west side

of Pitcher Street are downward, however calculated vertical gradients for well pairs located along Portage Creek are upward.

4.2.3 Seasonal Variations In Groundwater Conditions

Based on an evaluation of groundwater elevation data for monitoring wells that have more than one-year of elevation data, i.e. all wells with the exception of those installed in August 2002, the minimum groundwater elevations at the site appeared to have occurred in February 2000; while the maximum groundwater elevations occurred in March 2002. Chart No. 1 of Appendix D shows a trend diagram for groundwater elevation versus time for select monitoring wells screened at the water table. The wells indicated on the trend chart are representative of wells located upgradient, cross-gradient and downgradient of the site, as well as within the former MGP site.

The maximum groundwater elevation at the site was 761.48 feet above mean sea level (MSL), which was gauged at MW103 in March 2002, while the minimum groundwater elevation at the site was 756.24 feet above MSL, which was gauged at MW-3 in February 2000. Water table fluctuations at individual wells have ranged from 1.5 feet at MW304 to 2.4 feet at MW102.

The direction of groundwater flow at the MGP site has generally been consistent with site topography since the implementation of groundwater monitoring in 1999 where the direction of groundwater flow has been to the east, toward Portage Creek. In addition, the calculated horizontal hydraulic gradients have also been consistent ranging from 0.003 feet per foot to 0.007 feet per foot on the north side of the site and from 0.003 feet per foot to 0.006 feet per foot on the south side of the site.

5. ESTIMATED EXTENT OF COAL TAR IMPACT

Coal tar was not encountered at soil probes and soil borings conducted in August 2002. Based on remedial investigation activities conducted to date at the site, coal tar impact to soil appears to be limited to the current coal storage area south of the Power Plant. Coal tar was previously encountered within fill material at depths ranging from approximately 1 to 7 feet and extended to depths ranging from approximately 2.5 to 7.5 feet. The thickness of the fill containing coal tar ranged from approximately 0.25 feet to 3.5 feet. Figure No. 12 of Appendix A shows the estimated extent of coal tar impact to surface and subsurface soil on the south side of the Power Plant (Building No. 214) in the current coal storage area. The figure also shows the approximate boundaries of excavations conducted by Pharmacia personnel in September 1999 to remove near-surface coal tar. Coal tar impact has been identified in 3 areas, as shown on Figure No. 12.

6. ANALYTICAL RESULTS FOR SOIL

Laboratory testing results for the surface and subsurface soil samples collected at SP606 and SP607 are listed on Tables 2 and 3 of Appendix C. Tables 2 and 3 also lists the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water Protection, Groundwater Contact Protection, Volatilization to Indoor Air Inhalation and Direct Contact, as well as Part 201 Cleanup Criteria for Groundwater/Surface Water Interface (GSI) Protection. The laboratory analytical report for the soil sample is presented in Appendix F.

For the soil samples collected from SP606, S1 (0.5-1 feet BG) and S2 (4-5 feet BG), BTEX, PAHs, metals and amenable cyanide concentrations were either less than the target detection limit (TDL) or Part 201 Generic Commercial II Cleanup Criteria.

For SP607-S1 (0-1 feet BG), BTEX and PAH concentrations were either less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria. Mercury and selenium were detected at concentrations exceeding the Part 201 GSI Protection Cleanup Criteria, but the concentrations of remaining metals were either less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria. Amenable cyanide was detected at a concentration exceeding the Part 201 GSI Protection Cleanup Criterion.

For SP607-S3 (4-5 feet BG), BTEX concentrations were either less than the TDL or Part 201 Generic Commercial II Cleanup Criteria. Phenanthrene was detected at a concentration exceeding the Part 201 GSI Protection Cleanup Criterion, but the concentrations of remaining PAHs were either less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria. Selenium were detected at a concentration exceeding the Part 201 GSI Protection Cleanup Criterion, but the concentrations of remaining metals were either less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria. The amenable cyanide concentration was less than the TDL.

7. ANALYTICAL RESULTS FOR VERTICAL GROUNDWATER SAMPLING

Laboratory testing results for vertical groundwater samples collected at B401 through B404 are listed on Table 4 of Appendix C. Table 4 also lists the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and Volatilization to Indoor Air; the Part 201 Cleanup Criteria for Groundwater Contact and Groundwater/Surface Water Interface (GSI), as well as the Part 201 Water Solubility. Laboratory analytical reports for the vertical groundwater samples are presented in Appendix G.

BTEX concentrations for vertical groundwater samples were less than the Part 201 Commercial II Cleanup Criteria for Groundwater Volatilization to Indoor Air Inhalation and Part 201 Water Solubility.

00468

7.1 B401

BTEX concentrations for the vertical groundwater samples collected at 10 to 15 feet BG, 20 to 25 feet BG, 35 to 40 feet BG and 50 to 55 feet BG exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI.

Naphthalene concentrations for the vertical groundwater samples collected at 10 to 15 feet BG exceeded Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and Volatilization to Indoor Air Inhalation, as well as Part 201 Cleanup Criteria for GSI, Groundwater Contact and Water Solubility. Naphthalene concentrations for the vertical groundwater samples collected at 20 to 25 feet BG, 35 to 40 feet BG and 50 to 55 feet BG exceeded the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water and Part 201 Cleanup Criterion for GSI.

7.2 B402

Benzene, ethylbenzene and xylenes concentrations for the vertical groundwater samples collected at 20 to 25 feet BG, 35 to 40 feet BG and 50 to 55 feet BG exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI. The toluene concentration for the sample collected at 20 to 25 feet BG exceeded the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water and Part 201 Cleanup Criteria for GSI. However, the toluene concentrations for samples collected at 35 to 40 feet BG and 50 to 55 feet BG were less than the Part 201 Generic Commercial II Cleanup Criteria.

Naphthalene concentrations for the vertical groundwater samples collected at 20 to 25 feet BG, 35 to 40 feet BG and 50 to 55 feet BG exceeded Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI.

7.3 B403

Benzene, ethylbenzene and xylenes concentrations for the vertical groundwater samples collected at 5 to 8.5 feet BG, 20 to 25 feet BG, 35 to 40 feet BG and 50 to 55 feet BG exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI. The toluene concentration for the sample collected at 5 to 8.5 feet BG exceeded the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water and Part 201 Cleanup Criteria for GSI. However, the toluene concentrations for samples collected at 20 to 25 feet BG, 35 to 40 feet BG and 50 to 55 feet BG were either less than the TDL or the Part 201 Generic Commercial II Cleanup Criteria.

Naphthalene concentrations for the vertical groundwater samples collected at 5 to 8.5 feet BG, 20 to 25 feet BG and 35 to 40 feet BG exceeded Part 201 Generic Commercial II

Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI. However, the naphthalene concentration for the sample collected at 50 to 55 feet BG was less than the TDL.

7.4 B404

The benzene concentrations for the vertical groundwater samples collected at 20 to 25 feet BG, 35 to 40 feet BG and 50 to 55 feet BG exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water, Part 201 Cleanup Criteria for GSI and/or Part 201 Cleanup Criteria for Groundwater Contact. However, the benzene concentration for the vertical groundwater sample collected at 6 to 10 feet BG was less than the TDL.

Ethylbenzene and xylenes concentrations for the vertical groundwater samples collected at 35 to 40 feet BG and 50 to 55 feet BG exceeded the Part 201 Cleanup Criteria for GSI. However, the ethylbenzene and xylenes concentrations for the vertical groundwater samples collected at 6 to 10 feet BG and 20 to 25 feet BG were either less than the TDL or the Part 201 Generic Commercial II Cleanup Criteria.

Toluene concentrations for samples collected at 6 to 10 feet BG, 20 to 25 feet BG, 35 to 40 feet BG and 50 to 55 feet BG were either less than the TDL or the Part 201 Generic Commercial II Cleanup Criteria.

Naphthalene concentrations for the vertical groundwater samples collected at 35 to 40 feet BG and 50 to 55 feet BG exceeded Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI. However, the naphthalene concentrations for the samples collected at 6 to 10 feet BG and 20 to 25 feet BG were less than the TDL.

7.5 Basis for Vertical Groundwater Sampling

The analytical results for vertical groundwater samples collected from B401 through B404 indicate that BTEX and naphthalene impact to groundwater at concentrations exceeding Part 201 Generic Commercial II Cleanup Criteria extends to depths exceeding 55 feet BG at both the former MGP site and downgradient of the former MGP site, adjacent to Portage Creek. In addition the analytical results for the vertical groundwater samples collected at B401 indicate naphthalene is present at concentrations exceeding the Part 201 Water Solubility at and just below the water table.

The analytical results for the vertical groundwater sampling were used to evaluate the screened interval depths of proposed permanent monitoring wells to be set at locations corresponding to B401 through B404. At each of the deep monitoring well locations corresponding to B401 through B404, the screened intervals for the deep wells were set at an arbitrary depth below the maximum depth of vertical groundwater sampling since the

indicated benzene, toluene, ethylbenzene, xylenes and/or naphthalene concentrations for the 50 to 55 feet samples at each vertical sampling location exceeded Part 201 Generic Commercial II Cleanup Criteria.

At the location corresponding to B401, 3 permanent monitoring wells, identified as MW401, MW401I and MW401D, were installed. The screened interval for MW401 was set at the water table, which was encountered at approximately 6 feet BG. As previously stated, the well screen length at MW401 was 10 feet to evaluate the presence of dense non-aqueous phase liquids (DNAPLs) between the water table and a 2-foot sandy silt stratum which occurred at a depth of approximately 15 feet BG. The screened interval for MW402I was set at approximately 35 to 40 feet BG, and the screened interval for MW401D was set from approximately 66 to 71 feet BG.

At the location corresponding to B402, 2 permanent monitoring wells, identified as MW402 and MW402D, were installed. The screened interval for MW402 was set at the water table, which was encountered at approximately 6 feet BG. The screened interval for MW402D was set from approximately 65 to 70 feet BG.

At the location corresponding to B403, 2 permanent monitoring wells, identified as MW403 and MW403D, were installed. The screened interval for MW403 was set at the water table, which was encountered at approximately 5 feet BG. The screened interval for MW403D was set from approximately 60 to 65 feet BG.

At the location corresponding to B404, 3 permanent monitoring wells, identified as MW404, MW404I and MW404D, were installed. The screened interval for MW404 was set at the water table, which was encountered at approximately 5 feet BG. The screened interval for MW404I was set at approximately 35 to 40 feet BG, and the screened interval for MW404D was set from approximately 75 to 80 feet BG.

8. ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES COLLECTED FROM MONITORING WELLS

Laboratory testing results for 62 groundwater samples collected from permanent site monitoring wells in June and September 2002 are listed on Table 5 of Appendix D. For each monitoring well, Table 5 lists only those PAHs and metals that have been detected for at least one sampling event. Table 5 also lists the Part 201 Commercial II Cleanup Criteria for Drinking Water and Part 201 Cleanup Criteria for GSI. Laboratory analytical reports for the groundwater samples collected from permanent site monitoring wells in May and June 2001 are presented in Appendix H.

For the June 2002 groundwater monitoring event analytical results for BTEX and PAHs are not being discussed because the analytical laboratory indicated that the BTEX analyses had been conducted after the holding time and that the PAH results were invalid.

BTEX and PAH concentrations for groundwater samples collected in September 2002 were less than the Part 201 Commercial II Cleanup Criteria for Volatilization to Indoor Air Inhalation, as well as Part 201 Cleanup Criteria for Water Solubility and Acute Inhalation Screening Levels.

Metals concentrations for groundwater samples collected in both June and September 2002were less than the Part 201 Cleanup Criteria for Groundwater Contact.

8.1 MGP Parameters

8.1.1 BTEX

Ethylbenzene and xylenes at MW401 exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and the Part 201 Cleanup Criteria for GSI. The benzene concentration at MW401 exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and the Part 201 Cleanup Criteria for GSI, as well as the Part 201 Cleanup Criterion for Groundwater Contact. The toluene concentration at MW401 exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and the Part 201 Cleanup Criteria for GSI, as well as the Part 201 Flammability and Explosivity Screening Level.

Benzene, toluene, ethylbenzene and/or xylene(s) concentrations at MW-1, P-2, P-3D, MW101, MW101D, MW201R, MW301, MW302I, MW304, MW401I, MW401D, MW403, MW404I and MW404D exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI.

BTEX concentrations for other groundwater samples were either less than the TDL or Part 201 Generic Commercial II Cleanup Criteria.

8.1.2 PAHs

Naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene and/or fluoranthene concentrations at P-2, MW101D, MW201R, MW301, MW401I, MW401D and MW404D exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI. The concentrations of remaining PAHs constituents at these wells were either less than the TDL or Part 201 Generic Commercial II Cleanup Criteria.

Naphthalene concentrations at MW-1, P-3D, MW101, MW202D, MW304, MW401, MW402, MW403 and MW404I, exceeded the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water and/or Part 201 Cleanup Criterion for GSI. The concentrations

of remaining PAHs constituents at these wells were either less than the TDL or Part 201 Generic Commercial II Cleanup Criteria.

PAH concentrations for other groundwater samples were either less than the TDL or Part 201 Generic Commercial II Cleanup Criteria.

8.1.3 Michigan 10 Metals

8.1.3.1 June 2002

The arsenic concentration at MW301 exceeded the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water, while the arsenic concentration at MW303 exceeded the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water and Part 201 Cleanup Criterion for GSI. Other metals concentrations for the groundwater samples collected at MW301 and MW303 were either less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria.

Selenium concentrations at P-3, MW102 and MW105 exceeded the Part 201 Cleanup Criterion for GSI. Other metals concentrations for groundwater samples collected at P-3, MW102 and MW105 were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

The zinc concentration at MW105D exceeded the Part 201 Cleanup Criterion for GSI, however the concentrations of other metals were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Metals concentrations for other groundwater samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

8.1.3.2 September 2002

Arsenic concentrations at MW301 and MW304 exceeded the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water, while the arsenic concentration at MW403 exceeded the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water and Part 201 Cleanup Criterion for GSI. Other metals concentrations for the groundwater samples collected at MW301, MW304 and MW403 were either less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria.

Selenium concentrations at MW102 and MW105 exceeded the Part 201 Cleanup Criterion for GSI. Other metals concentrations for groundwater samples collected at MW102 and MW105 were less than the TDLs.

The zinc concentration at MW105D exceeded the Part 201 Cleanup Criterion for GSI, however the concentrations of other metals were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

Metals concentrations for other groundwater samples were either less than the TDLs or Part 201 Commercial II Cleanup Criteria.

8.1.4 Cyanide

Available and free cyanide concentrations were less than the TDLs at each well sampled in June and September 2002.

8.2 Natural Attenuation Parameters

A discussion of the analytical results for the natural attenuation parameters dissolved oxygen, alkalinity, dissolved iron, nitrate and sulfate is presented below. Natural attenuation parameters have been evaluated at site monitoring wells since February 2000. Natural attenuation is evaluated by looking at data trends over time for non-impacted wells compared to impacted wells. These criteria are discussed below.

The criteria for a well to be considered "non-impacted" were as follows:

1. the well is located upgradient or cross-gradient of suspected MGP source areas;
2. neither BTEX nor PAHs have been detected at concentrations greater than the TDL for more than 2 sampling events; and,
3. neither BTEX nor PAHs have been detected in the well at concentrations exceeding Part 201 Cleanup Criteria for all sampling events conducted to date.

MW-4, P-4, MW102, MW103 and MW105 were considered to be representative of non-impacted wells for this evaluation. At each of these wells, BTEX and PAH constituents have generally been detected at concentrations less than the TDLs with the exception of MW-4 and P-4 where BTEX constituents have been detected at concentrations slightly above the TDL, but below Part 201 Cleanup Criteria for no more than 2 groundwater monitoring events.

The criteria for a well to be considered impacted were as follows:

1. The well is located either within or downgradient of suspected MGP source areas; and,
2. BTEX and/or PAHs have been detected in the well at concentrations exceeding Part 201 Cleanup Criteria for a minimum of 2 sampling events.

MW-1, P-2, P-3, MW101, MW201R, MW301 and MW304 were considered to be representative of impacted wells for this evaluation.

Shallow monitoring wells MW-3, MW303, MW401, MW402 and MW403, which appear to be representative of impacted wells, were not used for this evaluation because there

has been only one sampling event where concentrations have exceeded Part 201 Cleanup Criteria.

Shallow monitoring wells MW-2, P-1, MW104, MW302 and MW404, which appear to be representative of non-impacted wells based on analytical results to date, were not used for this evaluation. These wells are located adjacent to and/or downgradient of the plume of impacted groundwater, therefore the inorganic chemistry of these wells may not be reflective of non-impacted conditions.

Deep monitoring wells with screens set below the water table (P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D, MW304D, MW401I, MW401D, MW402D, MW403D, MW404I and MW404D) were not considered for this discussion because of insufficient background data available for comparison.

For the evaluation of natural attenuation data, concentrations reported as less than the TDL were set as equal to the TDL as a conservative assumption.

8.2.1 Dissolved Oxygen

Chart No. 1 of Appendix E shows a comparison of dissolved oxygen (DO) concentrations for non-impacted wells and impacted wells for the June and September 2002 groundwater monitoring events.

DO concentrations for non-impacted wells for the June and September 2002 groundwater monitoring events ranged from 0.31 parts per million (ppm) at P-4 to 3.11 ppm at MW103. The mean DO concentrations for non-impacted wells for the June and September 2002 groundwater monitoring events were 1.20 ppm and 1.13 ppm, respectively. The slightly lower DO concentrations at MW-4 and P-4 are believed to be related to the fact that the wells are partially screened within the naturally occurring peat stratum, Stratum B.

DO concentrations for impacted wells for the June and September 2002 groundwater-monitoring events ranged from 0.32 ppm at MW-1 to 0.96 ppm at MW101. The mean DO concentrations for impacted wells for the June and September 2002 groundwater monitoring events were 0.47 ppm and 0.49 ppm, respectively.

An indicator of natural attenuation is when DO concentrations for impacted wells are lower than DO concentrations for non-impacted wells. This trend was observed for the June and September 2002 groundwater-sampling event.

Chart No. 2 of Appendix E shows a trend plot comparing the mean DO concentrations of non-impacted wells to impacted wells since February 2000 when natural attenuation data began to be collected. This chart indicates mean DO concentrations for non-impacted wells have been greater than the mean DO concentrations for impacted well consistently since February 2000, i.e. eight groundwater monitoring events.

8.2.2 Alkalinity

Chart No. 3 of Appendix E shows a comparison of alkalinity concentrations for non-impacted wells and impacted wells for the June and September 2002 groundwater monitoring events.

Alkalinity concentrations for non-impacted wells for the June and September 2002 groundwater monitoring events ranged from 290,000 ppb at MW102 and MW103 to 450,000 ppb at MW103. The mean alkalinity concentrations for non-impacted wells for the June and September 2002 groundwater monitoring events were 356,000 ppb and 360,000 ppb, respectively.

Alkalinity concentrations for impacted wells for the June and September 2002 groundwater monitoring events ranged from 200,000 ppb at P-3 to 570,000 ppb at MW304. The mean alkalinity concentrations for impacted wells for the June and September 2002 groundwater monitoring events were 404,286 ppb and 412,857 ppb, respectively.

An indicator of natural attenuation is when alkalinity concentrations for impacted wells are higher than alkalinity concentrations for non-impacted wells. Generally, this trend was observed for the June and September 2002 groundwater monitoring events.

Chart No. 4 of Appendix E shows a trend plot comparing the mean alkalinity concentrations of non-impacted wells to impacted wells since February 2002 when natural attenuation data began to be collected. This chart indicates mean alkalinity concentrations for impacted wells have been slightly greater than the mean alkalinity concentrations for non-impacted well consistently since February 2002, i.e. eight groundwater monitoring events.

8.2.3 Nitrate

Chart No. 5 of Appendix E shows a comparison of nitrate concentrations for non-impacted wells and impacted wells for the June and September 2002 groundwater monitoring events.

Nitrate concentrations for non-impacted wells for the June and September 2002 groundwater monitoring events ranged from less than the TDL, <100 ppb,, at MW-4, and P-4 to 2,400 ppb at MW103. The mean nitrate concentrations for non-impacted wells for the June and September 2002 groundwater monitoring events were 860 ppb and 468 ppb, respectively. As with DO, the lower nitrate concentrations at MW-4 and P-4 are believed to be related to the fact that the wells are partially screened within the naturally occurring peat stratum, Stratum B.

Nitrate concentrations for impacted wells for the June and September 2002 groundwater monitoring events ranged from less than the TDL at MW-1, P-2, P-3, MW201, MW301 and MW304 to 1,200 ppb at MW101. The mean nitrate concentrations for

impacted wells for the June and September 2002 groundwater monitoring events were 257 ppb and 207 ppb, respectively.

An indicator of natural attenuation is when nitrate concentrations for impacted wells are lower than nitrate concentrations for non-impacted wells. This trend was observed for the June and September 2002 groundwater monitoring events.

Chart No. 6 of Appendix E shows a trend plot comparing the mean nitrate concentrations of non-impacted wells to impacted wells since February 2002 when natural attenuation data began to be collected. This chart indicates that with the exception of May 2000 the mean nitrate concentrations for impacted wells have been lower than the mean nitrate concentrations for non-impacted well since February 2002.

8.2.4 Dissolved Iron

Chart No. 7 of Appendix E shows a comparison of dissolved iron concentrations for non-impacted wells and impacted wells for the June and September 2002 groundwater monitoring events.

Dissolved iron concentrations for non-impacted wells for the June and September 2002 groundwater monitoring events ranged from less than the TDL, <20 ppb, at P-4, MW102 and MW105 to 970 ppb at MW-4. The mean dissolved iron concentrations for non-impacted wells for the June and September 2002 groundwater monitoring events were 95 ppb and 260 ppb, respectively.

Dissolved iron concentrations for impacted wells for the June and September 2002 groundwater monitoring events ranged from 250 ppb at MW101 to 32,000 ppb at MW304. The mean dissolved iron concentrations for impacted wells for the June and September 2002 groundwater monitoring events were 10,249 ppb and 10,457 ppb, respectively.

An indicator of natural attenuation is when dissolved iron concentrations for impacted wells are higher than dissolved iron concentrations for non-impacted wells. This trend was observed for the June and September 2002 groundwater monitoring events.

Chart No. 8 of Appendix E shows a trend plot comparing the mean dissolved iron concentrations of non-impacted wells to impacted wells since February 2002 when natural attenuation data began to be collected. This chart indicates mean dissolved iron concentrations for impacted wells have been greater than the mean dissolved iron concentrations for non-impacted well consistently since February 2002, with the exception of November 2000 when the mean concentrations were similar.

8.2.5 Sulfate

Chart No. 9 of Appendix E shows a comparison of sulfate concentrations for non-impacted wells and impacted wells for the June and September 2002 groundwater monitoring events.

Sulfate concentrations for non-impacted wells for the June and September 2002 groundwater monitoring events ranged from 14,000 ppb at P-4 to 130,000 ppb at MW103. The mean sulfate concentrations for non-impacted wells for the June and September 2002 groundwater monitoring events were 55,200 ppb and 39,000 ppb, respectively.

Sulfate concentrations for impacted wells for the June and September 2002 groundwater monitoring events ranged from less than the TDL, <1,000 ppb, at MW301 and MW304 to 620,000 ppb at P-3. The mean sulfate concentrations for impacted wells for the June and September 2002 groundwater monitoring events were 55,529 ppb and 104,057 ppb, respectively. It should be noted that the sulfate concentrations at P-3 for June and September 2002 were significantly higher than at other impacted monitoring wells.

An indicator of natural attenuation is when sulfate concentrations for impacted wells are lower than sulfate concentrations for non-impacted wells. This trend was not observed for the June and September 2002 groundwater monitoring events.

Chart No. 10 of Appendix E shows a trend plot comparing the mean sulfate concentrations of non-impacted wells to impacted wells since February 2002 when natural attenuation data began to be collected. This chart indicates that there has been no consistent trend with respect to the comparison of mean sulfate concentrations of non-impacted wells versus impacted wells.

9. CONCLUSIONS

9.1 Former Creek Channel

The purpose of SP606 and SP607 was to evaluate potential MGP impact to the subsurface associated with the backfilling of a former creek channel. The location and backfilling of the former creek channel were identified on a Sanborn map for the site dated 1896. The estimated location of the former creek channel is shown on Figure Nos. 4 and 5 of Appendix A. The sand fill material encountered at SP606 and SP607 was not distinguishable from sand fill material encountered at other soil probe and soil boring locations conducted at the former MGP. It is believed that much of the near surface fill material on the north portion of the former MGP site has been reworked in association with past construction activities. In addition, the characteristics of the impacted soil conditions encountered at SP607, i.e. BTEX, PAH, metals and cyanide concentrations, was also not significantly distinguishable from other soil impact encountered at soil probes and soil borings conducted on the north side of the former MGP site. However, geologic cross-section B-B', Figure No. 8 of Appendix A, indicates the presence of a deeper sand fill area based on soil conditions encountered at B402. Since B402 was advanced within the estimated location of the former creek channel, the deeper fill area may be indicative of the former creek channel.

9.2 Coal Tar Impact

Coal tar was not encountered at soil probe and soil boring locations conducted in August 2002. Based on previous remedial investigation activities conducted at the site, coal tar impact to fill material appears to be limited to 3 areas located on the south side of the Power Plant (Building No. 214) in the current coal storage area. Fill containing coal tar has been encountered at depths ranging from approximately 1 to 7 feet and appears to extend to depths ranging from approximately 2.5 to 7.5 feet. The thickness of the fill containing coal tar generally ranged from approximately 0.25 feet to 3.5 feet.

9.3 MGP Impact to Groundwater

1. BTEX and PAH concentrations for groundwater samples collected from site monitoring wells in September 2002 did not exceed Part 201 Generic Commercial II Cleanup Criteria for Volatilization to Indoor Air, as well as Part 201 Cleanup Criteria for Water Solubility and Acute Inhalation Screening Levels, where applicable. In addition, dissolved metals concentrations for groundwater samples collected from site monitoring wells in June and September 2002 did not exceed Part 201 Cleanup Criteria for Groundwater Contact.

2. Free and available cyanide concentrations were less than the TDL at each site monitoring well for both the June and September 2002 groundwater monitoring events. Available and free cyanide have not been detected in site monitoring wells above the TDL since analysis for these parameters was implemented in February 2000. Therefore, it appears that cyanide is not a constituent of concern in groundwater at the site.

3. BTEX and/or PAH impact to groundwater was identified at the following site monitoring wells for the groundwater monitoring event conducted in September 2002: MW-1, P-2, P-3D, MW101, MW101D, MW201R, MW202D, MW301, MW302I, MW304 MW401, MW401I, MW401D, MW402, MW403, MW404I and MW404D. BTEX and/or PAH concentrations at these monitoring wells exceeded Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI. The PAH impact consisted primarily of naphthalene, however other PAHs were detected. In addition at MW401, the benzene concentration exceeded the Part 201 Cleanup Criterion for Groundwater Contact and the toluene concentration exceeded the Part 201 Cleanup Criterion for Flammability and Explosivity Screening Level.

Figure Nos. 13, 14 and 15 of Appendix A present isoconcentration contours for benzene, xylene(s) and naphthalene impact to groundwater at the water table, respectively. These diagrams were developed using analytical results from monitoring wells screened at the water table and sampled in September 2002. Each contour diagram indicates benzene, xylenes and naphthalene impact to groundwater is migrating to the east towards Portage Creek, which is consistent with the interpreted direction of groundwater flow. However, the diagrams also suggest the direction of migration within the former MGP site is being influenced by the presence of an existing foundation in the subsurface corresponding to the former coke ovens for the MGP. The location of the foundation indicated on the isoconcentration diagrams is approximate and is based on the location indicated on Figure No. 2 of Appendix A, the Former MGP Site Features Diagram. The depth of the base of the foundation is unknown.

Figure Nos. 13, 14 and 15 of Appendix A indicate the lateral extent of BTEX and PAH impact to groundwater at the former MGP site appears to be delineated to the north, south and west based on BTEX and PAH concentrations for groundwater samples collected from MW-3, MW-4, P-4, MW102, MW103, MW104 and MW105 which were less than the TDLs.

Figures Nos. 13, 14 and 15 of Appendix A, also indicate BTEX and PAH impact to groundwater at the water table is present at Portage Creek based on analytical results for groundwater samples collected at MW304 and MW403 where concentrations exceeding Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and Part 201 Cleanup Criteria for GSI. The source of the impact identified at MW304 and MW403 is either due to historical activities at the properties adjacent to Portage Creek, 341 and 357 Pitcher Street, and/or the migration of impact from the former MGP site.

Figure Nos. 16, 17 and 18 present the distribution of benzene, xylene(s) and naphthalene impact to groundwater below the water table, respectively. The figures indicate that benzene, xylenes and naphthalene impact to groundwater at concentrations exceeding Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and/or Part 201 Cleanup Criteria for GSI is present at depth within the aquifer at the MW401D and MW404D. MW401D is screened from approximately 66 feet to 71 feet BG, while MW404D is screened from approximately 75 feet to 80 feet BG. These analytical results indicate that the vertical extent of impact has not been delineated.

4. No NAPLs were encountered in site monitoring wells during groundwater monitoring activities.

5. Arsenic was detected at MW301, MW303, MW304 and MW403 for the June and/or September 2002 groundwater monitoring events at concentrations greater than the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water and/or the Part 201 Cleanup Criterion for GSI. At MW301, arsenic has been detected at concentrations slightly greater than Part 201 Generic Commercial II Cleanup Criterion for Drinking Water for 5 consecutive sampling events. However, the presence of arsenic in groundwater at concentrations greater than Part 201 criteria at off-site, downgradient wells MW303, MW304 and MW403 has not been confirmed by follow-up sampling events.

The repeatable arsenic concentrations at MW301, which is located in the former MGP production area, suggests that the arsenic impact to groundwater at concentrations exceeding the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water may be attributable to the former MGP operations. This conclusion is supported by the observation that arsenic has not been detected above the TDL at upgradient, off-site monitoring wells MW102 and MW105.

6. Selenium was detected at P-3, MW102 and MW105 for the June and/or September 2002 groundwater monitoring events at concentrations slightly exceeding the Part 201 Cleanup Criterion for GSI. Since groundwater monitoring was implemented at these wells in 1999, the detection of selenium at concentrations slightly exceeding the Part 201 Cleanup Criterion for GSI has been intermittent. Since the selenium impact has been detected in off-site, upgradient wells MW102 and MW105 it is not known if the selenium impact to groundwater is related to the former MGP operations.

7. Zinc was detected at MW105D for the June and September 2002 groundwater monitoring events at concentrations exceeding the Part 201 Cleanup Criterion for GSI. The observed zinc impact to groundwater is not believed to be related to the former MGP operations since MW105D is off-site, upgradient of the former MGP site and zinc has not been detected at concentrations greater than Part 201 criteria in monitoring wells located on and downgradient of the former MGP site.

9.4 Natural Attenuation Parameters

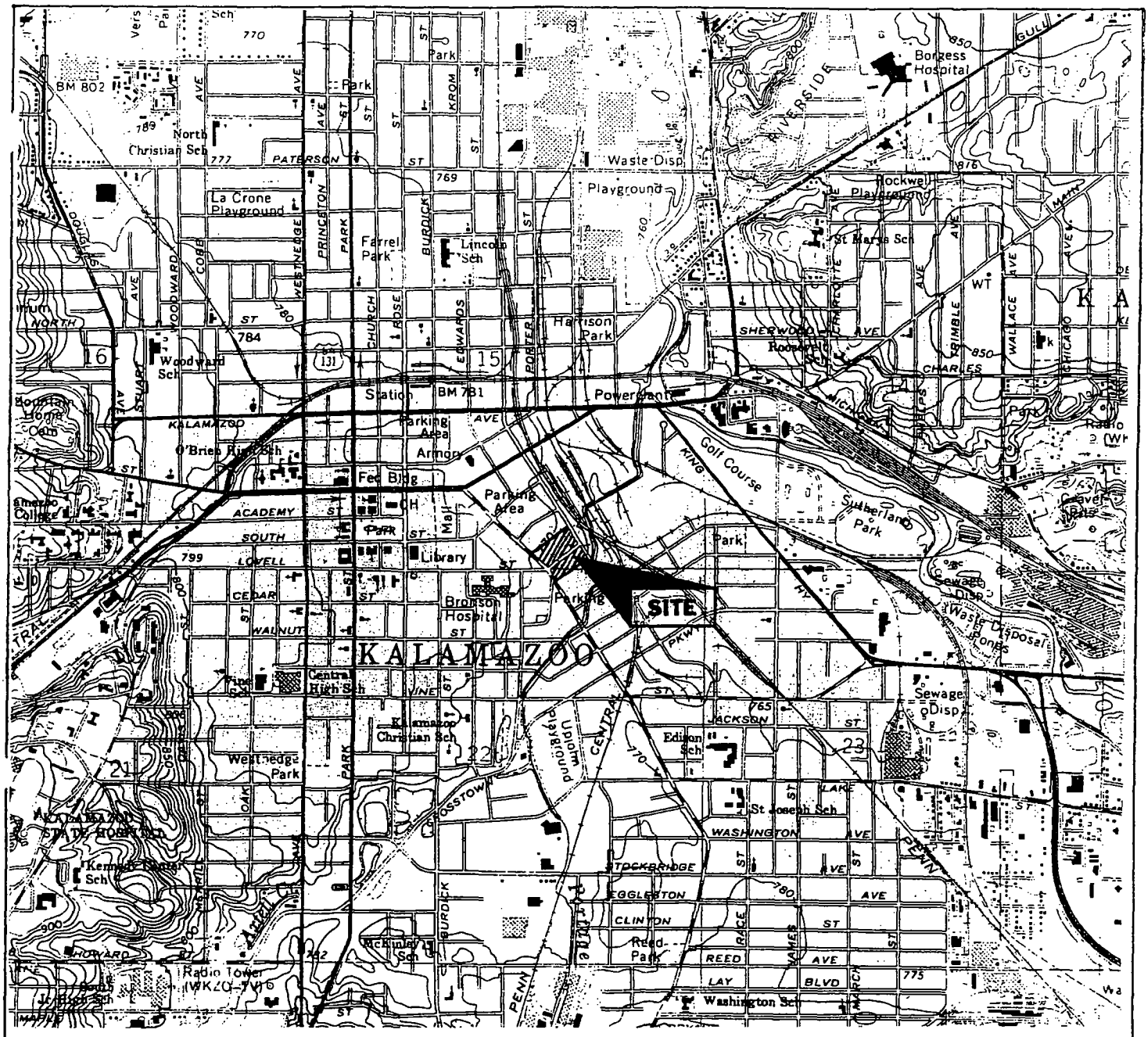
Based on 8 groundwater sampling events, analytical results continue to suggest natural attenuation may be occurring within the plume of impacted groundwater based on DO, nitrate, dissolved iron and alkalinity concentrations for impacted wells. At this time sulfate data does not appear to be indicative of natural attenuation throughout the plume. Figure Nos. 19, 20 and 21 show isoconcentration contours for DO, nitrate and dissolved iron at the site. Each of the contour diagrams show interpreted contour patterns that are generally consistent with the dimensions of the plume of impacted groundwater at the water table. With respect to both the DO and dissolved iron isoconcentration diagrams, the lowest DO concentrations and highest dissolved iron concentrations appear to be located on the north side of the site in the source area. Lower DO concentrations also appear to be present on the south side of the site based on the reported concentration at P-4, however as previously stated in Section 8.2.1, the apparent variation in DO concentration for P-4 is believed to result from the well screen being partially set within the fibrous peat unit and is not associated with MGP impact. This opinion is supported by previous analytical results for BTEX and PAHs at P-4, which have been less than the TDLs for the last 6 groundwater monitoring events conducted to date at the site.

APPENDIX A

00482

APPENDIX A

FIGURES



SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

KALAMAZOO QUADRANGLE

MICHIGAN—KALAMAZOO CO.

7.5 MINUTE SERIES (TOPOGRAPHIC)

1967
PHOTOREVISED 1973
AMS 3868 I SE—SERIES V862

QUADRANGLE LOCATION

NORTH

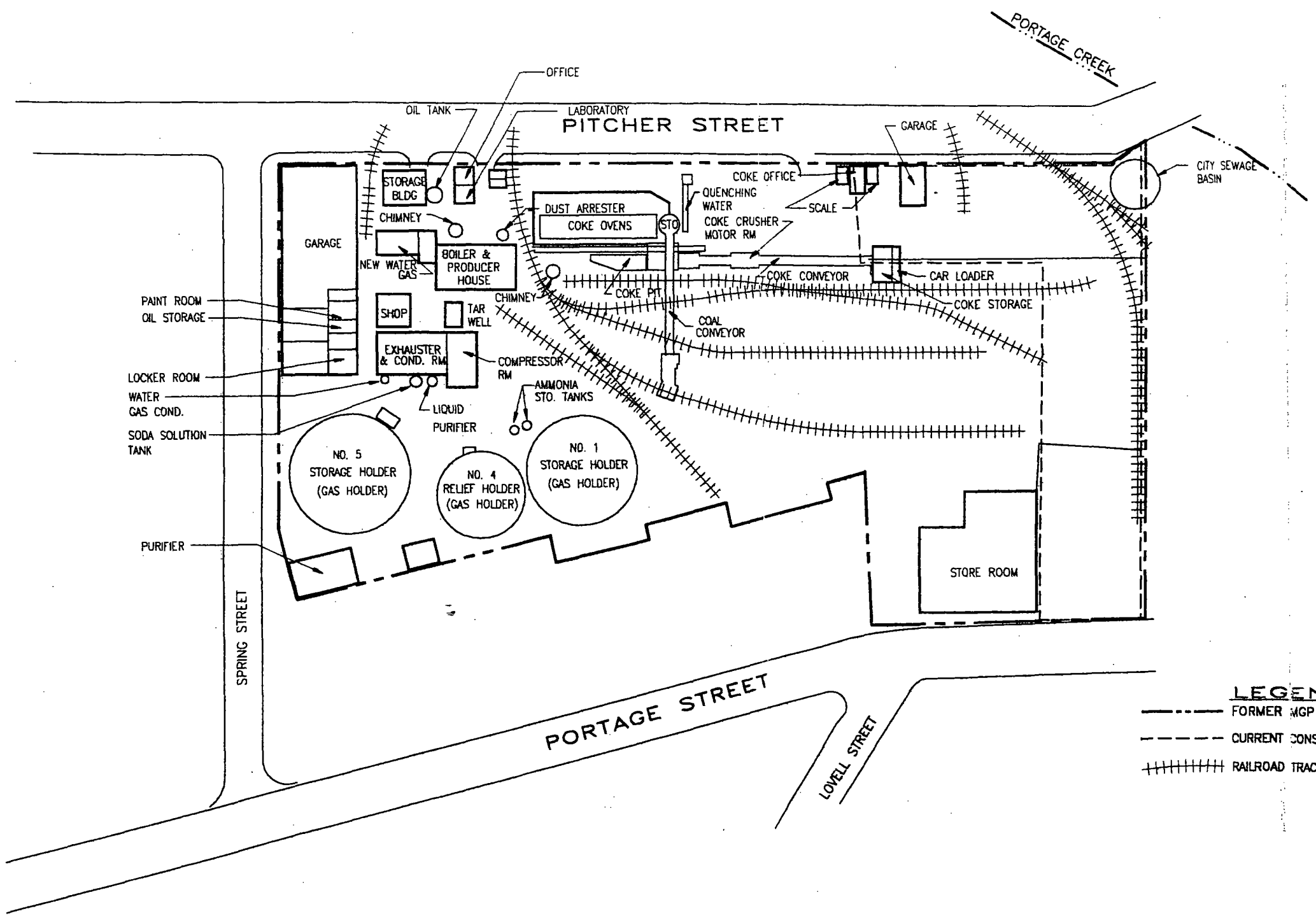
Date 10-22-98	BAY CITY KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc	SITE LOCATION DIAGRAM KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN
Drawn By ARR			
Scale AS SHOWN			
Job KE 31823			

DWG. NO. 31823-01

KR059B031070

Figure No. 1

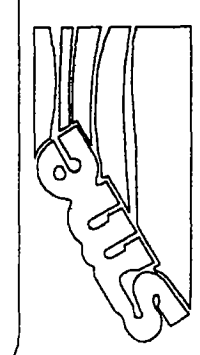
00484



NOTES:
1. FIGURE ADAPTED FROM PLAN OF GAS WORKS DATED JANUARY, 1937.

FORMER MGP SITE FEATURES DIAGRAM
JANUARY 1937
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

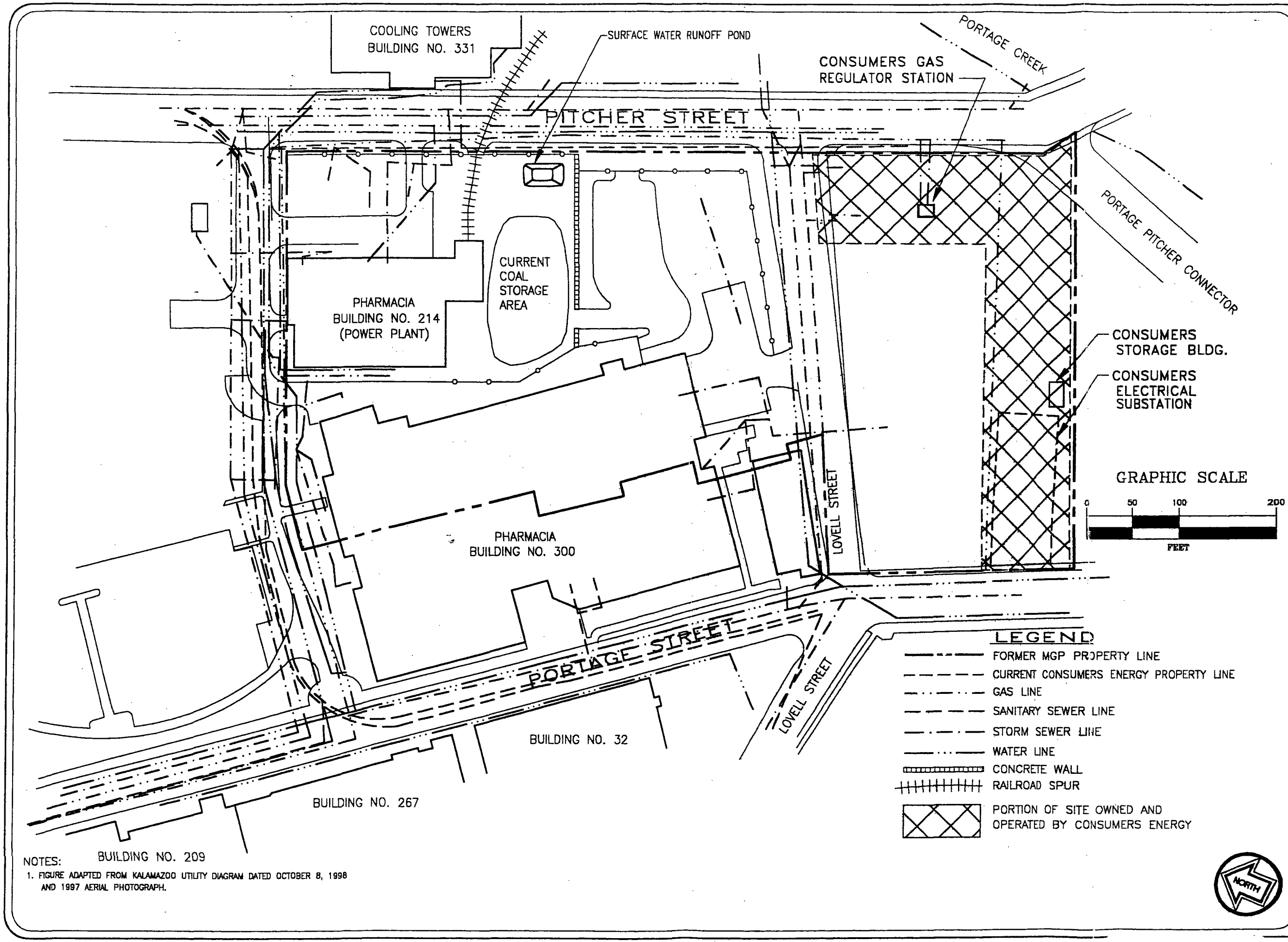
DATE: 11-27-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA
JOB: KE 31823



FILE NAME H:CECO\31823-02.DWG

KR059B031071

Figure No. 2



NOTES:
1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.

CURRENT SITE FEATURES DIAGRAM
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 08-09-00
SCALE: 1" = 100'
DRAFTER: ARR/MBA/PDN
JOB: KE 31823

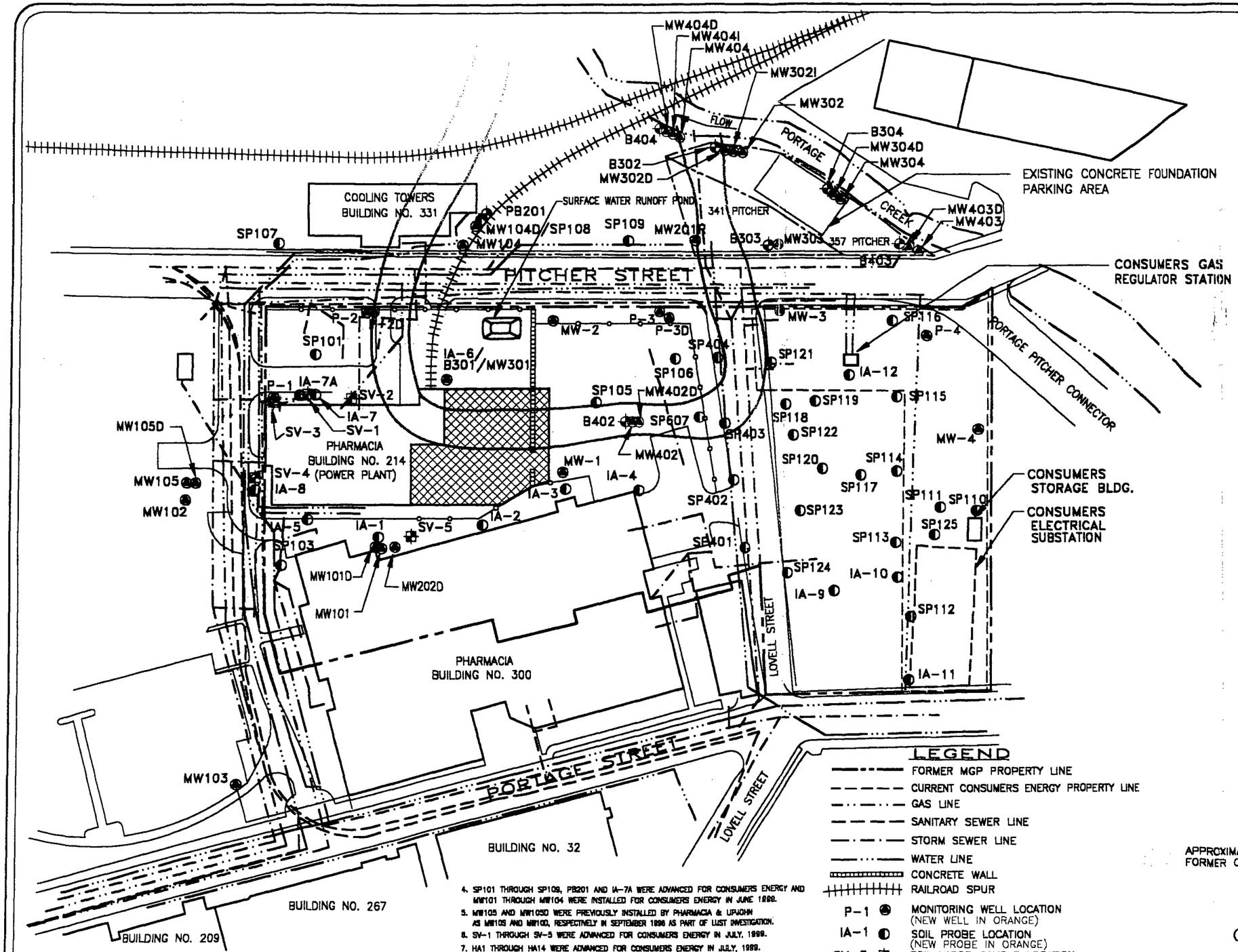
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-03.DWG

KR059B031072

Figure No. 3

00466

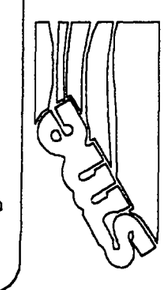


NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 6, 1998 1997 AERIAL PHOTOGRAPH, AND SANBORN DIAGRAM FOR YEAR 1896.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW100, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
9. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
10. SP601 THROUGH SP607 WERE ADVANCED FOR CONSUMERS ENERGY IN AUGUST 2002.
11. MW401 THROUGH MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.

SAMPLING LOCATION DIAGRAM
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 09-05-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

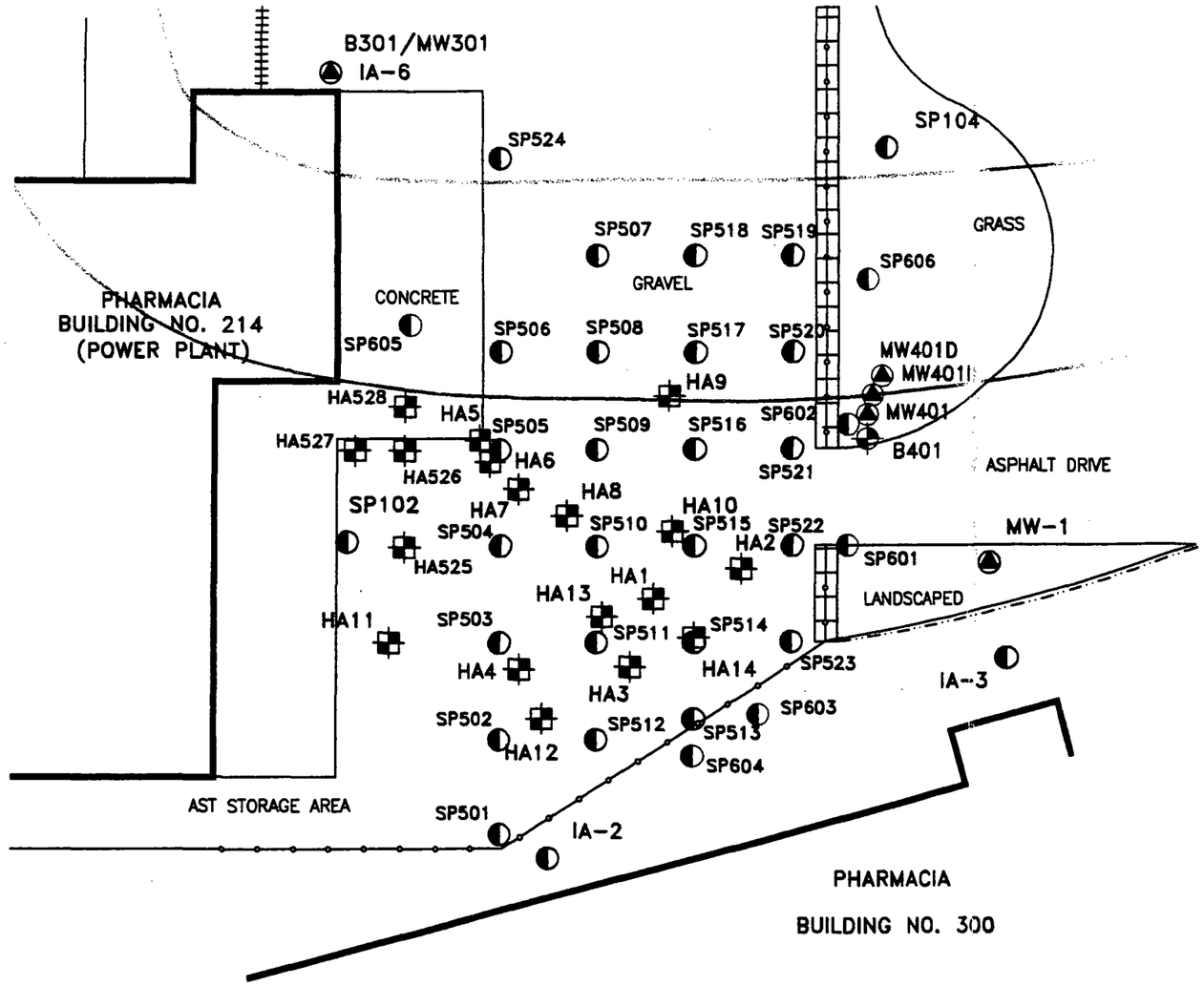


FILE NAME H:CECO\31823-13A.DWG

KR059B031073

Figure No. 4

00487



LEGEND

- GUARD RAIL
- FENCE
- CONCRETE WALL
- RAILROAD SPUR
- MW-1 — MONITORING WELL LOCATION (NEW WELL IN ORANGE)
- IA-2 — SOIL PROBE LOCATION (NEW PROBE IN ORANGE)
- HA1 — HAND AUGER LOCATION
- B401 — SOIL BORING LOCATION (NEW BORING IN ORANGE)
- APPROXIMATE LOCATION OF FORMER CREEK CHANNEL

NOTES:

1. IA-2, IA-3 AND IA-6 WERE ADVANCED FOR CONSUMERS ENERGY COMPANY IN JANUARY AND FEBRUARY 1999.
2. MW1 WAS INSTALLED FOR CONSUMERS ENERGY COMPANY IN FEBRUARY 1999.
3. SP102 AND SP104 WERE ADVANCED FOR CONSUMERS ENERGY COMPANY IN JUNE 1999.
4. HA1 TO HA14 WERE ADVANCED FOR CONSUMERS ENERGY COMPANY IN JULY 1999.
5. SP501 TO SP524 AND HA525 TO HA526 WERE ADVANCED FOR CONSUMERS ENERGY COMPANY IN JUNE 2001.
6. MW301 WAS INSTALLED FOR CONSUMERS ENERGY COMPANY IN MAY 2001.
7. SP601 THROUGH SP607 WERE ADVANCED FOR CONSUMERS ENERGY IN AUGUST 2002.
8. MW401 THROUGH MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.

GRAPHIC SCALE

0 15 30 60

FEET

NORTH

SAMPLING LOCATION DIAGRAM
SOUTH SIDE OF POWER PLANT
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 09-05-02
SCALE: 1" = 30'
DRAFTER: ARR
JOB: KE 31823B-8

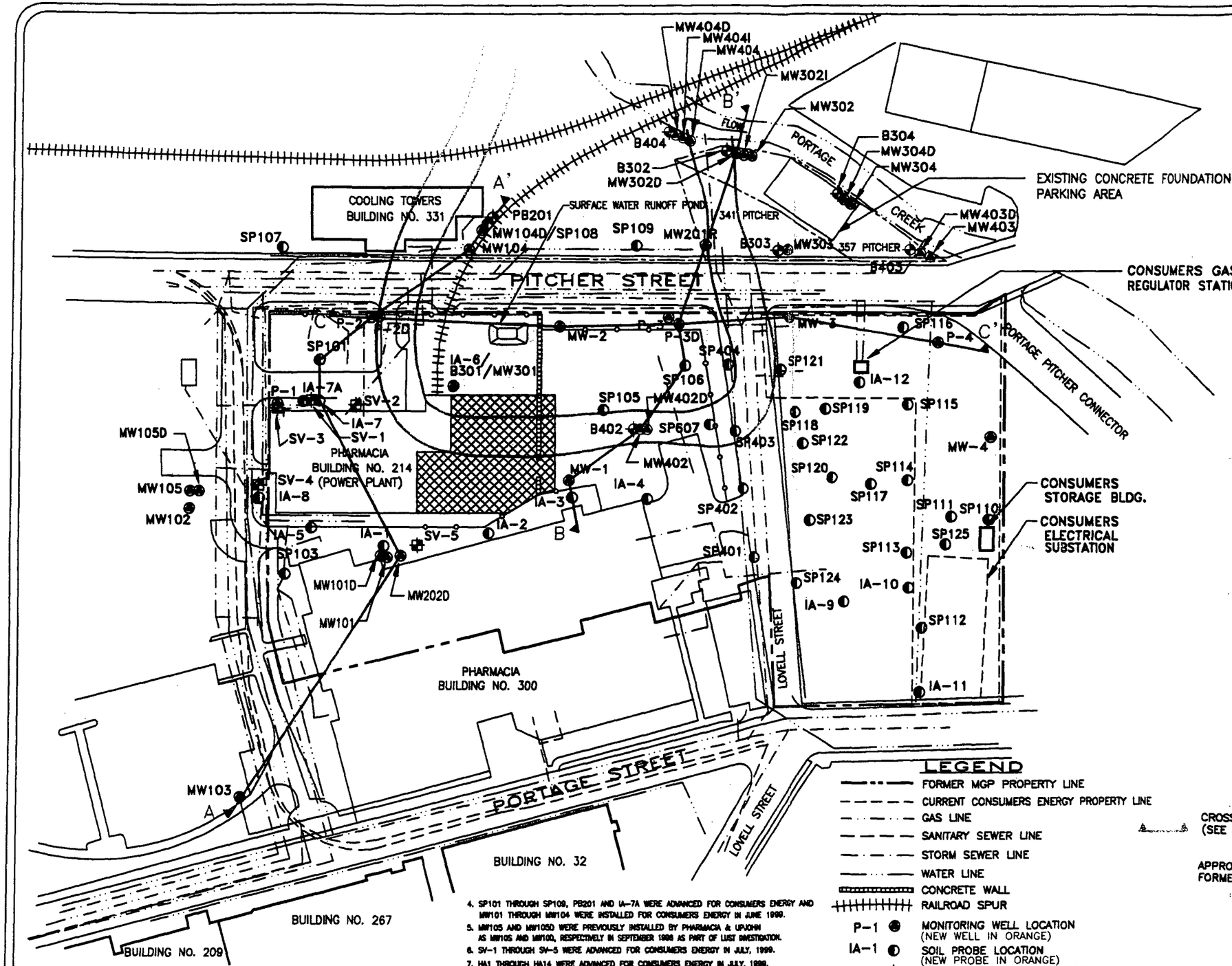
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-4A-1.DWG

KR059B031074

Figure No. 5

00488



LEGEND

- FORMER MGP PROPERTY LINE
- CURRENT CONSUMERS ENERGY PROPERTY LINE
- GAS LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- WATER LINE
- CONCRETE WALL
- RAILROAD SPUR
- P-1 MONITORING WELL LOCATION (NEW WELL IN ORANGE)
- IA-1 SOIL PROBE LOCATION (NEW PROBE IN ORANGE)
- SV-5 SOIL VAPOR SAMPLE LOCATION
- PB201 SOIL BORING LOCATION (NEW BORING IN ORANGE)
- SEE FIGURE No. 5 FOR SAMPLING LOCATIONS ON THE SOUTH SIDE OF POWER PLANT
- A——A CROSS-SECTION LOCATION (SEE Figure Nos. 7, 8 AND 9)
- APPROXIMATE LOCATION OF FORMER CREEK CHANNEL

NORTH

GRAPHIC SCALE

0 60 120 240

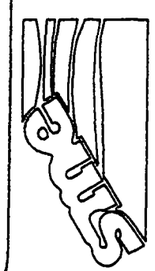
FEET

NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 1997 AERIAL PHOTOGRAPH, AND SANDBORN DIAGRAM FOR YEAR 1896.
2. IA-1 THROUGH IA-12 WERE ADVANCED FOR CONSUMERS ENERGY IN JANUARY AND FEBRUARY 1999.
3. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
4. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
5. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW100, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
6. SV-1 THROUGH SV-5 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1999.
7. HA1 THROUGH HA14 WERE ADVANCED FOR CONSUMERS ENERGY IN JULY, 1998.
8. SP401 THROUGH SP405 WERE ADVANCED FOR CONSUMERS ENERGY AND MW201, MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
9. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
10. SP601 THROUGH SP607 WERE ADVANCED FOR CONSUMERS ENERGY IN AUGUST 2002.
11. MW401 THROUGH MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.

GEOLOGIC CROSS-SECTION LOCATION DIAGRAM
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 09-05-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

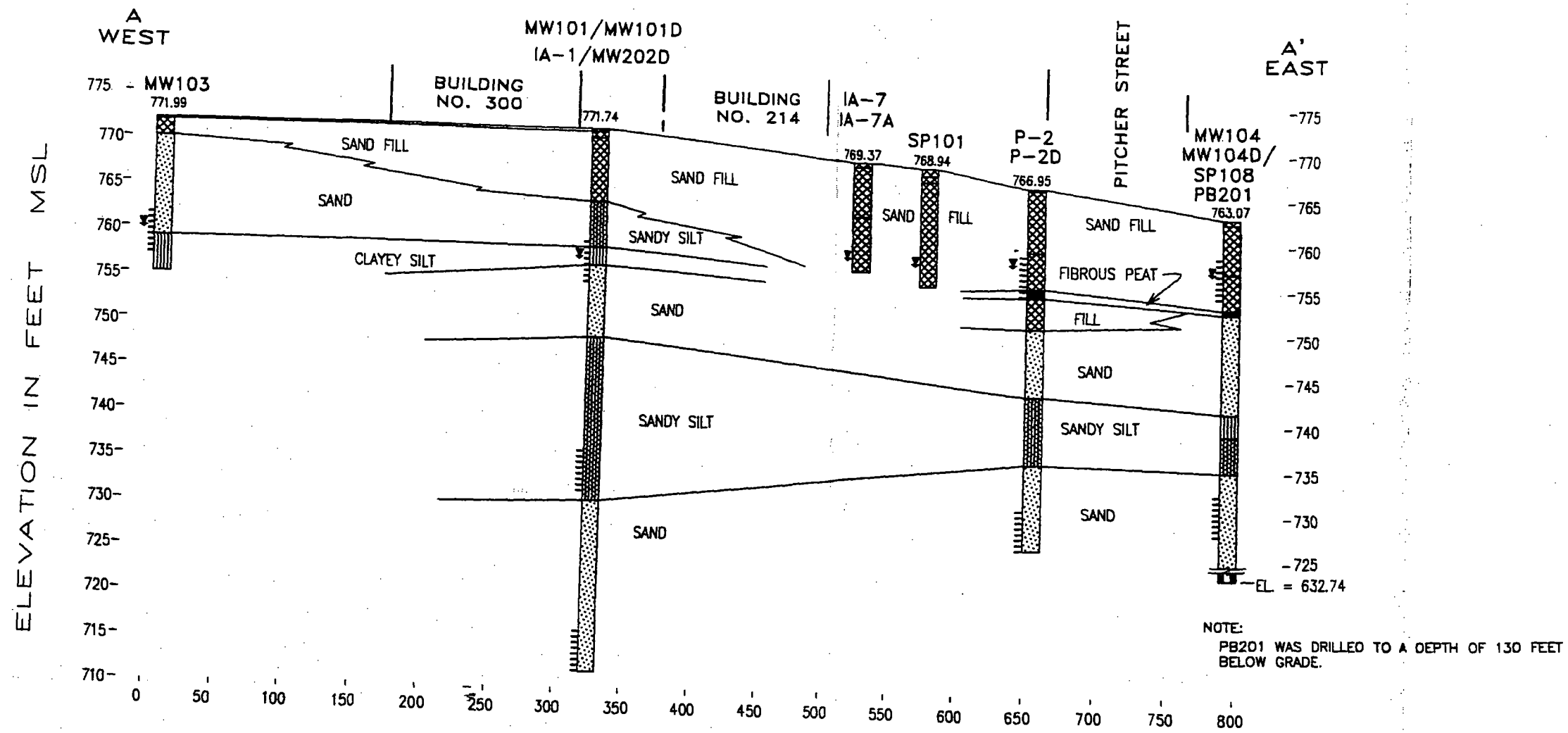


FILE NAME H:CECO\31823-13A.DWG

KR059B031075

Figure No. 6

00489



NOTE:
PB201 WAS DRILLED TO A DEPTH OF 130 FEET BELOW GRADE.

LEGEND

- ASPHALT CONCRETE
- FILL
- SAND
- SANDY SILT
- CLAYEY SILT
- FIBROUS PEAT
- SHALE
- GROUNDWATER ENCOUNTERED DURING DRILLING
- WELL SCREEN INTERVAL

SCALE

VERTICAL: 1" = 15'
HORIZONTAL: 1" = 100'
VE: 6.66X

DRAWING REV. 11-20-02

CROSS-SECTION A – A'
KALAMAZOO MGP SITE
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 11-10-99
SCALE: AS SHOWN
DRAFTER: ARR
JOB: KE 31283B

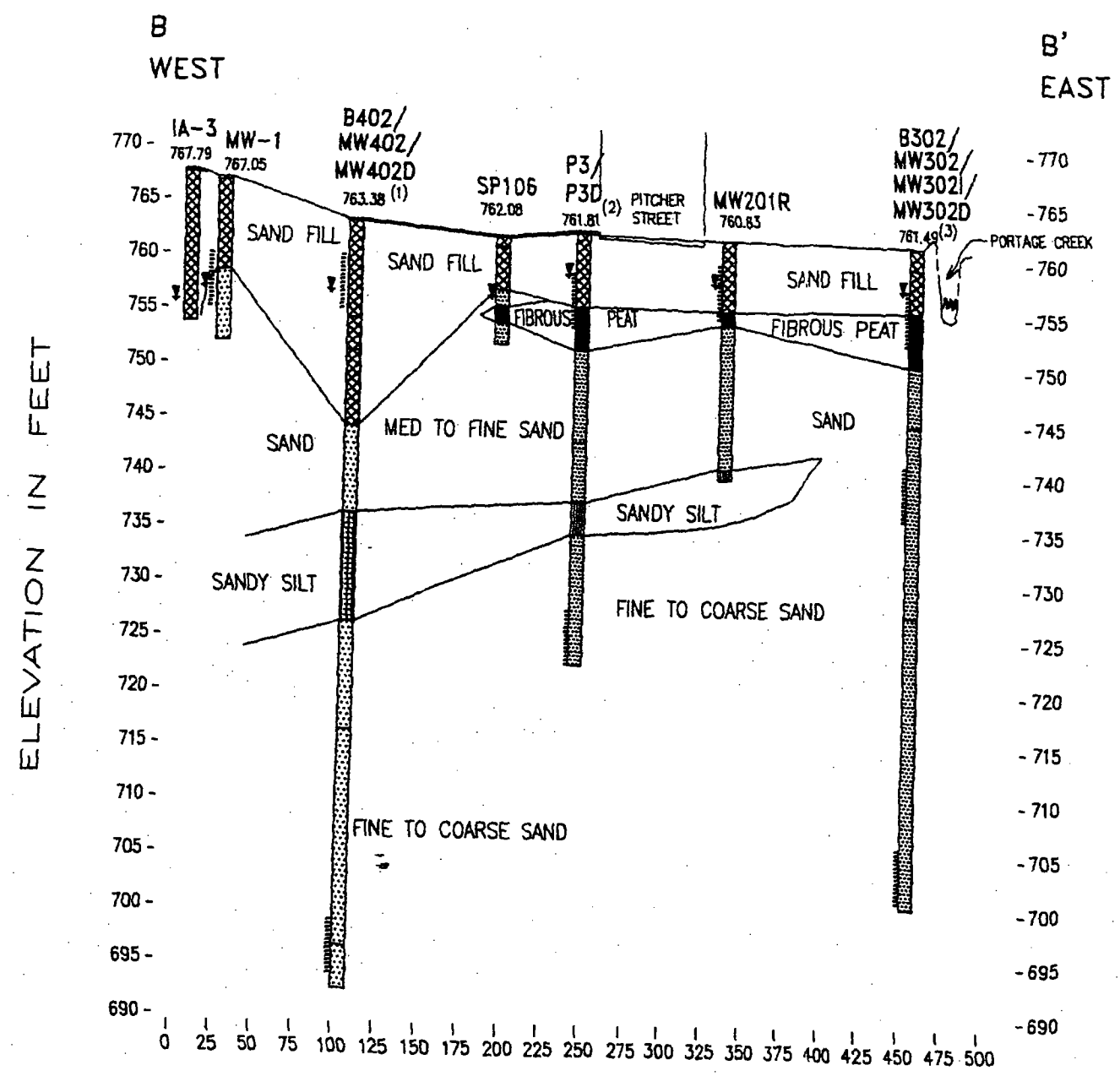
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823B-3.DWG

KR059B031076

Figure No. 7

00490



LEGEND

- ASPHALT CONCRETE
- SAND FILL
- SAND
- FIBROUS PEAT
- SANDY SILT
- GROUNDWATER ENCOUNTERED DURING DRILLING
- WELL SCREEN INTERVAL

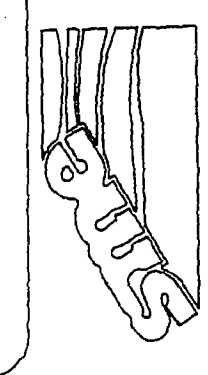
NOTES:
1. GROUND ELEVATION FOR MW402D.
2. GROUND ELEVATION FOR P3D.
3. GROUND ELEVATION FOR MW302D.

SCALE

VERTICAL: 1" = 15'
HORIZONTAL: 1" = 100'
VE = 6.66X

GEOLOGIC CROSS SECTION B – B'
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 7-19-01
SCALE: AS SHOWN
DRAFTER: ARR
JOB: KE31823B-8

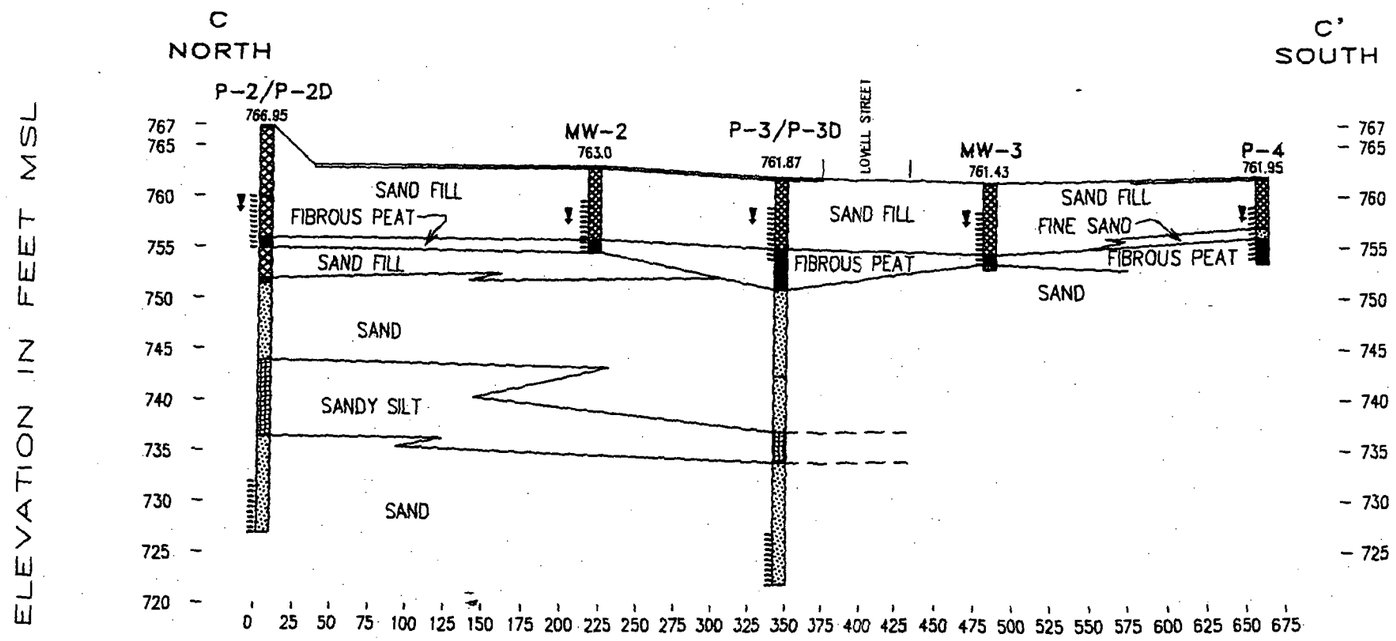


FILE NAME H:CECO\31823B-5.DWG

KR059B031077

Figure No. 8

00491



LEGEND

- ASPHALTIC CONCRETE
- SAND FILL
- FIBROUS PEAT
- SAND
- SANDY SILT
- GROUNDWATER ENCOUNTERED DURING DRILLING
- WELL SCREEN INTERVAL

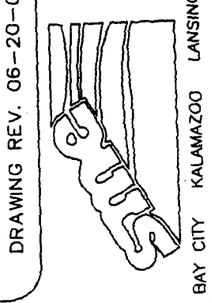
SCALE

VERTICAL: 1" = 15'
HORIZONTAL: 1" = 100'
VE: 6.66X

DRAWING REV. 06-20-00

CROSS-SECTION C - C'
KALAMAZOO MGP SITE
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 10-28-99
SCALE: AS SHOWN
DRAFTER: ARR
JOB: PE 31823B

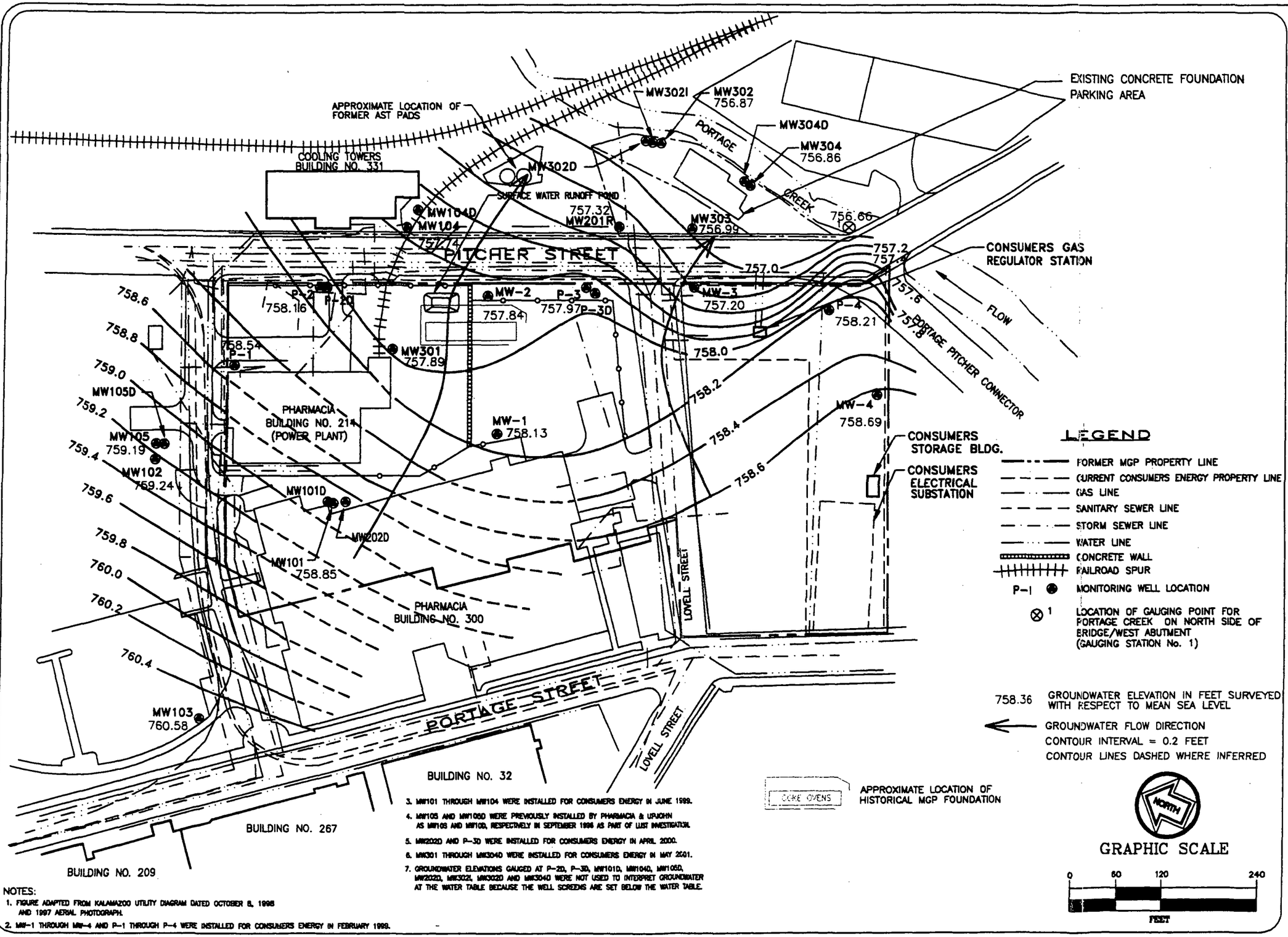


FILE NAME H:CECO\31823B-1.DWG

Figure No. 9

KR059B031078

00492



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LIST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. GROUNDWATER ELEVATIONS GAUGED AT P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D AND MW304D WERE NOT USED TO INTERPRET GROUNDWATER AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.

GROUNDWATER ELEVATION CONTOUR DIAGRAM
JUNE 11, 2002
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 10-22-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823B-8

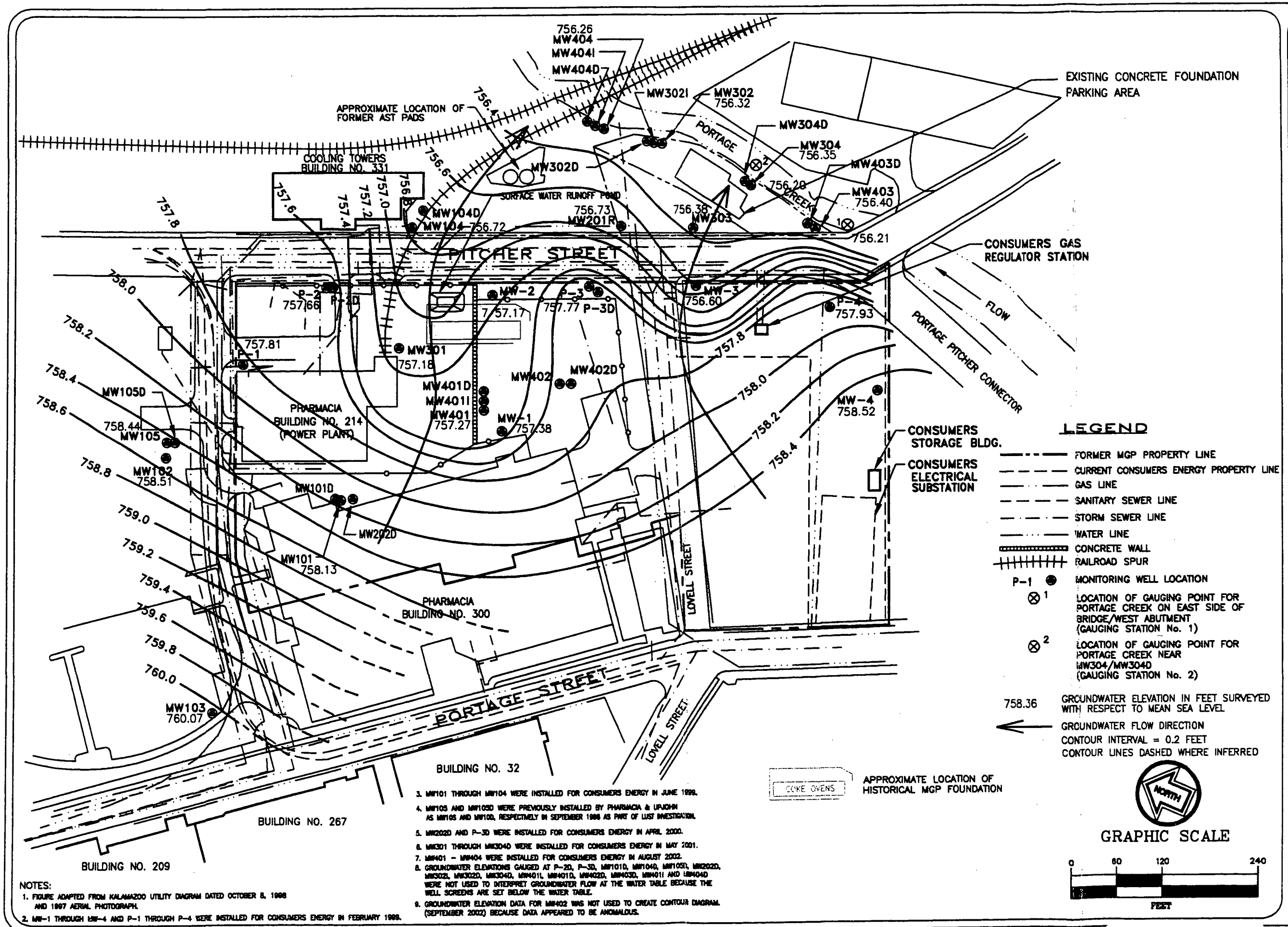
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-14.DWG

KR059B031079

Figure No. 10

00493



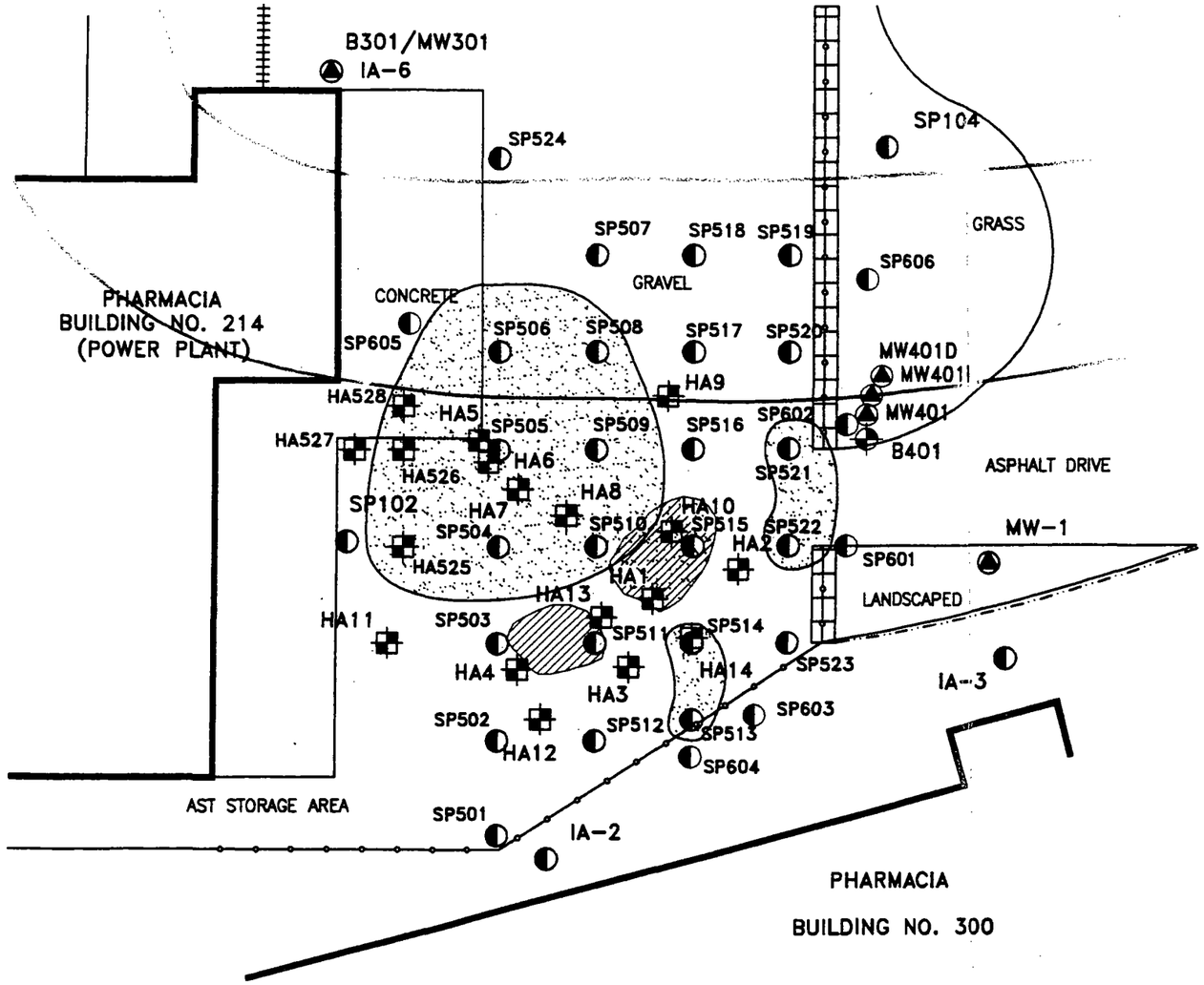
NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW401 – MW404 WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
8. GROUNDWATER ELEVATIONS GAUGED AT P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D, MW304D, MW401I, MW401D, MW402D, MW403D, MW401I AND MW404D WERE NOT USED TO INTERPRET GROUNDWATER FLOW AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.
9. GROUNDWATER ELEVATION DATA FOR MW402 WAS NOT USED TO CREATE CONTOUR DIAGRAM. (SEPTEMBER 2002) BECAUSE DATA APPEARED TO BE ANOMALOUS.

KR059B031080

Figure No. 11

00434



LEGEND

- GUARD RAIL
- FENCE
- CONCRETE WALL
- RAILROAD SPUR
- MW-1 — MONITORING WELL LOCATION (NEW WELL IN ORANGE)
- IA-2 — SOIL PROBE LOCATION (NEW PROBE IN ORANGE)
- HA1 — HAND AUGER LOCATION
- B401 — SOIL BORING LOCATION (NEW BORING IN ORANGE)
- APPROXIMATE AREA OF FORMER EXCAVATION CONDUCTED BY PHARMACIA IN SEPTEMBER 1999
- APPROXIMATE LIMITS OF COAL TAR IMPACT
- APPROXIMATE LOCATION OF FORMER CREEK CHANNEL

NOTES:

1. IA-2, IA-3 AND IA-6 WERE ADVANCED FOR CONSUMERS ENERGY COMPANY IN JANUARY AND FEBRUARY 1999.
2. MW1 WAS INSTALLED FOR CONSUMERS ENERGY COMPANY IN FEBRUARY 1999.
3. SP102 AND SP104 WERE ADVANCED FOR CONSUMERS ENERGY COMPANY IN JUNE 1999.
4. HA1 TO HA14 WERE ADVANCED FOR CONSUMERS ENERGY COMPANY IN JULY 1999.
5. SP501 TO SP524 AND HA525 TO HA526 WERE ADVANCED FOR CONSUMERS ENERGY COMPANY IN JUNE 2001.
6. MW301 WAS INSTALLED FOR CONSUMERS ENERGY COMPANY IN MAY 2001.
7. SP601 THROUGH SP607 WERE ADVANCED FOR CONSUMERS ENERGY IN AUGUST 2002.
8. MW401 THROUGH MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.

GRAPHIC SCALE

0 15 30 60

FEET

NORTH

ESTIMATED EXTENT OF COAL TAR IMPACT DIAGRAM
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 9-4-01
SCALE: 1" = 30'
DRAFTER: ARR
JOB: KE 31823B-8

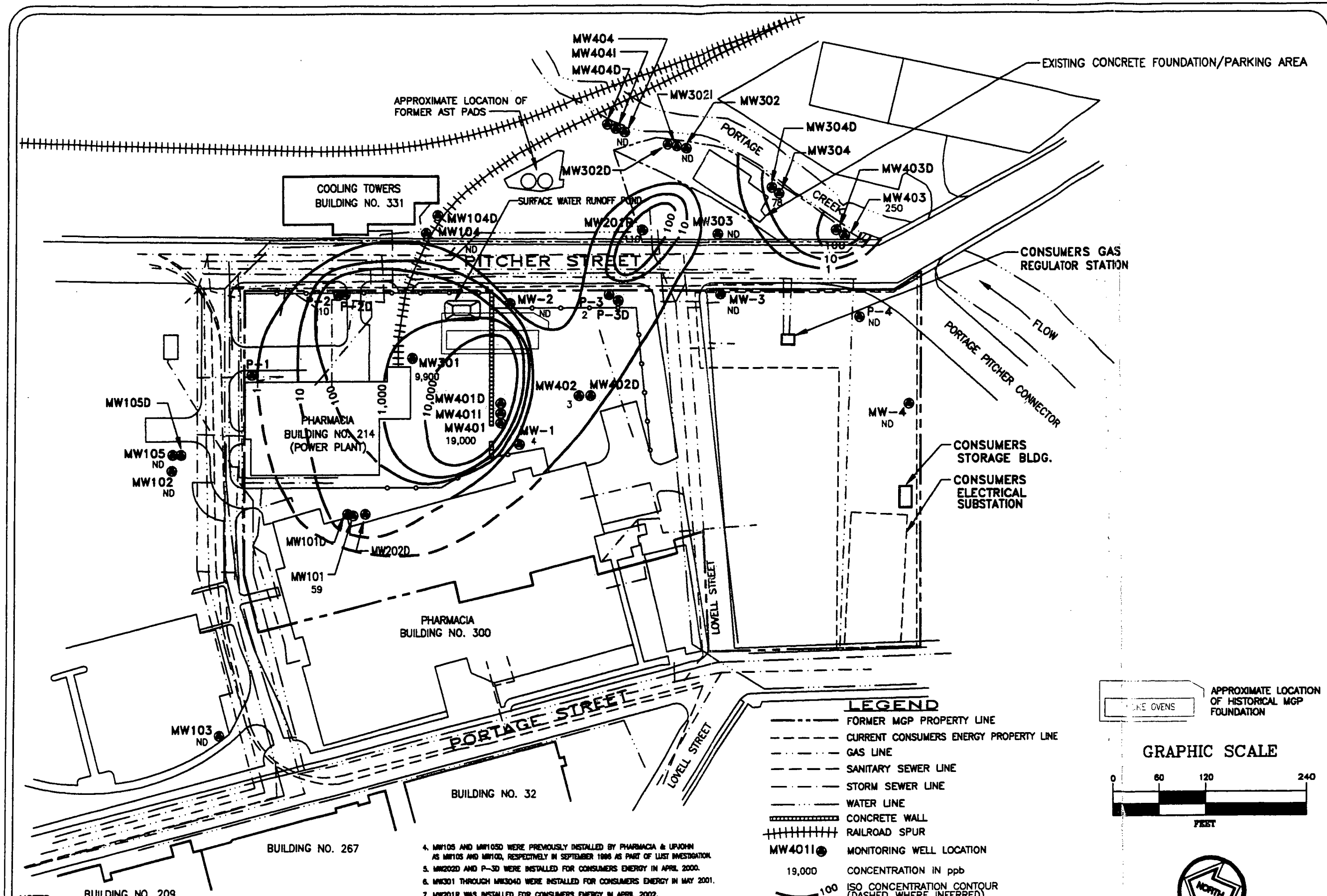
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-4A-1.DWG

KR059B031081

Figure No. 12

00495



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN SEPTEMBER 2002 WERE USED TO INTERPRET ISOCONTRENTION CONTOURS.

ISOCONCENTRATION DIAGRAM FOR BENZENE IMPACT TO GROUNDWATER AT THE WATER TABLE
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 11-20-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

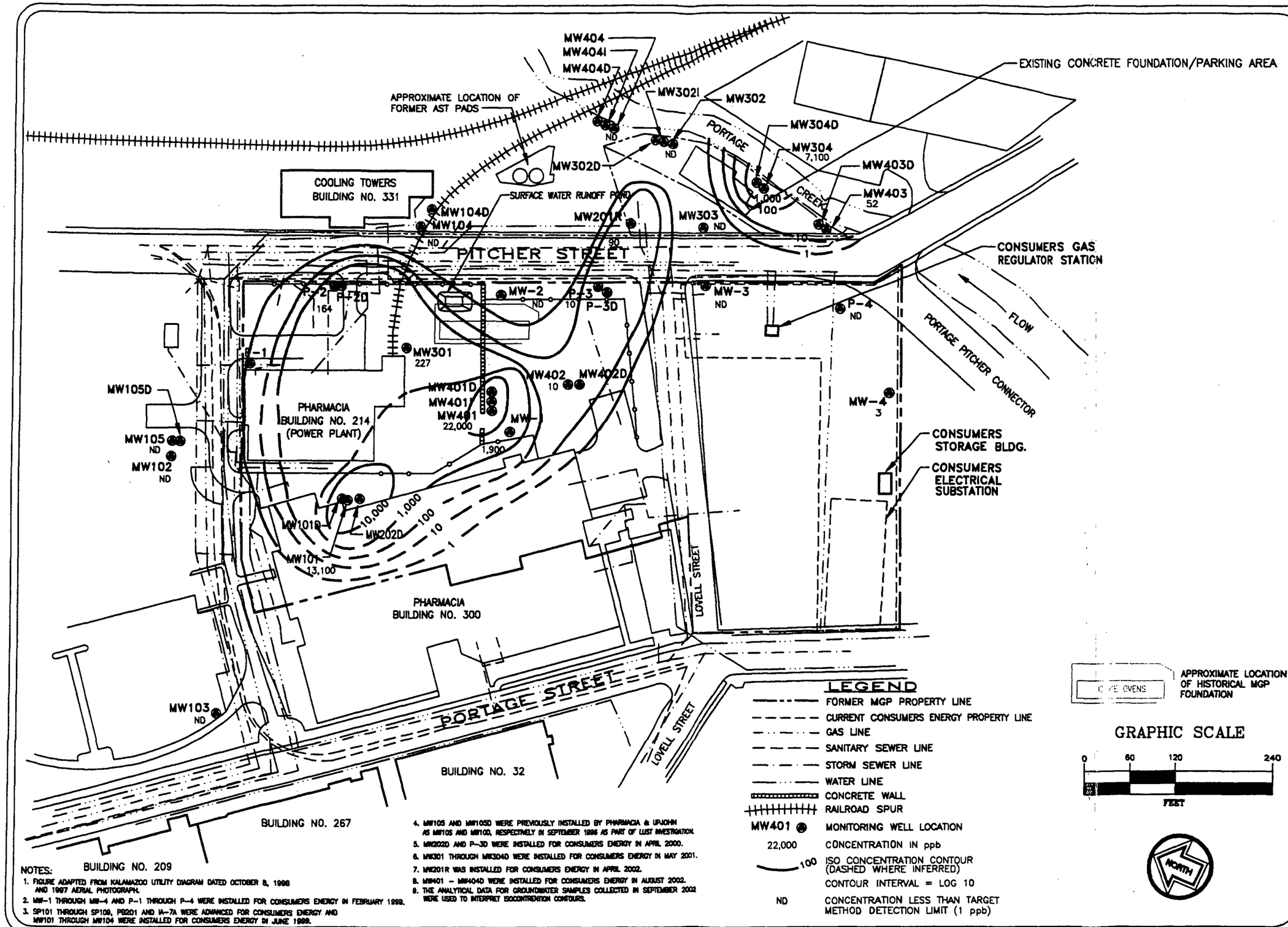
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11A.DWG

KR059B031082

Figure No. 13

00495



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW100, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN SEPTEMBER 2002 WERE USED TO INTERPRET ISOCONTRENTION CONTOURS.

ISOCONCENTRATION DIAGRAM FOR XYLENES IMPACT TO GROUNDWATER AT THE WATER TABLE
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

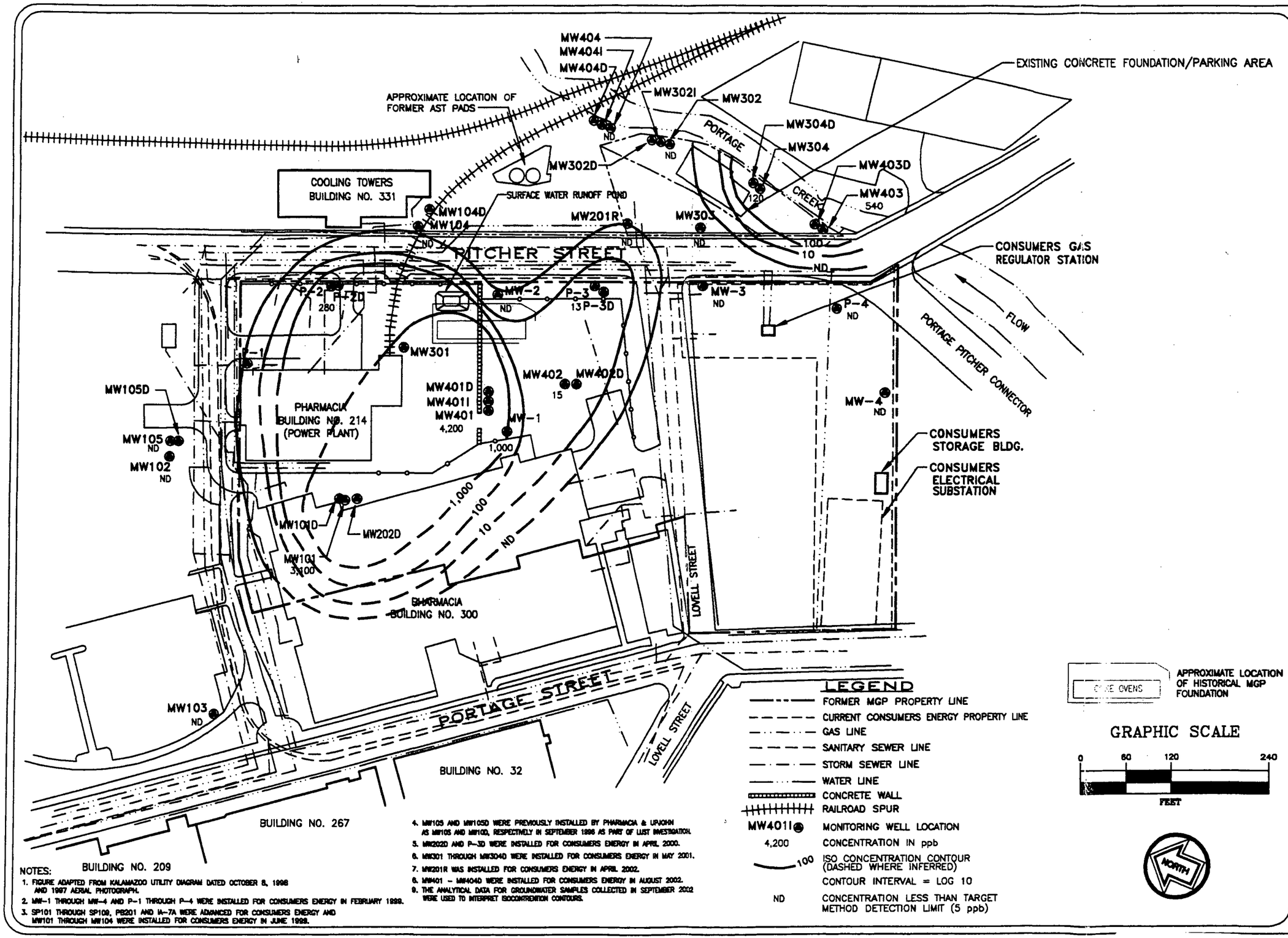
DATE: 11-20-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11A.DWG

KR059B031083

Figure No. 14



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LIST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN SEPTEMBER 2002 WERE USED TO INTERPRET ISOCONTRENTION CONTOURS.

ISOCONCENTRATION DIAGRAM FOR NAPHTHALENE IMPACT TO GROUNDWATER AT THE WATER TABLE
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

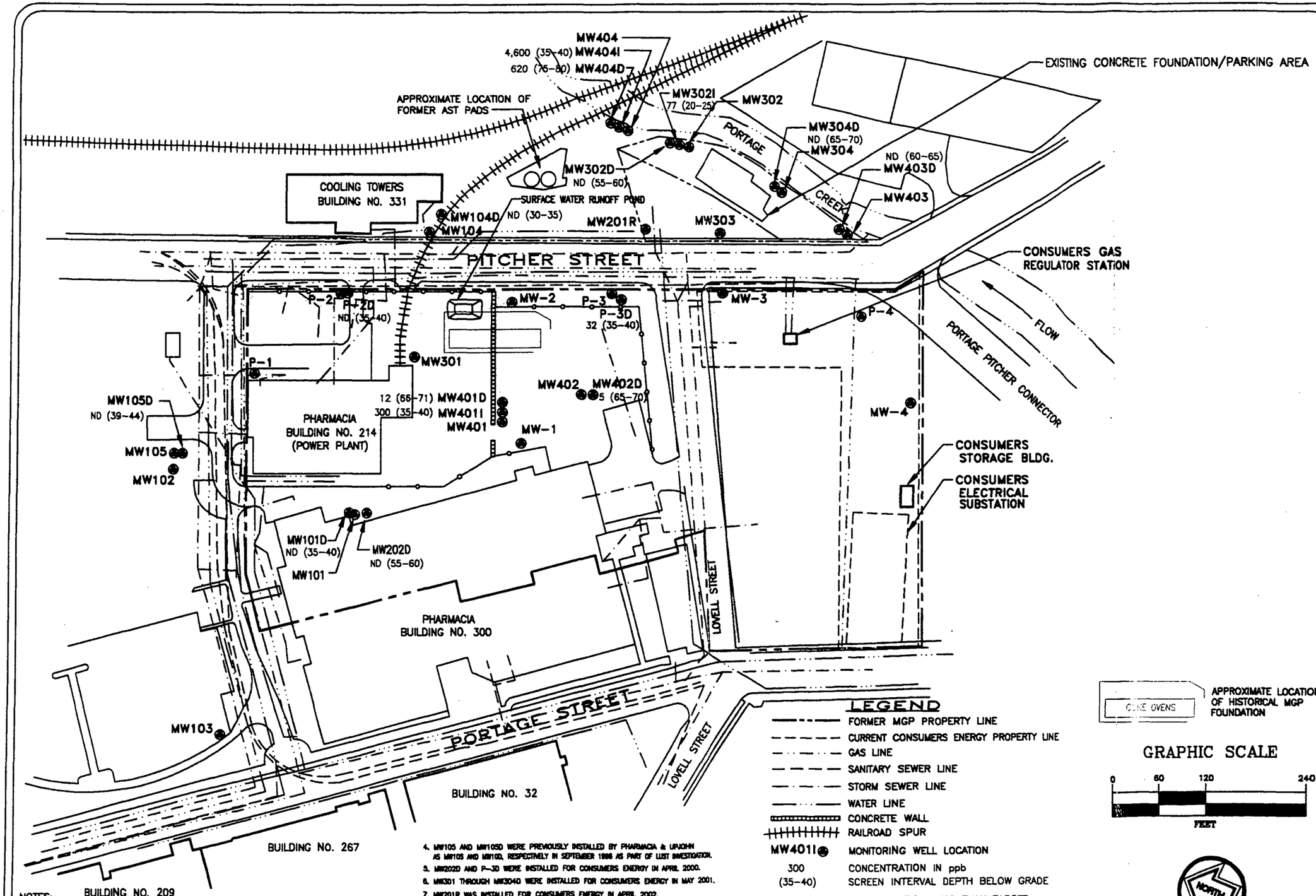
DATE: 11-20-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11A.DWG

KR059B031084

Figure No. 15



LEGEND

- FORMER MGP PROPERTY LINE
- CURRENT CONSUMERS ENERGY PROPERTY LINE
- GAS LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- WATER LINE
- CONCRETE WALL
- RAILROAD SPUR
- MW401I — MONITORING WELL LOCATION
- 300 — CONCENTRATION IN ppb
- (35-40) — SCREEN INTERVAL DEPTH BELOW GRADE
- ND — CONCENTRATION LESS THAN TARGET METHOD DETECTION LIMIT (1 ppb)

NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. SP101 THROUGH SP108, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW103 AND MW103D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LIST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN SEPTEMBER 2002 WERE USED TO INTERPRET ISOCONTRENTION CONTOURS.

EXTENT OF BENZENE IMPACT TO GROUNDWATER BELOW THE WATER TABLE
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 11-20-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

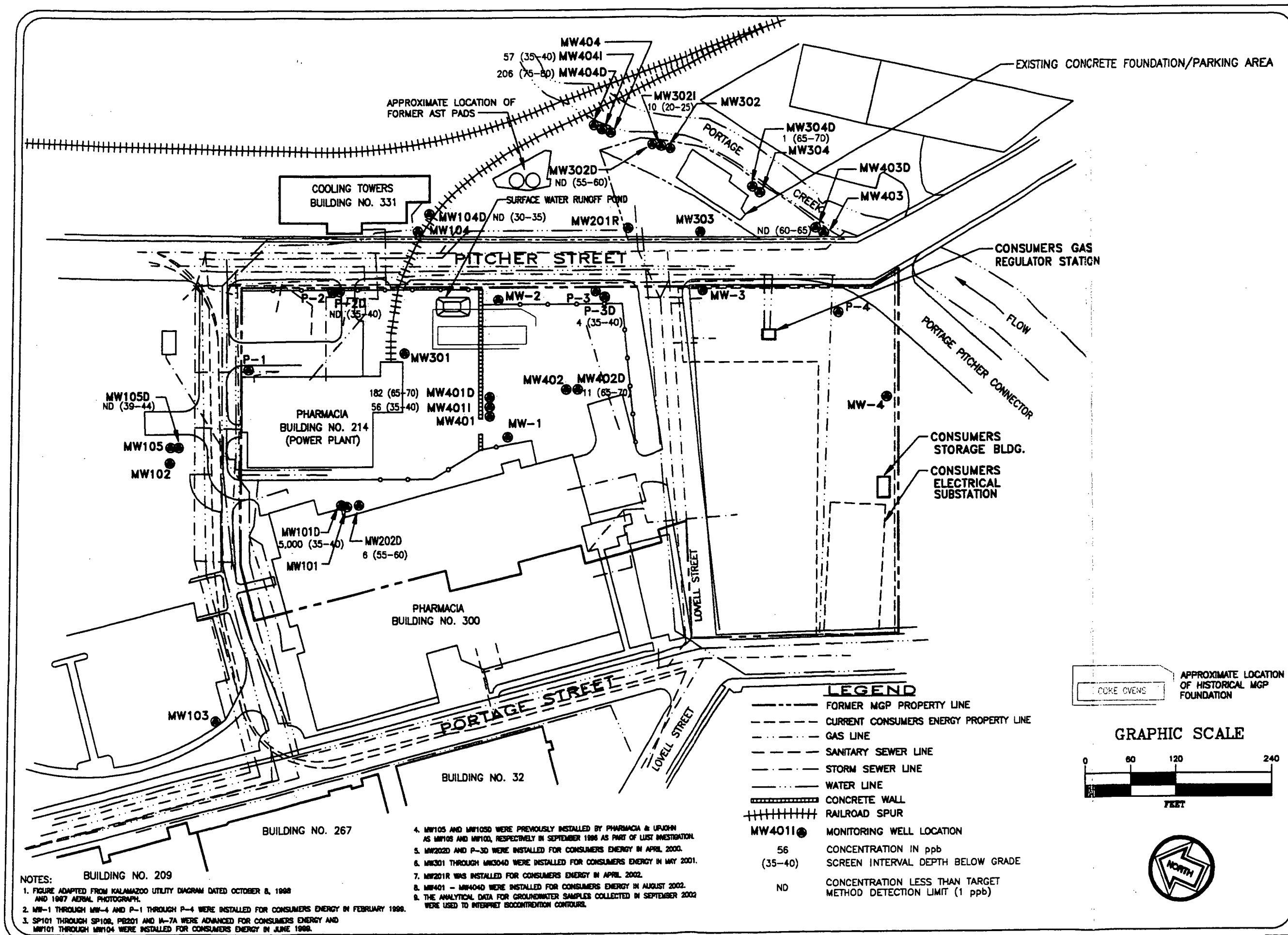
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11A.DWG

KR059B031085

Figure No. 16

00499



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW103 AND MW100, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN SEPTEMBER 2002 WERE USED TO INTERPRET ISOCONTRENTION CONTOURS.

EXTENT OF XYLENES IMPACT
TO GROUNDWATER BELOW THE WATER TABLE
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

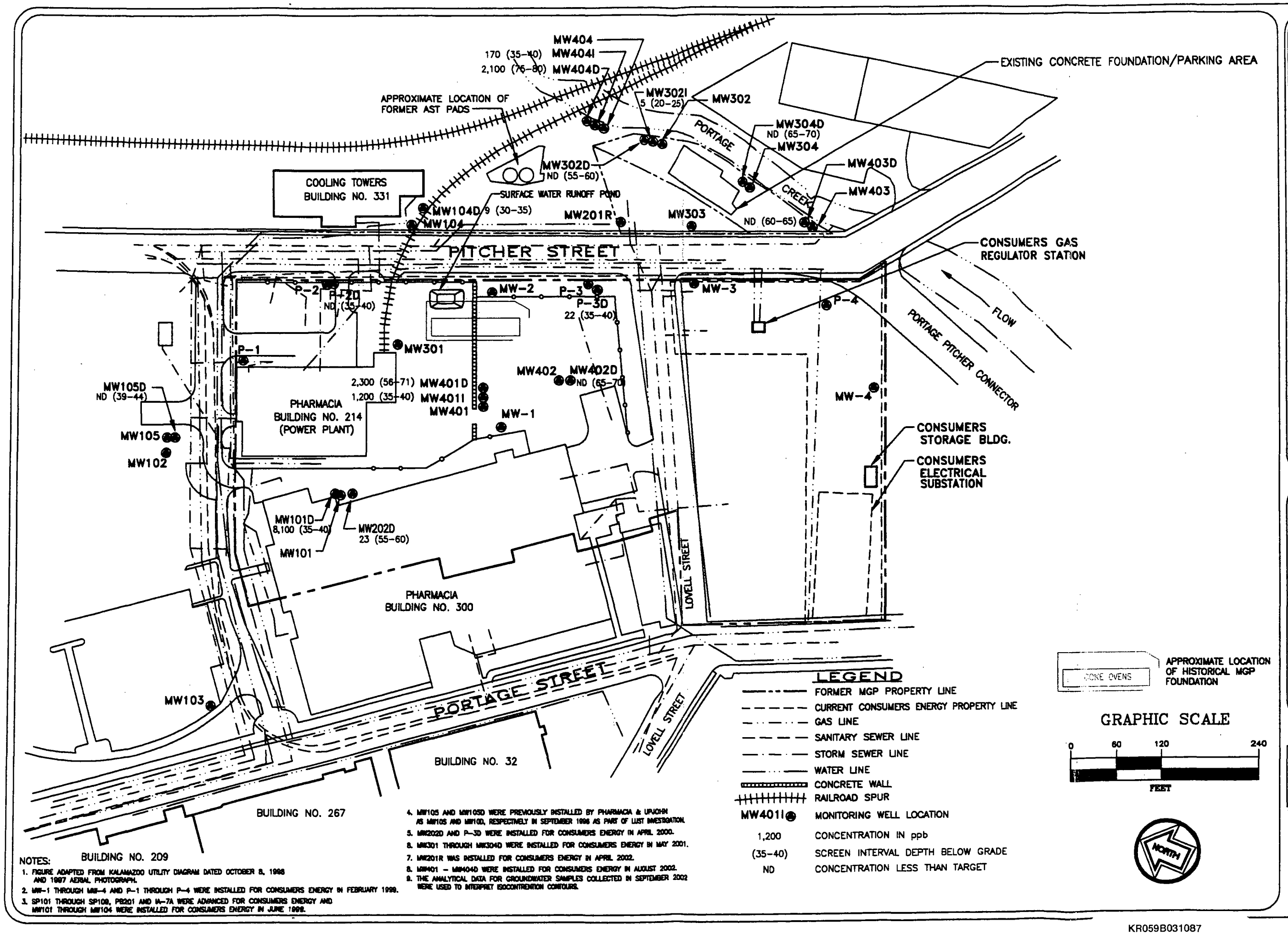
DATE: 11-21-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11A.DWG

KR059B031086

Figure No. 17



LEGEND

	FORMER MGP PROPERTY LINE
	CURRENT CONSUMERS ENERGY PROPERTY LINE
	GAS LINE
	SANITARY SEWER LINE
	STORM SEWER LINE
	WATER LINE
	CONCRETE WALL
	RAILROAD SPUR
MW401I	MONITORING WELL LOCATION
1,200	CONCENTRATION IN ppb
(35-40)	SCREEN INTERVAL DEPTH BELOW GRADE
ND	CONCENTRATION LESS THAN TARGET

NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. SP101 THROUGH SP108, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN SEPTEMBER 2002 WERE USED TO INTERPRET ISOCONTRENTION CONTOURS.

EXTENT OF NAPHTHALENE IMPACT TO GROUNDWATER BELOW THE WATER TABLE
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 11-21-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

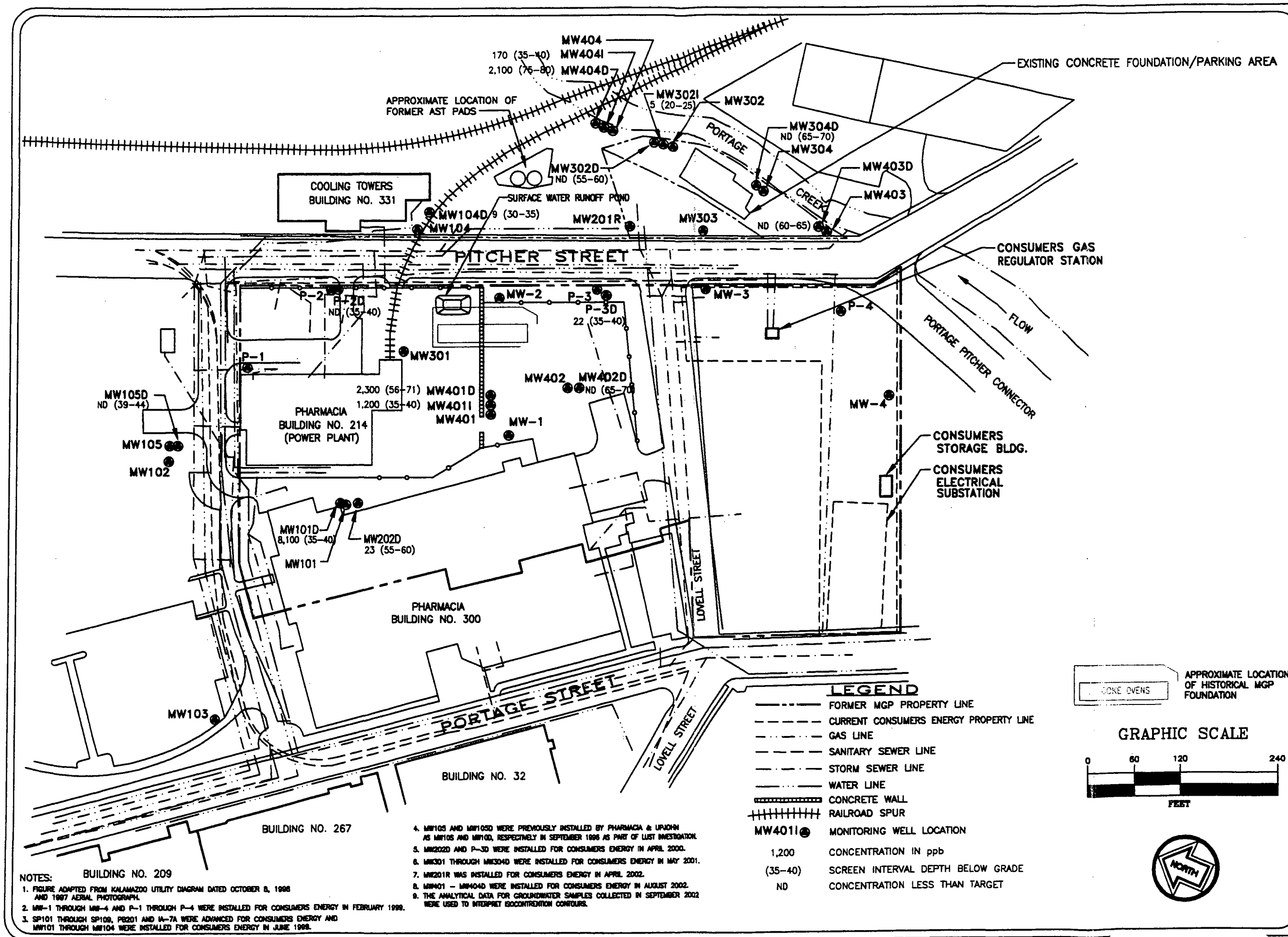
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11A.DWG

KR059B031087

Figure No. 18

00581



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LIST INVESTIGATION.
5. MW2020 AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN SEPTEMBER 2002 WERE USED TO INTERPRET ISOCONTRATION CONTOURS.

EXTENT OF NAPHTHALENE IMPACT
TO GROUNDWATER BELOW THE WATER TABLE
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 11-21-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

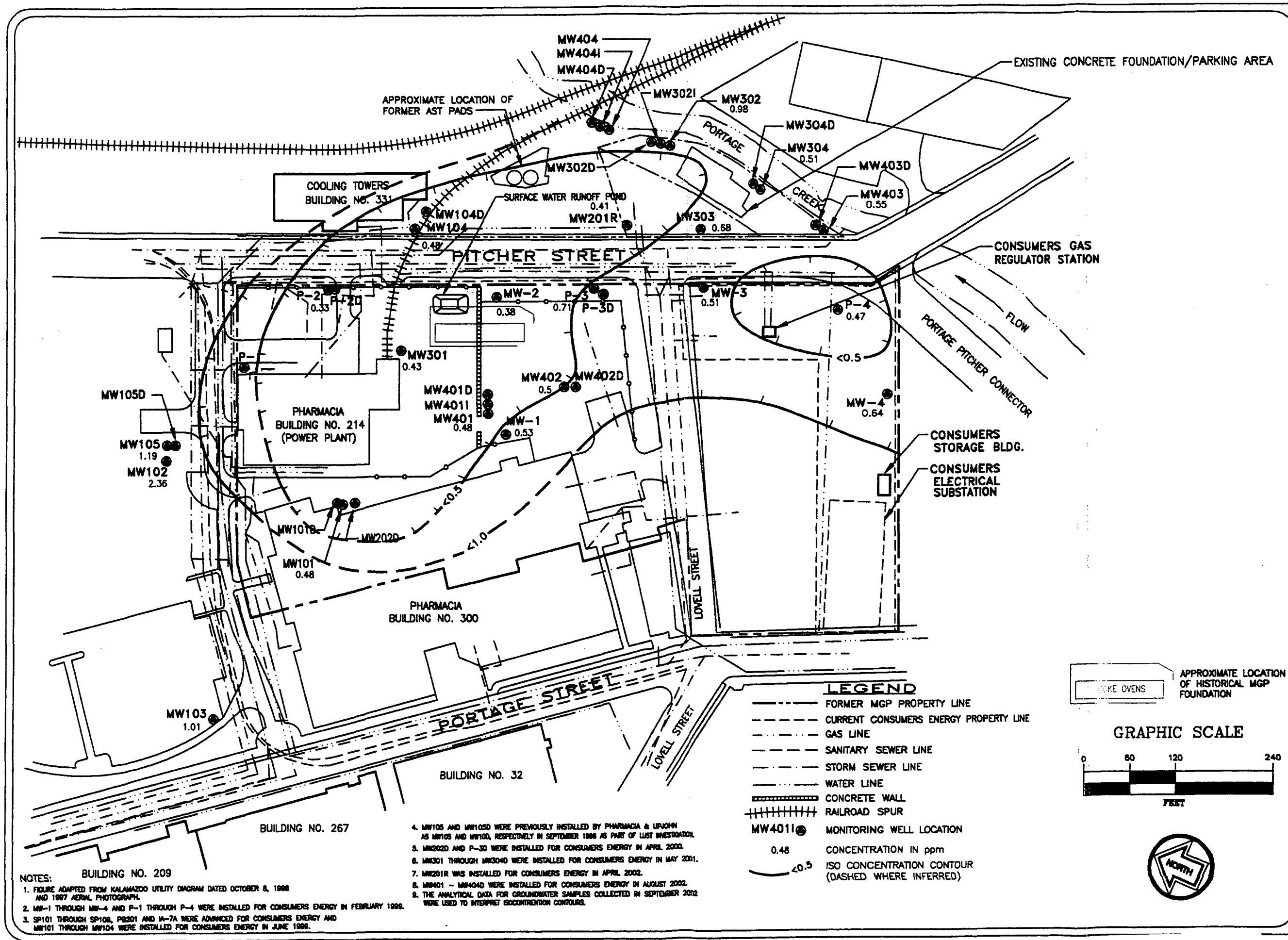
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11A.DWG

KR059B031087

Figure No. 18

00581



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1996 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW10S AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN SEPTEMBER 2002 WERE USED TO INTERPRET ISOCONTRENTION CONTOURS.

ISOCONCENTRATION DIAGRAM FOR DISSOLVED OXYGEN IN GROUNDWATER AT THE WATER TABLE
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

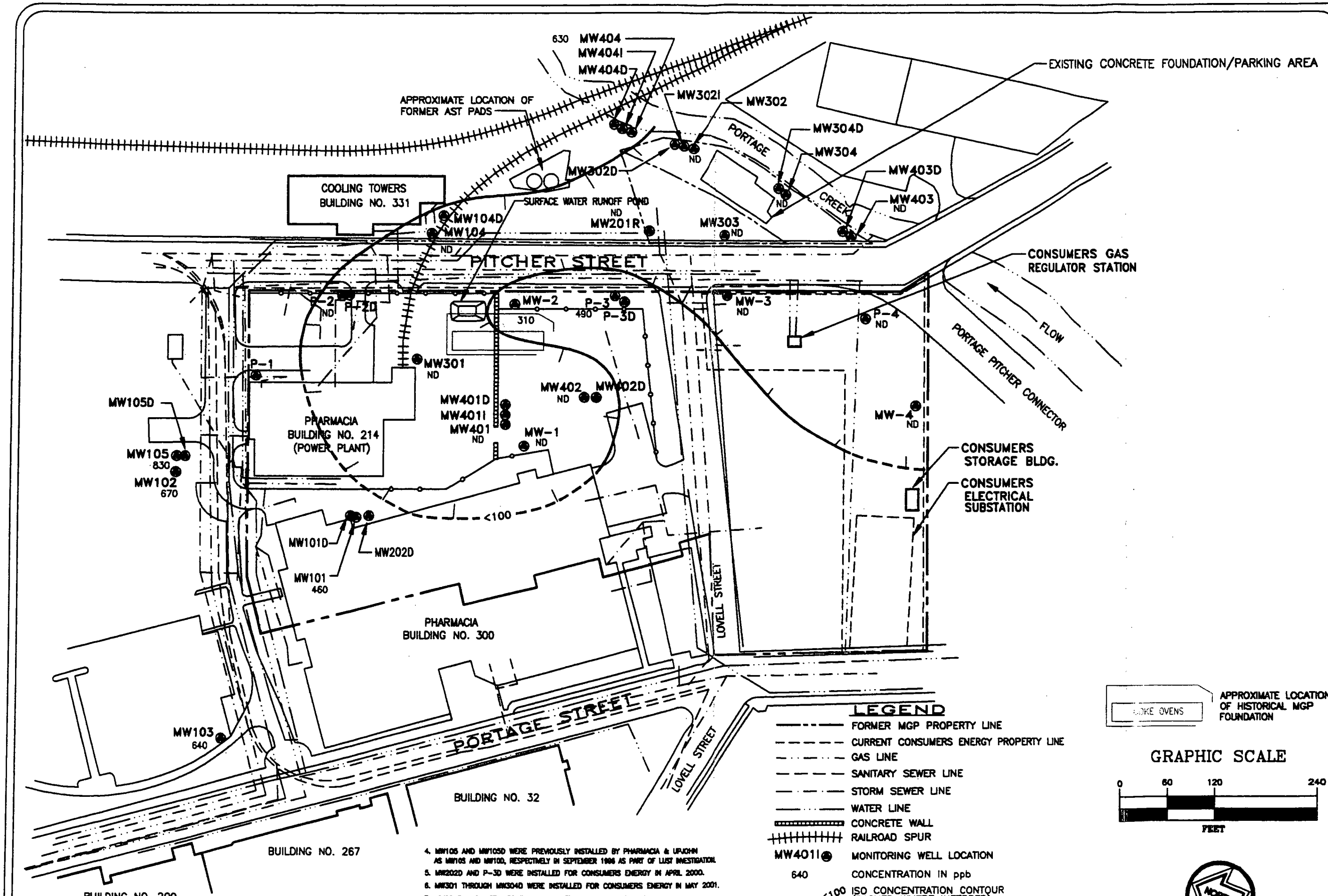
DATE: 11-21-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11A.DWG

KR059B031088

Figure No. 19



LEGEND

- FORMER MGP PROPERTY LINE
- CURRENT CONSUMERS ENERGY PROPERTY LINE
- GAS LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- WATER LINE
- CONCRETE WALL
- RAILROAD SPUR
- MW401I — MONITORING WELL LOCATION
- 640 — CONCENTRATION IN ppb
- <100 — ISO CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- CONTOUR INTERVAL = LOG 10
- ND — CONCENTRATION LESS THAN TARGET METHOD DETECTION LIMIT (100 ppb)

NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1996 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. SP101 THROUGH SP108, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW103 AND MW100, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN SEPTEMBER 2002 WERE USED TO INTERPRET ISOCONTRENTION CONTOURS.

ISOCONCENTRATION DIAGRAM FOR NITRATE IN GROUNDWATER
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

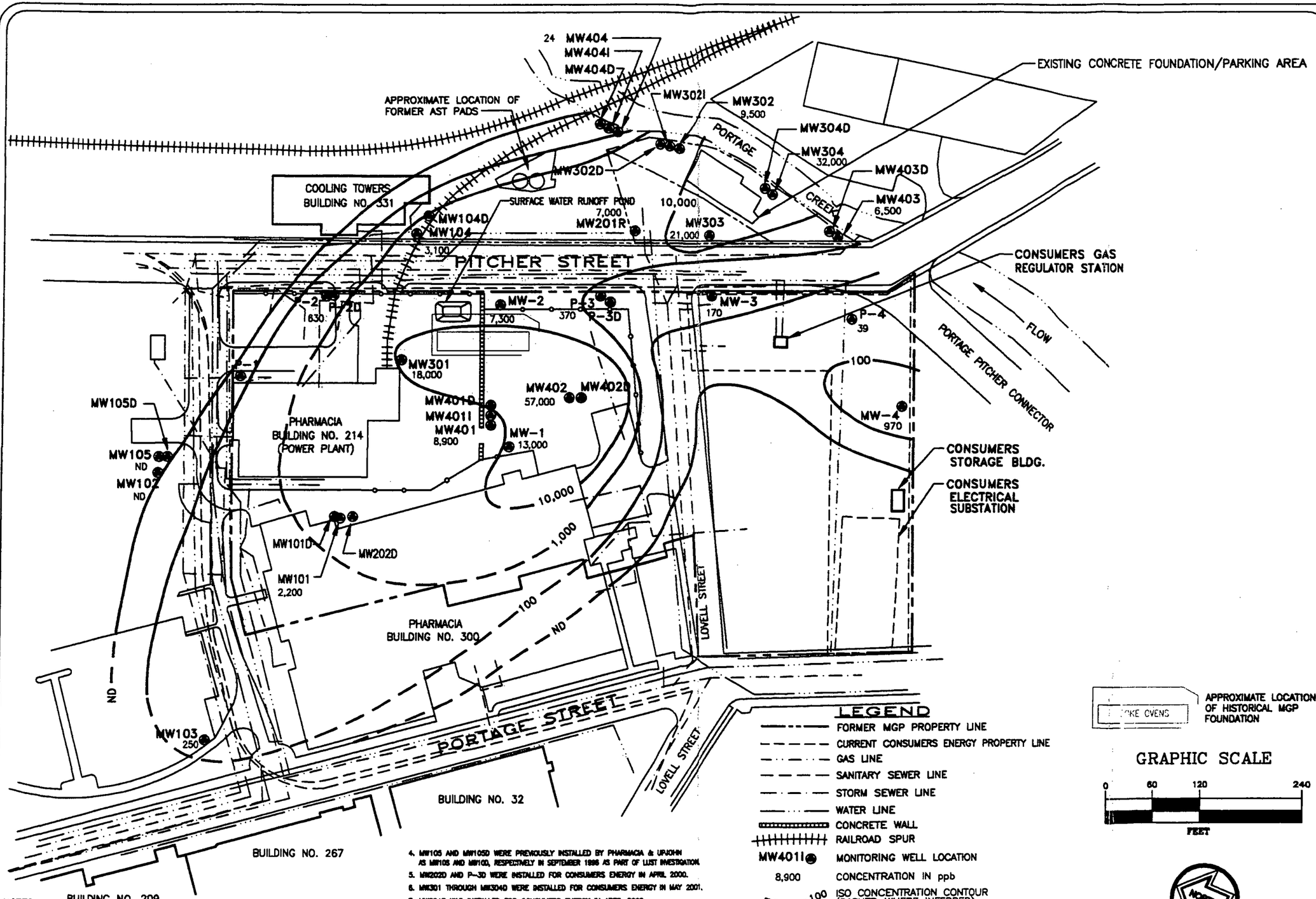
DATE: 11-22-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11A.DWG

KR059B031089

Figure No. 20



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN SEPTEMBER 2002 WERE USED TO INTERPRET ISOCONTRENTION CONTOURS.

ISOCONCENTRATION DIAGRAM FOR DISSOLVED IRON IN GROUNDWATER AT THE WATER TABLE
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 11-21-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11A.DWG

KR059B031090

Figure No. 21

APPENDIX B

KR059B031091

00565

APPENDIX B

SOIL PROBE AND MONITORING WELL LOGS

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/5/02
JOB NUMBER: KE31823

SP601
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE ELEVATION = NS

0 10 20 30 40 50

4 Inches of Asphaltic Concrete Over 2 Inches of Sand and Gravel Base Material

S1

S2

Fine to Medium Sand- Trace Silt, Coal, Gravel, Slag and Cinders- Brown- Moist to Wet (SP/Fill)

5

S3

S4

END OF PROBE AT 8 FEET

NOTES:
1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Soil cuttings containerized and probe hole backfilled with bentonite.

10

15

KR059B031093

WATER LEVEL OBSERVATIONS

GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/5/02 SP602
JOB NUMBER: KE31823 SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = NS		
		Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist (SM/Topsoil)	S1	
			S2	
5		Fine to Medium Sand- Trace Silt, Gravel and Coarse Sand- Brown- Moist to Wet (SP/Fill)	S3	
			S4	
10		END OF PROBE AT 10 FEET		
15				

NOTES:
1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Soil cuttings containerized and probe hole backfilled with bentonite.
4. Odors noted from 7.5 to 8 feet below grade.

LEGEND

KR059B031094

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00508

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/5/02
JOB NUMBER: KE31823

SP803
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = NS		
		Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist (SM/Topsoil)	S1	
			S2	
		Fine to Medium Sand- Trace Silt, Gravel and Coal- Brown- Moist (SP/Fill)	S3	
5				
		Fine Sand- Trace Silt- Brown- Moist to Wet (SP/Fill)	S4	
			S5	
10			S6	
		Fine to Medium Sand- Trace Coarse Sand and Gravel- Brown- Wet (SP)	S7	
15		END OF PROBE AT 15 FEET		

LEGEND

NOTES:
1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Soil cuttings containerized and probe hole backfilled with bentonite.
4. Odors noted from 13 to 15 feet below grade.

KR059B031095

WATER LEVEL OBSERVATIONS

! GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00569

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/5/02
JOB NUMBER: KE31823

SP604
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = NS		
		Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist (SM/Topsoil)	S1	
			S2	
		Fine to Medium Sand- Trace Silt, Gravel, Brick and Coal- Brown- Moist (SP/Fill)	S3	
5		2 Inches of Coal (Fill)		
			S4	
		Fine Sand- Trace Silt and Gravel- Brown- Moist (SP)	S5	
10			S6	
		Fine to Medium Sand- Trace Silt and Gravel- Brown- Moist to Wet (SP)	S7	
15		END OF PROBE AT 15 FEET		

NOTES:
1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Soil cuttings containerized and probe hole backfilled with bentonite.
4. Odors noted from 11 to 15 feet below grade.

LEGEND

KR059B031096

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/5/02
JOB NUMBER: KE31823

SP805
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = NS		
		3 Inches of Coal (Fill)		
		Fine to Medium Sand- Trace Silt and Gravel- Brown- Moist (SP/Fill)	S1	
		Fine to Medium Sand- Trace Silt and Gravel- Brown- Moist (SP/Fill)	S2	
5			S3	
		Clayey Fine Sand- Some Silt- Trace Gravel, Peat and Organics- Wet (SC/Fill)	S4	
			S5	
10		Fibrous Peat- Trace Sand and Root Fibers- Black (Pt)	S6	
		Fine Sand- Trace Silt- Gray- Wet (SP)		
		END OF PROBE AT 11 FEET		
15				

NOTES:
1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Soil cuttings containerized and probe hole backfilled with bentonite.
4. Odors noted from 7 to 11 feet below grade. Black staining observed from 8.25 to 10 feet.

LEGEND

KR059B031097

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

SOIL AND MATERIALS ENGINEERS, INC

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/5/02
JOB NUMBER: KE31823

SP606
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50

GROUND SURFACE ELEVATION = NS

Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist (SM/Topsoil)

S1

S2

5

S3

Fine to Medium Sand- Trace to Some Gravel- Trace Silt- Brown- Moist to Wet (SP/Fill)

S4

END OF PROBE AT 8 FEET

NOTES:
1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Soil cuttings containerized and probe hole backfilled with bentonite.
4. Laboratory samples collected from .5 to 1 foot and 4 to 5 feet below grade.

10

15

LEGEND

KR059B031098

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00512

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/5/02
JOB NUMBER: KE31823

SP607
SHEET: 1

WELL DIAGRAM

DRILLER: BEST | RIG: DP

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE ELEVATION = NS

0 10 20 30 40 50

Fine to Medium Sand- Trace Silt, Gravel and Organics- Brown- Moist (SP/Fill) — S1

Fine to Coarse Sand- Trace Brick, Coal, Slag, Cinders, Silt and Clay- Black- Moist to Wet (SP/Fill) — S2, S3

5

END OF PROBE AT 5.5 FEET

NOTES:
1. Soil samples were physically classified from grade to termination depth of the probe.
2. NS = not surveyed.
3. Soil cuttings containerized and probe hole backfilled with bentonite.
4. Laboratory samples collected from 0 to 1 foot and 4 to 5 feet below grade.
5. Black staining observed from 1 to 8 feet below grade.

10

15

KR059B031099

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00513

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/8/02
JOB NUMBER: KE31823

B401
SHEET: 1

WELL DIAGRAM

DRILLER: STEARNS | RIG: HSA

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT)

GROUND SURFACE ELEVATION = NS

0 10 20 30 40 50

LEGEND

Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist- (SM/Topsoil)

Fine to Medium Sand- Trace Silt, Gravel, Coal, Cinders, Root Fibers, Brick and Slag- Black- Moist to Wet- Medium Dense (SP/Fill)

Fine to Coarse Sand- Some Gravel- Trace Silt- Black- Wet- Very Loose to Loose (SP)

Sandy Silt- Some Clay- Brown to Gray- Wet- Loose (ML)

Fine Sand- Trace Silt- Gray- Wet- Medium Dense to Very Dense (SP)

Sandy Silt- Some Clay- Gray- Wet- Loose (ML)

Fine Sand- Trace Silt and Gravel- Gray- Wet- Medium Dense to Loose (SP)

Fine to Medium Sand- Some Gravel- Trace Silt- Brown- Wet- Medium Dense to Loose (SP)

END OF BORING AT 55 FEET

NOTES:
1. Soil samples were physically classified from grade to termination depth of the boring.
2. Odors noted from 6 to 40 feet below grade. Black staining with hydrocarbon sheen observed from 6 to 14.5 feet.
3. Soil cuttings containerized.
4. Temporary well screens were installed & groundwater samples collected using a screened auger from 10-15', 20-25', 35-40' & 50-55'.
5. NS = not surveyed

KR059B031100

WATER LEVEL OBSERVATIONS
! GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

SOIL AND MATERIALS ENGINEERS, IN(

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/8/02
JOB NUMBER: KE31823

B402
SHEET: 1

WELL DIAGRAM

DRILLER: STEARNS | RIG: HSA

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT)

GROUND SURFACE ELEVATION = NS

0 10 20 30 40 50

LEGEND

Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist- (SM/Topsoil)

Fine to Medium Sand- Trace Silt, Gravel, Coal, Cinders, Root Fibers, Brick, Slag and Concrete- Brown With Black- Moist to Wet- Loose to Very Loose (SP/Fill)

Fine Sand- Trace Silt, Wood Pieces and Root Fibers- Gray- Wet- Very Loose to Loose (SP/Fill)

Fine to Coarse Sand- Trace Coal, Slag, Gravel and Silt- Black- Wet- Medium Dense (SP/Fill)

Fine Sand- Trace Silt- Gray- Wet- Medium Dense (SP)

Sandy Silt- Some Clay- Gray- Wet- Loose to Medium Dense (ML)

Fine to Medium Sand- Trace Coarse Sand, Gravel and Silt- Gray- Wet- Medium Dense (SP)

Fine to Coarse Sand- Trace Silt and Gravel- Brown- Wet- Medium Dense (SP)

END OF BORING AT 55 FEET.

NOTES:
1. Soil samples were physically classified from grade to termination depth of boring.
2. Odors noted from 6 to 20 feet below grade.
3. Soil cuttings containerized.
4. Temporary well screens were installed & groundwater samples collected using a screened auger from 20-25', 35-40' & 50-55'.
5. NS = not surveyed.

KR059B031101

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/6/02
JOB NUMBER: KE31823

B403
SHEET: 1

WELL DIAGRAM

DRILLER: STEARNS | RIG: HSA

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT) | LEGEND

GROUND SURFACE ELEVATION = NS

Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist- (SM/Topsoil)

Fine to Medium Sand- Trace Silt, Gravel, Brick, Wood Fragments, Organics, Clay and Slag- Brown- Moist to Wet- Loose to Very Loose (SP/Fill)

Fine Sand- Trace Silt, Gravel and Root Fibers- Occasional Fibrous Peat Layers- Gray- Wet- Very Loose to Medium Dense (SP/Fill)

Fine to Coarse Sand- Trace Silt and Gravel- Occasional Fine Sand Layers- Gray- Wet- Medium Dense (SP)

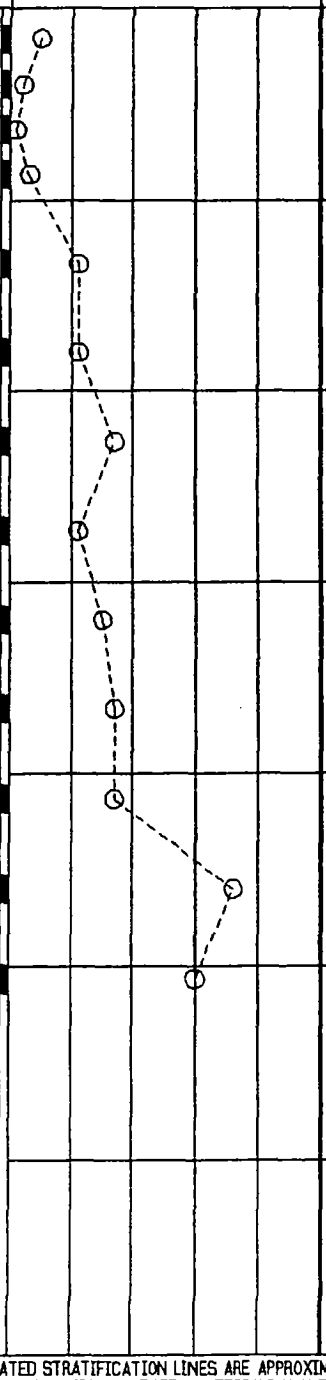
Fine Sand- Trace Silt- Gray and Brown- Wet- Medium Dense (SP)

Fine to Coarse Sand- Trace Silt and Gravel- Brown- Wet- Medium Dense to Dense (SP)

Fine Sand- Trace Silt- Brown- Wet- Dense to Loose (SP)

END OF BORING AT 55 FEET

NOTES:
1. Soil samples were physically classified from grade to termination depth of the boring.
2. Odors noted from 5 to 20 feet below grade.
3. Soil cuttings containerized.
4. Temporary well screens were installed & groundwater samples collected using a screened auger from 5-8.5', 20-25', 35-40' & 50-55'.
5. NS = not surveyed.



KR059B031102

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/7/02
JOB NUMBER: KE31823

B404
SHEET: 1

WELL DIAGRAM

DRILLER: STEARNS | RIG: HSA

DEPTH (FEET) | SYMBOLIC PROFILE | PROFILE DESCRIPTION | SAMPLE TYPE, NUMBER & INTERVAL | STANDARD PENETRATION - (BLOWS/FOOT)

GROUND SURFACE ELEVATION = NS

Silty Fine to Medium Sand- Trace Gravel, Concrete, Brick, Clay and Root Fibers- Black to Brown- Moist- Medium Dense to Loose (SM/Fill)

Clayey Fine to Medium Sand- Some Silt- Trace Gravel and Root Fibers- Brown- Moist to Wet- Very Loose (SC/Fill)

Fine to Coarse Sand- Trace Silt and Gravel- Occasional Fine Sand Layers- Gray and Black- Wet- Very Loose to Loose (SP)

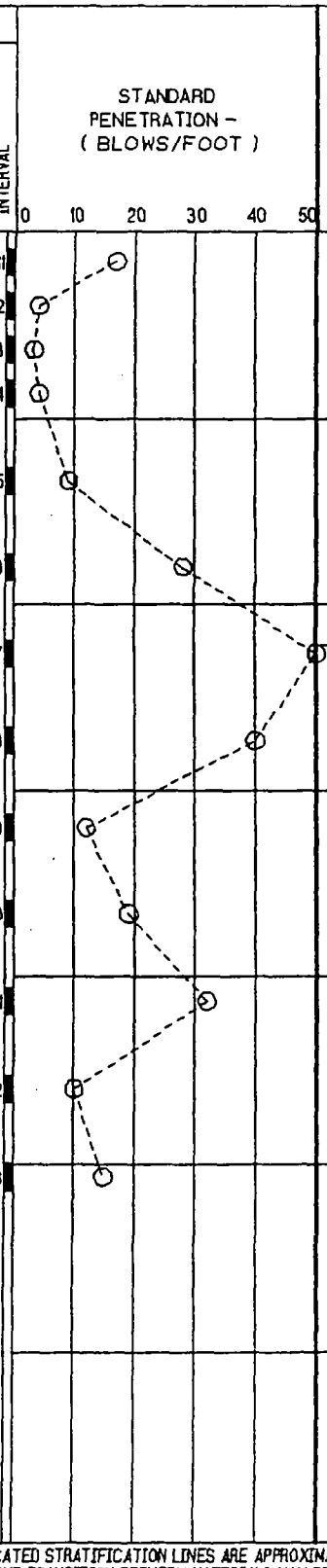
Fine Sand- Trace Silt- Brown- Wet- Loose to Very Dense (SP)

Sandy Silt- Some Clay- Gray- Wet- Medium Dense (ML)

Fine to Coarse Sand- Trace to Some Gravel- Trace Silt- Brown- Wet- Medium Dense to Dense (SP)

END OF BORING AT 55 FEET

NOTES:
1. Soil samples were physically classified from grade to termination depth of boring.
2. Odors noted from 7 to 10 feet below grade.
3. Soil cuttings containerized.
4. Temporary well screens were installed & groundwater samples collected using a screened auger from 6-10', 20-25', 35-40' & 50-55'.
5. NS = not surveyed.



LEGEND

KR059B031103

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

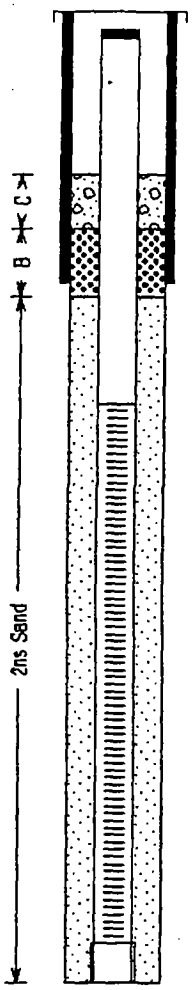
SOIL AND MATERIALS ENGINEERS, IN(

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/23/02
JOB NUMBER: KE31823

MW401
SHEET: 1

WELL DIAGRAM



DRILLER: STEARNS | RIG: HSA

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND
		GROUND SURFACE ELEVATION = 763.77			
		Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist- (SM/Topsoil)			
		Fine to Medium Sand- Trace Silt, Gravel, Coal, Cinders, Root Fibers, Brick and Slag- Black- Moist to Wet- Medium Dense (SP/Fill)			
5					
10		Fine to Coarse Sand- Some Gravel- Trace Silt- Black- Wet- Very Loose to Loose (SP)			
15		END OF BORING AT 15 FEET			
20					

NOTES:
1. Soil description from surface to termination depth of boring logged at B401, conducted approximately 3 feet to west of MW401.
2. Permanent monitoring well installed in borehole using HSA.
3. Odors noted from 6 to 15 feet below grade.
4. Soil cuttings containerized.
5. C = Concrete.
6. B = Bentonite.
7. Top of casing elevation = 766.30.

KR059B031104

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

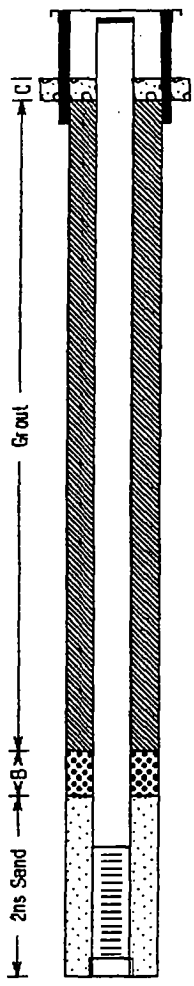
SOIL AND MATERIALS ENGINEERS, IN(

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/23/02
JOB NUMBER: KE31823

MW401I
SHEET: 1

WELL DIAGRAM



DRILLER: STEARNS | RIG: HSA

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = 763.78		
		Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist- (SM/Topsoil)		
5		Fine to Medium Sand- Trace Silt, Gravel, Coal, Cinders, Root Fibers, Brick and Slag- Black- Moist to Wet- Medium Dense (SP/Fill)		
10		Fine to Coarse Sand- Some Gravel- Trace Silt- Black- Wet- Very Loose to Loose (SP)		
15		Sandy Silt- Some Clay- Brown to Gray- Wet- Loose (ML)		
20				
25		Fine Sand- Trace Silt- Gray- Wet- Medium Dense to Very Dense (SP)		
30		Sandy Silt- Some Clay- Gray- Wet- Loose (ML)		
35		Fine Sand- Trace Silt and Gravel- Gray- Wet- Medium Dense to Loose (SP)		
40		END OF BORING AT 40 FEET		
45				
50				
55				

NOTES:
1. Soil description from surface to termination depth of boring logged at B401, conducted approximately 6 feet west of MW401I.
2. Permanent monitoring well installed in borehole using HSA.
3. Odors noted from 6 to 40 feet below grade.
4. Soil cuttings containerized.
5. C = Concrete.
6. B = Bentonite.
7. Top of casing elevation = 766.27.

LEGEND

KR059B031105

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE. IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00513

SOIL AND MATERIALS ENGINEERS, IN

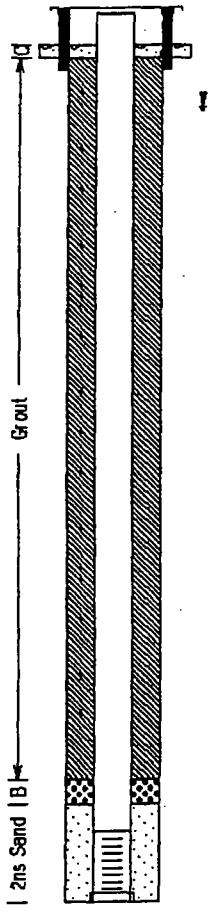
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/21/02
JOB NUMBER: KE31823

MW401D
SHEET: 1

DRILLER: STEARNS | RIG: HSA

WELL DIAGRAM



DEPTH (FEET)	PROFILE DESCRIPTION (GROUND SURFACE ELEVATION = 763.81)	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT)
5	Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist- (SM/Topsoil)		
10, 15	Fine to Medium Sand- Trace Silt, Gravel, Coal, Cinders, Root Fibers, Brick and Slag- Black- Moist to Wet- Medium Dense (SP/Fill)		
20, 25	Fine to Coarse Sand- Some Gravel- Trace Silt- Black- Wet- Very Loose to Loose (SP)		
30	Sandy Silt- Some Clay- Brown to Gray- Wet- Loose (ML)		
35, 40	Fine Sand- Trace Silt- Gray- Wet- Medium Dense to Very Dense (SP)		
45	Sandy Silt- Some Clay- Gray- Wet- Loose (ML)		
50, 55	Fine Sand- Trace Silt and Gravel- Gray- Wet- Medium Dense to Loose (SP)		
60	Fine to Medium Sand- Some Gravel- Trace Silt- Brown- Wet- Medium Dense to Loose (SP)	S14	
65		S15	
70	Fine to Coarse Sand- Trace Silt- Brown- Wet- Loose (SP)	S16	
75	Silty Fine Sand- Brown- Wet- Medium Dense (SM)		
80, 85, 90, 95, 100, 105	END OF BORING AT 70 FEET.		

STANDARD PENETRATION - (BLOWS/FOOT): 0, 10, 20, 30, 40, 50

LEGEND

NOTES:
1. Soil description from surface to 55 feet below ground surface logged at B401, conducted approximately 8 feet west of MW401D. The remaining depth (55-70') was physically classified during drilling.
2. Permanent monitoring well installed in borehole using HSA.
3. Odors noted from 6 to 40 feet below grade.
4. Soil cuttings containerized.
5. C = Concrete
6. B = Bentonite
7. Top of casing elevation = 766.28.

KR059B031106

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

SOIL AND MATERIALS ENGINEERS, IN

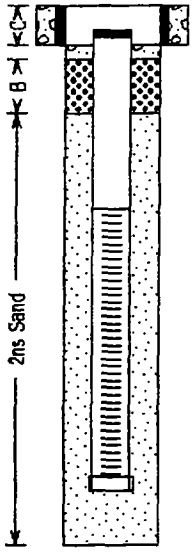
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/23/02
JOB NUMBER: KE31823

MW402
SHEET: 1

DRILLER: STEARNS | RIG: HSA

WELL DIAGRAM



DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = 763.38		
		Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist- (SM/Topsoil)		
5		Fine to Medium Sand- Trace Silt, Gravel, Coal, Cinders, Root Fibers, Brick, Slag and Concrete- Brown With Black- Moist to Wet- Loose to Very Loose (SP/Fill)		
10		END OF BORING AT 10 FEET		
15				
20				

NOTES:
1. Soil description from surface to termination depth of boring logged at B402, conducted approximately 3 feet to north of MW402.
2. Permanent monitoring well installed in borehole using HSA.
3. Odors noted from 8 to 10 feet below grade.
4. Soil cuttings containerized.
5. C = Concrete.
6. B = Bentonite.
7. Top of casing elevation = 762.81.

LEGEND

KR059B031107

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

SOIL AND MATERIALS ENGINEERS, IN

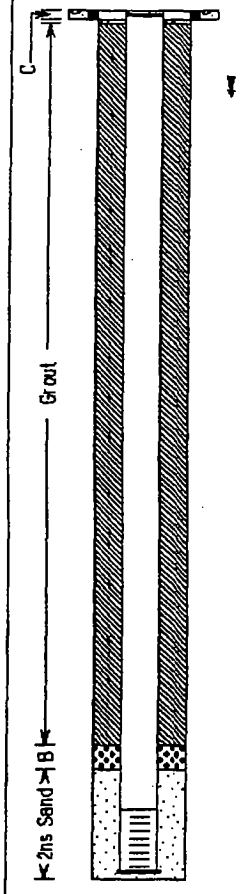
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/26/02
JOB NUMBER: KE31823

MW402D
SHEET: 1

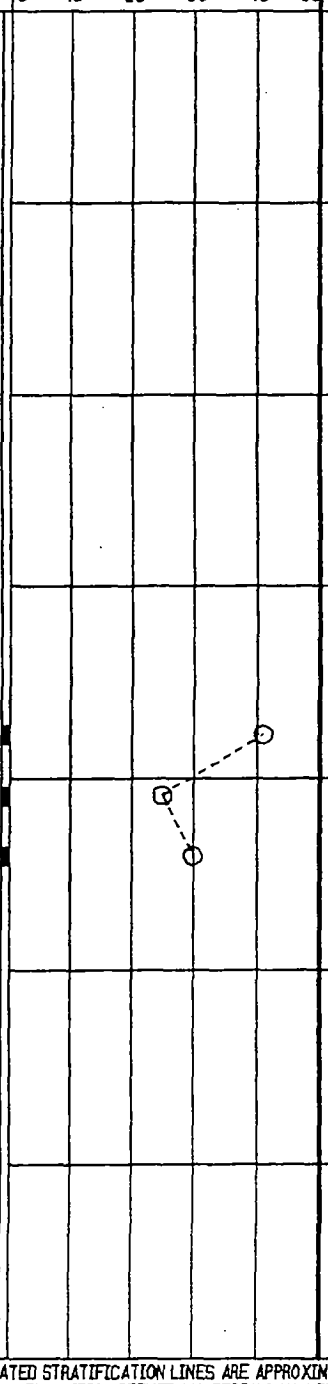
DRILLER: STEARNS | RIG: HSA

WELL DIAGRAM



DEPTH (FEET)	PROFILE DESCRIPTION (GROUND SURFACE ELEVATION = 763.38)	SAMPLE TYPE, NUMBER & INTERVAL
5	Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist- (SM/Topsoil)	
10, 15	Fine to Medium Sand- Trace Silt, Gravel, Coal, Cinders, Root Fibers, Brick, Slag and Concrete- Brown With Black- Moist to Wet- Loose to Very Loose (SP/Fill)	
20, 25	Fine Sand- Trace Silt, Wood Pieces and Root Fibers- Gray- Wet- Very Loose to Loose (SP/Fill)	
30, 35	Fine to Coarse Sand- Trace Coal, Slag, Gravel and Silt- Black- Wet- Medium Dense (SP/Fill)	
40	Fine Sand- Trace Silt- Gray- Wet- Medium Dense (SP)	
45	Sandy Silt- Some Clay- Gray- Wet- Loose to Medium Dense (ML)	
50, 55	Fine to Medium Sand- Trace Coarse Sand, Gravel and Silt- Gray- Wet- Medium Dense (SP)	
60, 65	Fine to Coarse Sand- Trace Silt and Gravel- Brown- Wet- Medium Dense to Dense (SP)	S14, S15
70	Fine Sand- Trace Silt- Brown- Wet- Medium Dense (SP)	S16
75	END OF BORING AT 71 FEET.	

STANDARD PENETRATION - (BLOWS/FOOT)



LEGEND

NOTES:
1. Soil description from surface to 55 feet below ground surface logged at B402, conducted approximately 6' to south of MW402D. The remaining depth (55-71') was physically classified during drilling.
2. Permanent monitoring well installed in borehole using HSA.
3. Odors noted from 6 to 20 feet below grade.
4. Soil cuttings containerized.
5. C = Concrete.
6. B = Bentonite.
7. Top of casing elevation = 762.89.

KR059B031108

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

00522

SOIL AND MATERIALS ENGINEERS, I

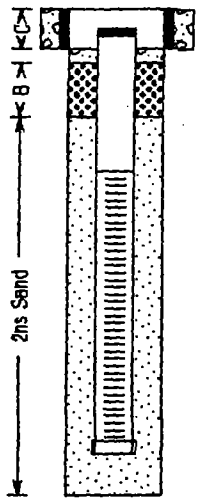
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/19/02
JOB NUMBER: KE31823

MW403
SHEET: 1

DRILLER: STEARNS | RIG: HSA

WELL DIAGRAM



DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION GROUND SURFACE ELEVATION = 781.92	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND
		Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist- (SM/Topsoil)			
5		Fine to Medium Sand- Trace Silt, Gravel, Brick, Wood Fragments, Organics, Clay and Slag- Brown- Moist to Wet- Loose to Very Loose (SP/Fill)			
10		END OF BORING AT 8 FEET NOTES: 1. Soil description from surface to termination depth of boring logged at B403, conducted approximately 5 feet to south of MW403. 2. Permanent monitoring well installed in borehole using HSA. 3. Odors noted from 5 to 8 feet below grade. 4. Soil cuttings containerized. 5. C = Concrete. 6. B = Bentonite. 7. Top of casing elevation = 781.81.			
15					
20					

KR059B031109

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

SOIL AND MATERIALS ENGINEERS, IN

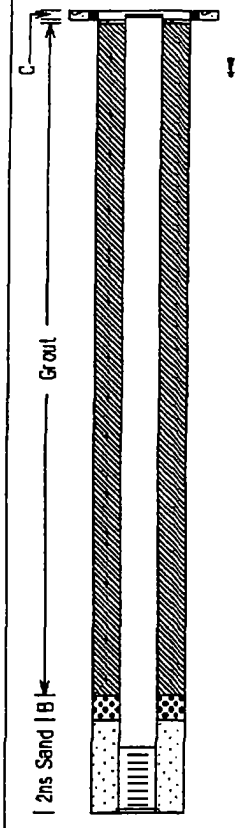
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/19/02
JOB NUMBER: KE31823

MW403D
SHEET: 1

DRILLER: STEARNS RIG: HSA

WELL DIAGRAM



DEPTH (FEET)	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL
	GROUND SURFACE ELEVATION = 762.03	
5	Silty Fine Sand- Trace Organics and Gravel- Dark Brown- Moist- (SM/Topsoil)	
10	Fine to Medium Sand- Trace Silt, Gravel, Brick, Wood Fragments, Organics, Clay and Slag- Brown- Moist to Wet- Loose to Very Loose (SP/Fill)	
15		
20	Fine Sand- Trace Silt, Gravel and Root Fibers- Occasional Fibrous Peat Layers- Gray- Wet- Very Loose to Medium Dense (SP/Fill)	
25		
30	Fine to Coarse Sand- Trace Silt and Gravel- Occasional Fine Sand Layers- Gray- Wet- Medium Dense (SP)	
35		
40	Fine Sand- Trace Silt- Gray and Brown- Wet- Medium Dense (SP)	
45	Fine to Coarse Sand- Trace Silt and Gravel- Brown- Wet- Medium Dense to Dense (SP)	
50		
55	Fine Sand- Trace Silt- Brown- Wet- *Dense to Loose (SP)*	
60		S14
65	END OF BORING AT 65 FEET	S15
70		
75		
80		
85		
90		
95		
100		
105		

STANDARD PENETRATION - (BLOWS/FOOT)

0 10 20 30 40 50

LEGEND

NOTES:
1. Soil description from surface to 55 feet below ground surface logged at B403, conducted approximately 2.5 feet to south of MW403D. The remaining depth (55-65 feet) was physically classified during drilling.
2. Permanent monitoring well installed in borehole using HSA.
3. Odors noted from 5 to 20 feet below grade.
4. Soil cuttings containerized.
5. C = Concrete.
6. B = Bentonite.
7. Top of casing elevation = 761.72.

KR059B031110

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

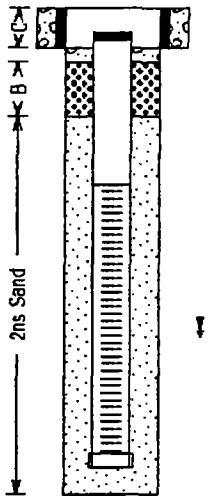
SOIL AND MATERIALS ENGINEERS, IN

JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/21/02
JOB NUMBER: KE31823

MW404
SHEET: 1

WELL DIAGRAM



DRILLER: STEARNS | RIG: HSA

DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = 763.12		
		Silty Fine to Medium Sand- Trace Gravel, Concrete, Brick, Clay and Root Fibers- Black to Brown- Moist- Medium Dense to Loose (SM/Fill)		
5		Clayey Fine to Medium Sand- Some Silt- Trace Gravel and Root Fibers- Brown- Moist to Wet- Very Loose (SC/Fill)		
10		END OF BORING AT 9 FEET		
15				
20				

NOTES:
1. Soil description from surface to termination depth of boring logged at B404, conducted approximately 9 feet southwest of MW404.
2. Permanent monitoring well installed in borehole using HSA.
3. Odors noted from 7 to 8 feet below grade.
4. Soil cuttings containerized.
5. C = Concrete.
6. B = Bentonite.
7. Top of casing elevation = 762.67.

LEGEND

KR059B031111

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

SOIL AND MATERIALS ENGINEERS, IN

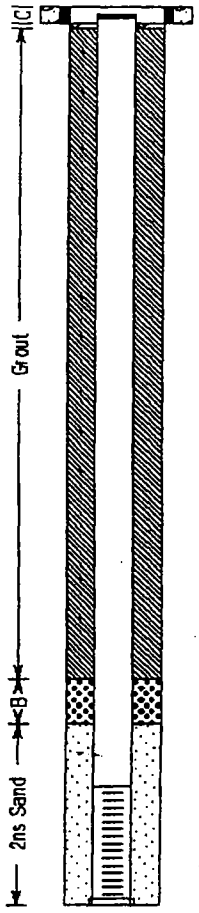
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/20/02
JOB NUMBER: KE31823

MW404I
SHEET: 1

DRILLER: STEARNS | RIG: HSA

WELL DIAGRAM



DEPTH (FEET)	SYMBOLIC PROFILE	PROFILE DESCRIPTION	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION - (BLOWS/FOOT) 0 10 20 30 40 50
		GROUND SURFACE ELEVATION = 763.21		
5		Silty Fine to Medium Sand- Trace Gravel, Concrete, Brick, Clay and Root Fibers- Black to Brown- Moist- Medium Dense to Loose (SM/Fill)		
10		Clayey Fine to Medium Sand- Some Silt- Trace Gravel and Root Fibers- Brown- Moist to Wet- Very Loose (SC/Fill)		
15		Fine to Coarse Sand- Trace Silt and Gravel- Occasional Fine Sand Layers- Gray and Black- Wet- Very Loose to Loose (SP)		
20		Fine Sand- Trace Silt- Brown- Wet- Loose to Very Dense (SP)		
25				
30				
35		Sandy Silt- Some Clay- Gray- Wet- Medium Dense (ML)		
40		Fine to Coarse Sand- Trace to Some Gravel- Trace Silt- Brown- Wet- Medium Dense to Dense (SP)		
45		END OF BORING AT 40 FEET		
50				
55				

NOTES:
1. Soil description from surface to termination depth of boring logged at B404, conducted approximately 6 feet to southwest of MW404L.
2. Permanent monitoring well installed in borehole using HSA.
3. Odors noted from 7 to 10 feet below grade.
4. Soil cuttings containerized.
5. C = Concrete.
6. B = Bentonite.
7. Top of casing elevation = 762.92.

LEGEND

KR059B031112

WATER LEVEL OBSERVATIONS

▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

SOIL AND MATERIALS ENGINEERS, IN

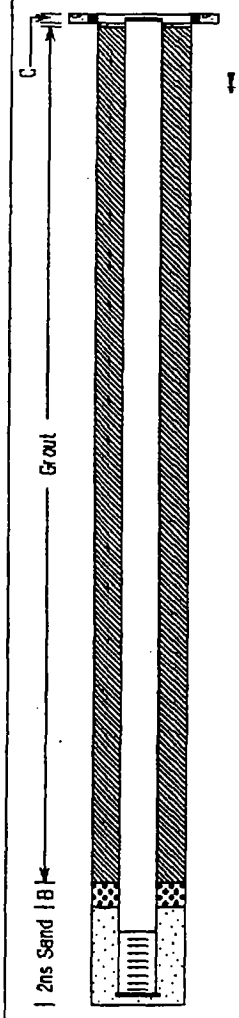
JOB NAME: KALAMAZOO MGP
JOB LOCATION: KALAMAZOO, MICHIGAN
OWNER: CONSUMERS ENERGY COMPANY

A/E: NL
BY: NBL/PGB DATE: 8/20/02
JOB NUMBER: KE31823

MW404D
SHEET: 1

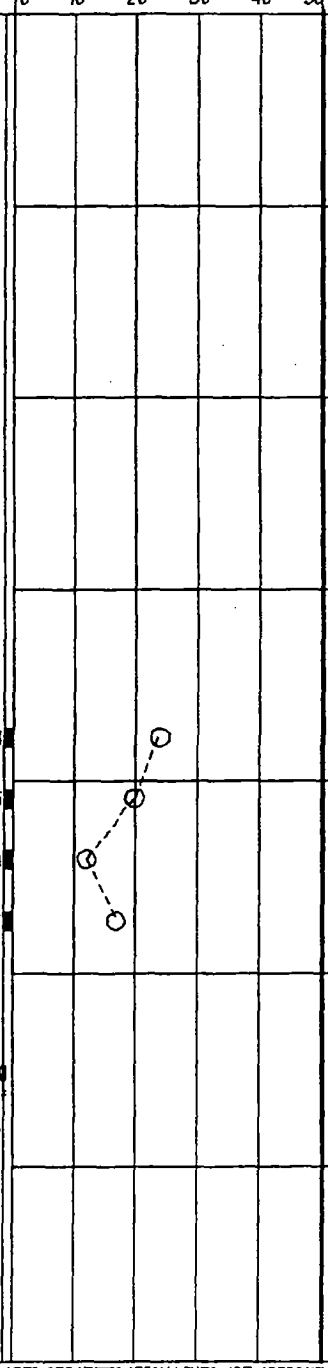
DRILLER: STEARNS RIG: HSA

WELL DIAGRAM



DEPTH (FEET)	PROFILE DESCRIPTION (GROUND SURFACE ELEVATION = 763.08)	SAMPLE TYPE, NUMBER & INTERVAL
5	Silty Fine to Medium Sand- Trace Gravel, Concrete, Brick, Clay and Root Fibers- Black to Brown- Moist- Medium Dense to Loose (SM/Fill)	
10		
15	Clayey Fine to Medium Sand- Some Silt- Trace Gravel and Root Fibers- Brown- Moist to Wet- Very Loose (SC/Fill)	
20		
25	Fine to Coarse Sand- Trace Silt and Gravel- Occasional Fine Sand Layers- Gray and Black- Wet- Very Loose to Loose (SP)	
30		
35	Fine Sand- Trace Silt- Brown- Wet- Loose to Very Dense (SP)	
40		
45	Sandy Silt- Some Clay- Gray- Wet- Medium Dense (ML)	
50	Fine to Coarse Sand- Trace to Some Gravel- Trace Silt- Brown- Wet- Medium Dense (SP)	
55		
60	Fine Sand- Trace Silt- Brown- Wet- Medium Dense (SP)	S14, S15, S16, S17
65		
70	Fine to Coarse Sand- Trace Silt and Gravel- Brown- Wet- Medium Dense (SP)	
75		
80	END OF BORING AT 80 FEET	
85		
90		
95		
100		
105		

STANDARD PENETRATION - (BLOWS/FOOT)



LEGEND

NOTES:
1. Soil description from surface to 55' of boring logged at B404, conducted approx. 3' SW of MW404D. The remaining depth (55-80') was physically classified during drilling.
2. Permanent monitoring well installed in borehole using HSA.
3. Odors noted from 7 to 10 feet below grade.
4. Soil cuttings containerized.
5. C = Concrete.
6. B = Bentonite.
7. Top of casing elevation = 762.82.

KR059B031113

WATER LEVEL OBSERVATIONS
▼ GROUNDWATER ENCOUNTERED DURING DRILLING

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

APPENDIX C

KR059B031114

00528

APPENDIX C

TABULATED WATER LEVEL AND ANALYTICAL DATA

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	2/8/99 Depth to Water from TOC (ft.)	2/8/99 Static Groundwater Elevation (ft.)	2/25/99 Depth to Water from TOC (ft.)	2/25/99 Static Groundwater Elevation (ft.)	6/22/1999 (Set 5) Depth to Water from TOC (ft.)	6/22/1999 (Set 5) Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	8.47	758.04	8.77	757.74	9.13	757.38
MW-2	763.00	762.56	759.6 - 754.6	4.89	757.67	5.27	757.29	5.66	756.90
MW-3	761.43	760.86	758.2 - 753.2	3.63	757.23	3.82	757.04	4.32	756.54
MW-4	761.70	760.99	759.2 - 754.2	2.68	758.31	3.02	757.97	3.45	757.54
P-1	768.91	768.38	762.4 - 757.4	NI	NI	10.44	757.94	10.50	757.88
P-2	766.95	766.35	759.4 - 754.4	8.17	758.18	8.38	757.97	8.87	757.48
P-2D	766.84	766.61	731.7 - 726.7	NI	NI	NI	NI	9.61	757.00
P-3	761.87	761.35	758.6 - 753.6	3.82	757.53	4.16	757.19	4.61	756.74
P-4	761.95	761.51	758.7 - 753.7	3.39	758.12	3.95	757.56	4.46	757.05
MW101	771.74	771.41	759.6 - 754.6	NI	NI	NI	NI	13.28	758.13
MW101D	771.59	770.91	736.5 - 731.5	NI	NI	NI	NI	13.19	757.72
MW102	770.02	769.88	760.1 - 755.1	NI	NI	NI	NI	11.32	758.56
MW103	771.99	771.52	761.3 - 756.3	NI	NI	NI	NI	11.42	760.10
MW104	763.07	762.74	758.4 - 753.4	NI	NI	NI	NI	6.04	756.70
MW104D	762.92	762.66	732.8 - 727.8	NI	NI	NI	NI	5.81	756.85
MW105	770.61	770.31	760.1 - 755.1	NG	NG	NG	NG	11.77 (5)	758.54
MW105D	770.61	770.20	731.9 - 726.9	NG	NG	NG	NG	12.85 (5)	757.35

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) NG = Groundwater elevation not gauged.
(5) Groundwater elevations for MW105 and MW105D were gauged on June 23, 1999.

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	2/15/00 Depth to Water from TOC (ft.)	2/15/00 Static Groundwater Elevation (ft.)	5/22/00 Depth to Water from TOC (ft.)	5/22/00 Static Groundwater Elevation (ft.)	11/6/00 Depth to Water from TOC (ft.)	11/6/00 Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	9.58	756.93	7.92	758.59	9.17	757.34
MW-2	763.00	762.56	759.6 - 754.6	6.04	756.52	4.24	758.32	5.44	757.12
MW-3	761.43	760.86	758.2 - 753.2	4.62	756.24	3.23	757.63	4.35	756.51
MW-4	761.70	760.99	759.2 - 754.2	3.78 (4)	757.21	2.52	758.47	3.38	757.61
P-1	768.91	768.38	762.4 - 757.4	DRY	DRY	9.27	759.11	10.57	757.81
P-2	766.95	766.35	759.4 - 754.4	8.94	757.41	7.54	758.81	8.35	758.00
P-2D	766.84	766.61	731.7 - 726.7	10.00	756.61	8.29	758.32	9.59	757.02
P-3	761.87	761.35	758.6 - 753.6	4.82	756.53	3.33	758.02	3.95	757.40
P-3D	762.58	762.16	727.6 - 722.6	NI	NI	3.49	758.67	—	—
P-3D (5)	761.81	761.39	727.6 - 722.6	—	—	—	—	4.52	756.87
P-4	761.95	761.51	758.7 - 753.7	4.42 (4)	757.09	3.30	758.21	4.45	757.06
MW101	771.74	771.41	759.6 - 754.6	13.80	757.61	12.24	759.17	13.16	758.25
MW101D	771.59	770.91	736.5 - 731.5	13.63	757.28	12.01	758.90	13.35	757.56
MW102	770.02	769.88	760.1 - 755.1	11.93	757.95	10.10	759.78	11.44	758.44
MW103	771.99	771.52	761.3 - 756.3	12.12	759.40	10.46	761.06	11.63	759.89
MW104	763.07	762.74	758.4 - 753.4	6.34	756.40	4.65	758.09	6.01	756.73
MW104D	762.92	762.66	732.8 - 727.8	6.18	756.48	4.46	758.20	5.80	756.86
MW105	770.61	770.31	760.1 - 755.1	12.42	757.89	10.62	759.69	11.92	758.39
MW105D	770.61	770.20	731.9 - 726.9	13.28	756.92	11.58	758.62	12.89	757.31
MW201	761.78	761.31	759.8 - 754.8	NI	NI	3.12	758.19	4.28	757.03
MW202D	771.89	771.53	716.1 - 711.1	NI	NI	13.07	758.46	14.35	757.18

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) Groundwater elevations for MW-4 and P-4 were gauged on February 22, 2000.
(5) Top of casing elevations for P3 and P3D were resurveyed as a result of landscaping surface modifications+A140.

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	5/29/01 Depth to Water from TOC (ft.)	5/29/01 Static Groundwater Elevation (ft.)	12/10/01 Depth to Water from TOC (ft.)	12/10/01 Static Groundwater Elevation (ft.)	3/18/02 Depth to Water from TOC (ft.)	3/18/02 Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	7.92	758.59	8.45	758.06	7.52	758.99
MW-2	763.00	762.56	759.6 - 754.6	4.00	758.56	4.69	757.87	3.69	758.87
MW-3	761.43	760.86	758.2 - 753.2	2.99	757.87	3.72	757.14	2.65	758.21
MW-4 (3)	763.08	762.42	759.2 - 754.2	3.64	758.78	4.50	757.92	3.25	759.17
P-1	768.91	768.38	762.4 - 757.4	9.38	759.00	9.82	758.56	8.94	759.44
P-2	766.95	766.35	759.4 - 754.4	7.61	758.74	8.09	758.26	7.38	758.97
P-2D	766.84	766.61	731.7 - 726.7	8.16	758.45	8.72	757.89	7.77	758.84
P-3	761.87	761.35	758.6 - 753.6	2.88	758.47	3.47	757.88	2.55	758.80
P-3D	761.81	761.39	727.6 - 722.6	3.06	758.33	3.66	757.73	2.70	758.69
P-4	761.95	761.51	758.7 - 753.7	2.93	758.58	3.94	757.57	– (5)	– (5)
MW101	771.74	771.41	759.6 - 754.6	12.26	759.15	12.60	758.81	11.75	759.66
MW101D	771.59	770.91	736.5 - 731.5	11.94	758.97	12.35	758.56	11.48	759.43
MW102	770.02	769.88	760.1 - 755.1	10.36	759.52	10.68	759.20	9.53	760.35
MW103	771.99	771.52	761.3 - 756.3	10.76	760.76	11.10	760.42	10.04	761.48
MW104	763.07	762.74	758.4 - 753.4	4.64	758.10	5.27	757.47	4.38	758.36
MW104D	762.92	762.66	732.8 - 727.8	4.34	758.32	4.94	757.72	3.96	758.70
MW105	770.61	770.31	760.1 - 755.1	10.84	759.47	11.17	759.14	10.04	760.27
MW105D	770.61	770.20	731.9 - 726.9	11.51	758.69	12.04	758.16	11.09	759.11
MW201 (4)	761.78	761.31	759.8 - 754.8	3.05	758.26	3.67	757.64	NG	NG
MW202D	771.89	771.53	716.1 - 711.1	12.96	758.57	13.50	758.03	12.55	758.98
MW301	762.93	762.54	757.4 - 752.4	4.02	758.52	4.63	757.91	3.69	758.85
MW302	761.48	761.07	757.4 - 752.4	3.48	757.59	4.14	756.93	3.17	757.90
MW302I	761.51	760.97	741.2 - 736.2	3.41	757.56	4.07	756.90	3.10	757.87
MW302D	761.49	761.19	705.9 - 700.9	2.95	758.24	3.56	757.63	2.59	758.60
MW303	761.25	760.78	758.2 - 753.2	3.18	757.60	3.79	756.99	2.83	757.95
MW304	761.96	761.54	756.4 - 751.4	4.00	757.54	4.67	756.87	3.68	757.86
MW304D	761.96	761.63	697.1 - 692.1	3.42	758.21	4.04	757.59	3.08	758.55
Gauging Station No. 1	—	759.41	—	3.00	756.41	3.05	756.36	1.65	757.76

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) Top of casing and ground level elevations for MW-4 were resurveyed as a result of landscaping surface modifications.
(4) NG = Well not gauged. MW201 was destroyed and not sampled during March 2002 quarterly sampling event.
(5) The groundwater elevation gauged at P4 appeared to anmalous compared to historical elevation data.

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	6/11/02 Depth to Water from TOC (ft.)	6/11/02 Static Groundwater Elevation (ft.)	9/16/02 Depth to Water from TOC (ft.)	9/16/02 Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	8.38	758.13	9.13	757.38
MW-2	763.00	762.56	759.6 - 754.6	4.72	757.84	5.39	757.17
MW-3	761.43	760.86	758.2 - 753.2	3.66	757.20	4.26	756.60
MW-4 (3)	763.08	762.42	759.2 - 754.2	3.73	758.69	3.90	758.52
P-1	768.91	768.38	762.4 - 757.4	9.84	758.54	10.57	757.81
P-2	766.95	766.35	759.4 - 754.4	8.19	758.16	8.69	757.66
P-2D	766.84	766.61	731.7 - 726.7	8.81	757.80	9.65	756.96
P-3	761.87	761.35	758.6 - 753.6	3.38	757.97	3.58	757.77
P-3D	761.81	761.39	727.6 - 722.6	3.75	757.64	4.60	756.79
P-4	761.95	761.51	758.7 - 753.7	3.30	758.21	3.58	757.93
MW101	771.74	771.41	759.6 - 754.6	12.56	758.85	13.28	758.13
MW101D	771.59	770.91	736.5 - 731.5	12.35	758.56	13.11	757.80
MW102	770.02	769.88	760.1 - 755.1	10.64	759.24	11.37	758.51
MW103	771.99	771.52	761.3 - 756.3	10.94	760.58	11.45	760.07
MW104	763.07	762.74	758.4 - 753.4	5.00	757.74	6.02	756.72
MW104D	762.92	762.66	732.8 - 727.8	5.33	757.33	5.85	756.81
MW105	770.61	770.31	760.1 - 755.1	11.12	759.19	11.87	758.44
MW105D	770.61	770.20	731.9 - 726.9	12.10	758.10	12.92	757.28
MW201R	761.40	760.83	759.8 - 754.8	3.51	757.32	4.10	756.73
MW202D	771.89	771.53	716.1 - 711.1	13.58	757.95	13.38	758.15
MW301	762.93	762.54	757.4 - 752.4	4.65	757.89	5.36	757.18
MW302	761.48	761.07	757.4 - 752.4	4.20	756.87	4.75	756.32
MW302I	761.51	760.97	741.2 - 736.2	4.12	756.85	4.65	756.32
MW302D	761.49	761.19	705.9 - 700.9	3.68	757.51	4.53	756.66
MW303	761.25	760.78	758.2 - 753.2	3.79	756.99	4.40	756.38
MW304	761.96	761.54	756.4 - 751.4	4.68	756.86	5.19	756.35
MW304D	761.96	761.63	697.1 - 692.1	4.14	757.49	5.00	756.63
MW401	763.77	766.30	758.8 - 748.8	NI	NI	9.03	757.27
MW401I	763.78	766.27	728.7 - 723.7	NI	NI	9.32	756.95
MW401D	763.81	766.28	697.9 - 692.7	NI	NI	9.33	756.95
MW402	763.38	762.91	759.3 - 754.3	NI	NI	5.97	756.94
MW402D	763.38	762.99	698.0 - 693.0	NI	NI	6.09	756.90
MW403	761.92	761.61	758.8 - 753.8	NI	NI	5.21	756.40
MW403D	762.03	761.72	701.6 - 696.6	NI	NI	5.12	756.60
MW404	763.12	762.67	759.7 - 754.7	NI	NI	6.41	756.26
MW404I	763.21	762.92	728.2 - 723.2	NI	NI	6.33	756.59
MW404D	763.09	762.82	688.0 - 683.0	NI	NI	6.20	756.62
Gauging Station No. 1	—	759.41	—	2.75	756.66	3.20	756.21
Gauging Station No. 2	—	756.69	—	NI	NI	0.49	756.20

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) Top of casing and ground level elevations for MW-4 were resurveyed as a result of landscaping surface modifications.
(4) NG = Well not gauged. MW201 was destroyed and not sampled during March 2002 quarterly sampling event.
(5) NI = Monitoring well not installed at time of gauging event.

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TABLE 2
KALAMAZOO MGP
SURFACE AND SUBSURFACE SOIL ANALYTICAL RESULTS
BTEX AND PAHs
SME Project No. KE31823

					Sample Number Sample ID Depth (feet) Date Collected	SP606 S1 0.5-1 8/5/2002	SP606 S3 4-5 8/5/2002	SP607 S1 0-1 8/5/2002	SP607 S3 4-5 8/5/2002
Constituent	Commercial II Drinking Water Protection Criteria	Groundwater Contact Protection Criteria	GSI Protection Criteria	Commercial II Volatilization to Indoor Air Inhalation Criteria	Commercial II Direct Contact Criteria				
BTEX									
Benzene	100	220,000	4,000	8,400	400,000	ND	ND	ND	80
Toluene	16,000	250,000	2,800	250,000	250,000	ND	ND	100	160
Ethylbenzene	1,500	140,000	360	140,000	140,000	ND	ND	ND	ND
Xylenes	5,600	150,000	700	150,000	150,000	ND	ND	190	250
PAHs									
Naphthalene	100,000	2,100,000	870	470,000	80,000,000	ND	ND	600	660
2-Methylnaphthalene	170,000	5,500,000	ID	ID	40,000,000	ND	ND	430	510
Acenaphthylene	17,000	440,000	ID	3,000,000	8,000,000	ND	ND	ND	ND
Acenaphthene	880,000	970,000	4,400	350,000,000	200,000,000	ND	ND	ND	ND
Fluorene	890,000	890,000	5,300	1,000,000,000	130,000,000	ND	ND	ND	ND
Phenanthrene	160,000	1,100,000	2,300	3,300,000	8,000,000	ND	ND	2,200	2,400
Anthracene	41,000	41,000	ID	1,000,000,000	1,000,000,000	ND	ND	1,100	1,200
Fluoranthene	730,000	730,000	5,500	1,000,000,000	180,000,000	ND	ND	4,300	3,500
Pyrene	480,000	480,000	ID	1,000,000,000	110,000,000	ND	ND	4,200	3,200
Benzo(a)anthracene	NLL	NLL	NLL	NLV	100,000	ND	ND	3,500	3,300
Chrysene	NLL	NLL	NLL	ID	10,000,000	ND	ND	3,300	3,100
Benzo(b)fluoranthene	NLL	NLL	NLL	NLV	100,000	ND	ND	2,500	2,800
Benzo(k)fluoranthene	NLL	NLL	NLL	NLV	1,000,000	ND	ND	2,200	2,900
Benzo(a)pyrene	NLL	NLL	NLL	NLV	10,000	ND	ND	4,000	5,600
Indeno(1,2,3-cd)pyrene	NLL	NLL	NLL	NLV	100,000	ND	ND	3,000	4,700
Dibenzo(a,h)anthracene	NLL	NLL	NLL	ID	10,000	ND	ND	350	430
Benzo(g,h,i)perylene	NLL	NLL	NLL	NLV	9,100,000	ND	ND	4,200	6,400

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) Analytical results were compared to the MDEQ Part 201 Generic Commercial II Cleanup Criteria, dated June 2000.
(3) ND = Analytical result was less than the target detection limit.
(4) NLL = Chemical is not likely to leach under most soil conditions.
(5) NLV= Chemical is not likely to volatilize under most conditions.
(6) ID = Inadequate data to develop criterion.
(7) Shading and bolding indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) The above data was compared to criteria for ambient air inhalation and the data did not exceed these criteria.

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TABLE 3
KALAMAZOO MGP
SURFACE AND SUBSURFACE SOIL ANALYTICAL RESULTS
METALS AND CYANIDE
SME Project No. KE31823
Page 1 of 1

Constituent	Commercial II Drinking Water Protection Criteria	Groundwater Contact Protection Criteria	GSI Protection Criteria	Commercial II Direct Contact Criteria	SP606 S1 0.5-1 8/5/2002	SP606 S3 4-5 8/5/2002	SP607 S1 0-1 8/5/2002	SP607 S3 4-5 8/5/2002
Sample Number / Sample ID / Depth (feet) / Date Collected								
Arsenic	23,000	2,000,000	70,000	61,000	3,800	12,000	11,000	4,300
Barium	1,300,000	1,000,000,000	100,000	250,000,000	16,000	23,000	100,000	34,000
Cadmium	6,000	230,000,000	3,000	4,100,000	ND	84	100	ND
Chromium (total)	30,000 (6)	140,000,000 (6)	18,000 (5)	17,000,000	5,500	14,000	14,000	4,600
Copper	5,800,000	1,000,000,000	120,000	140,000,000	6,800	16,000	22,000	4,000
Lead	700,000	ID	2,500,000	900,000	5,400	10,000	77,000	11,000
Mercury	1,700	47,000	**130**	1,000,000	ND	ND	**230**	ND
Selenium	4,000	78,000,000	**410 (5)**	18,000,000	ND	ND	**1,800**	**1,400**
Silver	13,000	200,000,000	1,000 (5)	17,000,000	ND	ND	ND	ND
Zinc	5,000,000	1,000,000,000	270,000	1,000,000,000	27,000	52,000	130,000	23,000
Cyanide (amenable)	4,000	250,000	**400**	250,000	ND	ND	**3,100**	ND

NOTES:
(1) Concentrations reported in ppb (parts per billion or ug/kg).
(2) Analytical results were compared to the MDEQ Part 201 Generic Commercial II Cleanup Criteria dated June 2000.
(3) ND = Analytical result was less than the target detection limit.
(4) ID = Inadequate data to develop criterion.
(5) Cleanup criteria defaults to Statewide Default Background Concentration.
(6) Hexavalent chromium used for comparison.
(7) Shading and bolding indicates which cleanup criteria are exceeded and the corresponding analytical result.
(8) The above data was compared to criteria for particulate air inhalation and the data did not exceed these criteria.

KR059B031121

TABLE 4
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS - VERTICAL GROUNDWATER SAMPLING
BTEX AND NAPHTHALENE
SME Project No. KE31823

					Sample Location Sample ID Screen Depth (feet) Date Collected	B401 GW 10 - 15 8/8/2002	B401 GW 20 -25 8/9/2002	B401 GW 35 - 40 8/9/2002	B401 GW 50 - 55 8/9/2002
Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria	Water Solubility Criteria				
BTEX									
Benzene	5	**200**	36,000	11,000	1,750,000	**5,100**	**90**	**50**	**220**
Toluene	790	**140**	530,000	530,000	526,000	**42,000**	**39,000**	**4,000**	**12,000**
Ethylbenzene	74	**18**	170,000	170,000	169,000	**23,000**	**19,000**	**22,000**	**5,500**
Xylenes	280	**35**	190,000	190,000	186,000	**78,000**	**86,000**	**27,000**	**12,100**
PAHs									
Naphthalene	1,500	**13**	31,000	31,000	31,000	**34,000**	**29,000**	**23,000**	**15,000**

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) Analytical results were compared to the MDEQ Part 201 Generic Commercial II Cleanup Criterian, dated June, 2000.
(3) ND= Analytical result was less than target detection limit.
(4) Vertical groundwater samples were not analyzed for other PAHs, the Michigan 10 Metals and cyanide.
(5) Shading and bolding indicates which cleanup criteria are exceeded and the corresponding analytical result.
(6) The above data was also compared to criteria for flammability/explosivity and acute inhalation and the data did not exceed these criteria.

TABLE 4
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS - VERTICAL GROUNDWATER SAMPLING
BTEX AND NAPHTHALENE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria	Water Solubility Criteria	B402 GW 20 - 25 8/8/2002	B402 GW 35 - 40 8/8/2002	B402 GW 50 - 55 8/8/2002
Sample Location / Sample ID / Screen Depth (feet) / Date Collected								
BTEX								
Benzene	5	200	36,000	11,000	1,750,000	**1,100**	**11**	**21**
Toluene	790	140	530,000	530,000	526,000	**5,400**	17	110
Ethylbenzene	74	19	170,000	170,000	169,000	**3,200**	**400**	**1,700**
Xylenes	280	35	190,000	190,000	186,000	**10,600**	**610**	**2,800**
PAHs								
Naphthalene	1,500	13	31,000	31,000	31,000	**7,800**	**200**	**2,400**

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) Analytical results were compared to the MDEQ Part 201 Generic Commercial II Cleanup Criterian, dated June, 2000.
(3) ND= Analytical result was less than target detection limit.
(4) Vertical groundwater samples were not analyzed for other PAHs, the Michigan 10 Metals and cyanide.
(5) Shading and bolding indicates which cleanup criteria are exceeded and the corresponding analytical result.
(6) The above data was also compared to criteria for flammability/explosivity and acute inhalation and the data did not exceed these criteria.

TABLE 4
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS - VERTICAL GROUNDWATER SAMPLING
BTEX AND NAPHTHALENE
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria	Water Solubility Criteria				
Sample Location Sample ID Screen Depth (feet) Date Collected						B403 GW 5 - 8.5 8/6/2002	B403 GW 20 - 25 8/6/2002	B403 GW 35 - 40 8/6/2002	B403 GW 50 - 55 8/6/2002
BTEX									
Benzene	5	200	36,000	11,000	1,750,000	**5,000**	**19**	**140**	**7**
Toluene	790	140	530,000	530,000	526,000	**1200**	4	27	ND
Ethylbenzene	74	18	170,000	170,000	169,000	**7,500**	**90**	**570**	**33**
Xylenes	280	35	190,000	190,000	186,000	**13,600**	**170**	**790**	**62**
PAHs									
Naphthalene	1,500	13	31,000	31,000	31,000	**5,500**	**840**	**100**	ND

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) Analytical results were compared to the MDEQ Part 201 Generic Commercial II Cleanup Criterian, dated June, 2000.
(3) ND= Analytical result was less than target detection limit.
(4) Vertical groundwater samples were not analyzed for other PAHs, the Michigan 10 Metals and cyanide.
(5) Shading and bolding indicates which cleanup criteria are exceeded and the corresponding analytical result.
(6) The above data was also compared to criteria for flammability/explosivity and acute inhalation and the data did not exceed these criteria.

TABLE 4
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS - VERTICAL GROUNDWATER SAMPLING
BTEX AND NAPHTHALENE
SME Project No. KE31823

					Sample Location Sample ID Screen Depth (feet) Date Collected	B404 GW 6 - 10 8/7/2002	B404 GW 20 - 25 8/7/2002	B404 GW 35 - 40 8/7/2002	B404 GW 50 - 55 8/7/2002
Constituent	Commercial II Drinking Water Criteria	GSI Criteria	Commercial II Groundwater Volatilization to Indoor Air Inhalation Criteria	Commercial II Groundwater Contact Criteria	Water Solubility Criteria				
BTEX									
Benzene	5	**200**	36,000	**11,000**	1,750,000	ND	**290**	**20,000**	**3,100**
Toluene	790	140	530,000	530,000	526,000	ND	ND	10	ND
Ethylbenzene	74	**18**	170,000	170,000	169,000	ND	3	**56**	**22**
Xylenes	280	**35**	190,000	190,000	186,000	ND	5	**82**	**36**
PAHs									
Naphthalene	**1,500**	**13**	31,000	31,000	31,000	ND	ND	**4,000**	**144**

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb).
(2) Analytical results were compared to the MDEQ Part 201 Generic Commercial II Cleanup Criterian, dated June, 2000.
(3) ND= Analytical result was less than target detection limit.
(4) Vertical groundwater samples were not analyzed for other PAHs, the Michigan 10 Metals and cyanide.
(5) Shading and bolding indicates which cleanup criteria are exceeded and the corresponding analytical result.
(6) The above data was also compared to criteria for flammability/explosivity and acute inhalation and the data did not exceed these criteria.

TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Contaminant of Drinking Water Criteria	Sample Location Screen Depth (feet) Date Collected / DSI Criteria	MW-1 7-12 2/8/1999	MW-1 7-12 6/22/1999	MW-1 7-12 2/15/2000	MW-1 7-12 5/22/2000	MW-1 7-12 11/7/2000	MW-1 7-12 5/31/2001	MW-1 7-12 12/12/2001	MW-1 7-12 3/15/2002	MW-1 7-12 6/13/2002	MW-1 7-12 9/23/2002
BTEX												
Benzene	[illegible]	200	[illegible]	[illegible]	[illegible]	[illegible]	ND	ND	ND	ND	ND	4
Toluene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	1,900	420
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5,900	3,500
Xylenes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3,300	1,900
PAHs												
Naphthalene	1,500	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	33	800	1,000
2-Methylnaphthalene	750	ID	21	7	ND	ND	ND	17	20	5	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
INORGANICS												
Arsenic	50	150	ND	8	13	ND	6	7	11	13	14	18
Barium	2,000	1,200	ND	190	130	160	220	290	110	200	260	320
Chromium	100	11**	ND	ND	ND	ND	7	ND	6	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS												
pH (ph Units)	NL	NL	NE	NE	7.26	7.1	–	7.11	7.31	7.28	7.12	7.18
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,920	1,960	3,590	1,482	1,208	2,210	1,873	NE
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.65	0.35	0.38	0.4	0.3	0.48	0.32	0.53
Iron	300	NA	NE	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11,000	15,000	13,000
Nitrate	10,000	NA	NE	NE	ND	160	ND	270	ND	310	ND	ND
Sulfate	250,000	NA	NE	NE	33,000	110,000	61,000	73,000	33,000	36,000	22,000	30,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	470,000	420,000	400,000	470,000	390,000	370,000	420,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	Sample Location Screen Depth (feet) Date Collected / GSI Criteria	MW-2 3-8 2/8/1999	MW-2 3-8 6/22/1999	MW-2 3-8 2/15/2000	MW-2 3-8 5/22/2000	MW-2 3-8 11/6/2000	MW-2 3-8 5/31/2001	MW-2 3-8 12/11/2001	MW-2 3-8 3/13/2002	MW-2 3-8 6/12/2002	MW-2 3-8 9/18/2002
BTEX												
Benzene	5	200	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	790	140	4	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	280	35	7	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs												
Naphthalene	1,500	13	6	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
INORGANICS												
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	98	0.002	ND	ND	ND	ND	1.6	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	100	30	60	46	63	57	56	45
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS												
pH (pH units)	NL	NL	NE	NE	5.5	6.59	6.50	6.43	6.19	6.51	6.45	6.46
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	3,050	860	2,110	1,267	939	1,890	1,882	1,805
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.84	0.51	0.40	0.52	0.37	0.48	0.46	0.38
Iron	300	NA	NE	NE	21,000	330	6,300	4,000	6,700	4,300	3,900	7,300
Nitrate	10,000	NA	NE	NE	140	1,100	600	850	100	490	ND	310
Sulfate	250,000	NA	NE	NE	1,500,000	410,000	920,000	510,000	740,000	540,000	610,000	750,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	26,000	130,000	91,000	110,000	82,000	130,000	160,000	140,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW-3 3-8 2/8/1999	MW-3 3-8 6/22/1999	MW-3 3-8 2/15/2000	MW-3 3-8 5/24/2000	MW-3 3-8 11/6/2000	MW-3 3-8 5/30/2001	MW-3 3-8 12/11/2001	MW-3 3-8 3/12/2002	MW-3 3-8 6/11/2002	MW-3 3-8 9/17/2002
Constituent	Commercial II Drinking Water Criteria	CSI Criteria										
BTEX												
Benzene	5	200	3	ND	ND	ND	ND	290	ND	ND	NR	ND
Toluene	790	140	1	ND	ND	ND	ND	13	ND	ND	NR	ND
Ethylbenzene	74	110	1	ND	ND	ND	ND	330	ND	ND	NR	ND
Xylenes	280	810	3	ND	ND	ND	ND	810	ND	ND	NR	ND
PAHs												
Naphthalene	1,500	13	ND	ND	ND	ND	ND	61	ND	ND	NR	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
INORGANICS												
Arsenic	50	150	13	8	8	ND	7	ND	ND	ND	ND	6
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	150
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	13	ND	ND	17
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS												
pH (pH units)	NL	NL	NE	NE	7.27	7.7	7.22	7.71	7.43	7.86	7.61	7.34
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,290	1,380	860	473	362	167	436	911
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.53	0.7	0.48	0.85	0.63	0.72	0.66	0.51
Iron	300	NA	NE	NE	110	ND	410	64	160	22	ND	170
Nitrate	10,000	NA	NE	NE	ND	ND	ND	1,300	ND	590	110	ND
Sulfate	250,000	NA	NE	NE	33,000	26,000	25,000	17,000	8,900	5,700	10,000	19,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	260,000	230,000	290,000	190,000	210,000	110,000	180,000	300,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW-4 3-8 2/8/1999	MW-4 3-8 6/22/1999	MW-4 3-8 2/22/2000	MW-4 3-8 5/24/2000	MW-4 3-8 11/6/2000	MW-4 3-8 5/30/2001	MW-4 3-8 12/11/2001	MW-4 3-8 3/13/2002	MW-4 3-8 6/11/2002	MW-4 3-8 9/17/2002
BTEX												
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Xylenes	280	35	2	ND	ND	ND	ND	ND	ND	ND	NR	3
PAHs*												
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
INORGANICS*												
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	ND	6	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	15	ND	40	17	14
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS												
pH (pH units)	NL	NL	NE	NE	NE	7.09	7.02	7.04	7.02	7.16	7.15	7.1
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	850	1,370	800	612	720	889	1,030
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.39	0.67	0.45	0.43	0.49	0.95	0.64
Iron	300	NA	NE	NE	8,700	5,900	8,900	20	7,600	91	330	970
Nitrate	10,000	NA	NE	NE	ND	230	ND	2,000	ND	1,200	290	ND
Sulfate	250,000	NA	NE	NE	6,900	22,000	27,000	40,000	20,000	29,000	36,000	44,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	360,000	410,000	420,000	360,000	380,000	260,000	310,000	330,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Generic MCL & Drinking Water Criteria	Sample Location / Screen Depth (feet) / Date Collected / GSI Criteria	P-1 7-12 See (13)	P-1 7-12 6/22/1999	P-1 7-12 5/22/2000	P-1 7-12 See (14)	P-1 7-12 12/13/2001	P-1 7-12 3/15/2002	P-1 7-12 6/11/2002	P-1 7-12 9/17/2002
BTEX										
Benzene	5	200	ND	ND	ND	ND	ND	ND	NS	NS
Toluene	790	140	ND	ND	ND	ND	ND	ND	NS	NS
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	NS	NS
Xylenes	280	35	ND	ND	ND	ND	ND	ND	NS	NS
PAHs										
Naphthalene	1,500	13	ND	NE	ND	ND	ND	ND	NS	NS
2-Methylnaphthalene	750	ID	ND	NE	ND	ND	ND	ND	NS	NS
Acenaphthylene	150	ID	ND	NE	ND	ND	ND	ND	NS	NS
Acenaphthene	3,800	19	ND	NE	ND	ND	ND	ND	NS	NS
Fluorene	2,000	12	ND	NE	ND	ND	ND	ND	NS	NS
Phenanthrene	150	5	ND	NE	ND	ND	ND	ND	NS	NS
Anthracene	43	ID	ND	NE	ND	ND	ND	ND	NS	NS
Fluoranthene	210	1.6	ND	NE	ND	ND	ND	ND	NS	NS
Pyrene	140	ID	ND	NE	ND	ND	ND	ND	NS	NS
INORGANICS										
Arsenic	50	150	ND	NE	ND	ND	NE	NE	NS	NS
Barium	2,000	1,200	ND	NE	100	140	NE	NE	NS	NS
Chromium (Total)	100	11 **	ND	NE	8	6	NE	NE	NS	NS
Selenium	50	5	6 A	NE	ND	ND	NE	NE	NS	NS
Zinc	5,000	270	ND	NE	ND	ND	NE	NE	NS	NS
Cyanide (available)	200	20	NE	NE	ND	ND	NE	NE	NS	NS
Cyanide (amenable)	200	20	ND	NE	NE	NE	NE	NE	NS	NS
Cyanide (free)	200	20	NE	NE	ND	ND	NE	NE	NS	NS
NATURAL ATTENUATION PARAMETERS										
pH (pH units)	NL	NL	NE	NE	NE	NE	NE	NE	NS	NS
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	NE	NE	NE	NS	NS
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	NE	NE	NE	NS	NS
Iron	300	NA	NE	NE	380	ND	NE	NE	NS	NS
Nitrate	10,000	NA	NE	NE	7,200	5,400	NE	NE	NS	NS
Sulfate	250,000	NA	NE	NE	84,000	57,000	NE	NE	NS	NS
Alkalinity (as CaCO3)	NL	NL	NE	NE	320,000	300,000	NE	NE	NS	NS

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial & Drinking Water Criteria	Sample Location Screen Depth (feet) Date Collected / GSI Criteria	P-2 8-13 2/8/1999	P-2 8-13 6/23/1999	P-2 8-13 2/16/2000	P-2 8-13 5/23/2000	P-2 8-13 11/8/2000	P-2 8-13 6/4/2001	P-2 8-13 12/12/2001	P-2 8-13 3/14/2002	P-2 8-13 6/14/2002	P-2 8-13 9/20/2002
BTEX												
Benzene	5	200	180	140	410	150	290	330	330	ND	NR	110
Toluene	790	140	280	100	86	40	54	83	160	ND	NR	19
Ethylbenzene	700	18	300	190	260	50	300	160	570	ND	NR	97
Xylenes	9,600	155	1,300	610	690	450	550	670	1,900	ND	NR	164
PAHs												
Naphthalene	1,500	12	2,900	200	410	ND	880	790	480	ND	NR	280
2-Methylnaphthalene	750	ID	59	15	21	ND	16	27	35	ND	NR	11
Acenaphthylene	150	ID	ND	8	5	ND	ND	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	85	38	30	13	50	71	34	ND	NR	47
Fluorene	2,000	12	31	23	18	6	32	40	17	ND	NR	25
Phenanthrene	150	3	46	28	5	ND	60	81	32	ND	NR	44
Anthracene	43	ID	ND	8	5	ND	8	11	6	ND	NR	ND
Fluoranthene	210	13	ND	16	7	11	13	17	5	ND	NR	6
Pyrene	140	ID	ND	5	ND	10	15	10	5	ND	NR	9
INORGANICS												
Arsenic	50	150	8	8	9	8	13	11	5	ND	10	12
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	5	1.2	ND	ND	ND	ND	4.5	ND	ND	ND	ND	ND
Chromium (Total)	100	11**	ND	ND	ND	5	13	ND	ND	ND	ND	ND
Lead	4	29	ND	ND	ND	ND	6	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	81	ND	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS												
pH (pH units)	NL	NL	NE	NE	7.09	7.61	–	6.98	7.15	7.25	6.55	7.13
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	920	1,570	1,660	628	747	1,460	1,402	1,499
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.82	0.43	0.91	0.85	0.43	0.4	0.43	0.33
Iron	300	NA	NE	NE	440	12,000	940	11,000	790	2,700	590	630
Nitrate	10,000	NA	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	NE	32,000	47,000	14,000	12,000	3,200	79,000	16,000	46,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	530,000	360,000	550,000	340,000	450,000	240,000	390,000	450,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	Sample Location / Screen Depth (feet) / Date Collected / CSX Criteria	P-2D 35-40 6/23/1999	P-2D 35-40 2/16/2000	P-2D 35-40 5/23/2000	P-2D 35-40 11/8/2000	P-2D 35-40 6/4/2001	P-2D 35-40 12/12/2001	P-2D 35-40 3/14/2002	P-2D 35-40 6/14/2002	P-2D 35-40 9/20/2002
BTEX											
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	NR	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND	NR	ND
PAHs											
Naphthalene	1,500	13	ND	ND	ND	6	ND	ND	ND	NR	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND
Phenanthrene	150	5	5	ND	ND	ND	ND	ND	ND	NR	ND
Anthracene	43	ID	6	ND	ND	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
INORGANICS											
Arsenic	50	150	ND	8	5	6	9	7	8	6	7
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	110	120	110
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	21	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS											
pH (pH units)	NL	NL	NE	7.34	7.02	–	7.01	7.36	7.33	7.13	7.34
Specific Conductivity (umhos/cm)	NL	NL	NE	990	1,170	2,100	858	928	1,610	1,645	1,802
Dissolved Oxygen (ppm)	NA	7	NE	3.04	2.64	1.62	2.01	0.56	0.38	0.32	0.39
Iron	300	NA	NE	3,400	3,100	3,200	3,400	3,000	4,100	3,400	3,400
Nitrate	10,000	NA	NE	ND	ND	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	86,000	93,000	110,000	100,000	110,000	100,000	110,000	93,000
Alkalinity (as CaCO3)	NL	NL	NE	300,000	300,000	310,000	300,000	300,000	310,000	310,000	300,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	P-3 3-8 2/8/1999	P-3 3-8 6/22/1999	P-3 3-8 2/15/2000	P-3 3-8 5/22/2000	P-3 3-8 11/6/2000	P-3 3-8 5/30/2001	P-3 3-8 12/11/2001	P-3 3-8 3/13/2002	P-3 3-8 6/12/2002	P-3 3-8 9/18/2002
Constituent	Commercial II Drinking Water Criteria	GSI Criteria										
BTEX												
Benzene	5	200	3	190	39	ND	25	ND	ND	ND	NR	2
Toluene	790	140	5	21	5	ND	2	ND	ND	ND	NR	1
Ethylbenzene	700	110	13	330	260	ND	67	ND	ND	ND	NR	6
Xylenes	200	35	31	298	129	ND	65	ND	ND	ND	NR	10
PAHs												
Naphthalene	1,500	13	226	25	180	ND	71	ND	ND	17	NR	13
2-Methylnaphthalene	750	ID	ND	5	10	ND	ND	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	5	ND	ND	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	9	14	ND	ND	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	10	12	ND	ND	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	10	6	ND	ND	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	5	6	ND	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	5	ND	ND	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
INORGANICS												
Arsenic	50	150	ND	ND	6	ND	ND	ND	ND	ND	14	ND
Barium	2,000	1,200	ND	150	290	ND	190	200	130	150	150	180
Cadmium	5	4	ND	ND	ND	0.5	4.7	0.8	0.9	0.7	ND	0.6
Chromium (total)	100	11	ND	ND	ND	ND	12	ND	ND	ND	ND	ND
Lead	4	29	ND	ND	ND	ND	4	ND	ND	ND	ND	ND
Selenium	50	5	20	ND	ND	77	11	ND	7	ND	7	ND
Zinc	5,000	270	ND	ND	ND	190	260	300	180	310	14	170
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	50	ND	ND	29	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS												
pH (pH units)	NL	NL	NE	NE	7.26	7.18	7.05	7.25	7.34	7.20	7.22	7.39
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	4,320	1,790	4,770	1,692	1,568	2,810	2,310	2,430
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.95	0.61	1.98	1.1	0.57	0.66	0.35	0.71
Iron	300	NA	NE	NE	3,400	210	1,000	300	300	3,600	7,500	370
Nitrate	10,000	NA	NE	NE	ND	3,200	600	500	270	310	ND	490
Sulfate	250,000	NA	NE	NE	35,000	76,000	80,000	130,000	320,000	69,000	290,000	620,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	400,000	440,000	310,000	270,000	310,000	280,000	200,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	Sample Location Screen Depth (feet) Date Collected / GSI Criteria	P-3D 35-40 5/22/2000	P-3D 35-40 11/6/2000	P-3D 35-40 5/31/2001	P-3D 35-40 12/11/2001	P-3D 35-40 3/13/2002	P-3D 35-40 6/13/2002	P-3D 35-40 9/18/2002
BTEX									
Benzene	5	200	110	110	100	100	80	NR	32
Toluene	790	140	2	2	2	ND	6	NR	1
Ethylbenzene	74	18	1	2	2	ND	ND	NR	ND
Xylenes	280	35	10	9	7	ND	ND	NR	4
PAHs									
Naphthalene	1,500	19	32	28	50	6	5	NR	22
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	NR	ND
INORGANICS									
Arsenic	50	150	27	30	35	31	33	35	36
Barium	2,000	1,200	190	200	200	200	200	210	210
Mercury	2	0.0013	ND	ND	ND	0.2	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	30	ND	ND	10	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	8.26	7.36	7.34	7.39	7.33	7.56	7.51
Specific Conductivity (umhos/cm)	NL	NL	1,630	1,740	1,021	850	1,500	1,233	1,459
Dissolved Oxygen (ppm)	NA	7	1.5	0.40	0.73	0.42	0.39	0.32	0.31
Iron	300	NA	6,000	6,300	6,100	5,600	6,100	5,600	5,800
Nitrate	10,000	NA	ND	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	ND	ND	ND	ND	ND	ND	1,000
Alkalinity (as CaCO3)	NL	NL	320,000	320,000	330,000	350,000	350,000	360,000	340,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	Sample Location / Screen Depth (feet) / Date Collected	P-4 3-8 2/8/1999	P-4 3-8 6/22/1999	P-4 3-8 2/22/00	P-4 3-8 5/24/2000	P-4 3-8 11/6/2000	P-4 3-8 5/30/2001	P-4 3-8 12/11/2001	P-4 3-8 3/12/2002	P-4 3-8 6/11/2002	P-4 3-8 9/17/2002
BTEX												
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Ethylbenzene	74	18	ND	ND	1	ND	ND	ND	ND	ND	NR	ND
Xylenes	280	35	ND	ND	7	ND	ND	ND	ND	ND	NR	ND
PAHs												
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND
INORGANICS												
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	ND	9	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	12	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS												
pH (pH units)	NL	NL	NE	NE	NE	7.59	7.11	7.09	6.93	7.46	7.16	7.12
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	1,770	1,990	1,619	1,065	755	1,468	1,175
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.15	0.28	0.45	0.53	0.89	0.31	0.47
Iron	300	NA	NE	NE	4,800	ND	3,600	24	ND	28	ND	39
Nitrate	10,000	NA	NE	NE	240	430	ND	490	280	120	ND	ND
Sulfate	250,000	NA	NE	NE	21,000	37,000	22,000	58,000	16,000	15,000	22,000	14,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	340,000	390,000	440,000	350,000	350,000	320,000	400,000	360,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial IL Drinking Water Criteria	Sample Location Screen Depth (feet) Date Collected / GSI Criteria	MW101 12-17 6/23/1999	MW101 12-17 2/16/2000	MW101 12-17 5/23/2000	MW101 12-17 11/7/2000	MW101 12-17 5/31/2001	MW101 12-17 12/13/2001	MW101 12-17 3/15/2002	MW101 12-17 6/14/2002	MW101 12-17 9/23/2002
BTEX											
Benzene	5	200	62	89	39	110	63	ND	ND	NR	59
Toluene	700	140	2,100	8,400	4,300	5,900	4,700	2,200	ND	NR	16,000
Ethylbenzene	74	18	760	1,400	7,590	1,800	2,700	1,100	ND	NR	2,900
Xylenes	280	35	1,200	8,000	8,800	14,000	20,700	2,600	ND	NR	13,100
PAHs											
Naphthalene	1,400	13	1,800	1,100	680	2,190	2,700	770	ND	NR	3,100
2-Methylnaphthalene	750	ID	55	31	35	150	110	39	ND	NR	56
Acenaphthylene	150	ID	75	33	ND	88	30	20	ND	NR	31
Acenaphthene	3,800	19	ND	6	21	ND	51	ND	ND	NR	ND
Fluorene	2,000	12	25	11	ND	ND	ND	ND	ND	NR	ND
Phenanthrene	150	5	21	7	ND	ND	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	7	ND	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.8	ND	ND	ND	ND	11	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	17	ND	ND	NR	ND
INORGANICS											
Arsenic	50	150	7	9	6	6	5	5	ND	ND	6
Barium	2,000	1,200	760	230	230	190	230	190	ND	200	160
Cadmium	5	4	ND	ND	0.5	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	7	ND	ND	ND	ND	ND
Selenium	50	75	ND	ND	15	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS											
pH (pH units)	NL	NL	NE	7.34	7.44	--	7.28	7.32	7.59	7.4	7.35
Specific Conductivity (umhos/cm)	NL	NL	NE	1,420	3,040	2,350	2,890	1,483	2,230	2,750	1,876
Dissolved Oxygen (ppm)	NCA	7	NE	0.58	0.62	0.42	0.36	0.33	0.4	0.96	0.48
Iron	300	NA	NE	5,900	1,700	1,700	1,400	2,100	37	250	2,200
Nitrate	10,000	NA	NE	310	4,500	710	970	900	1,900	1,200	460
Sulfate	250,000	NA	NE	63,000	70,000	44,000	96,000	44,000	51,000	55,000	28,000
Alkalinity (as CaCO3)	NL	NL	NE	470,000	490,000	490,000	380,000	460,000	410,000	480,000	390,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial/ Drinking Water Criteria	GSI Criteria	MW101D 35-40 6/23/1999	MW101D 35-40 2/16/2000	MW101D 35-40 5/23/2000	MW101D 35-40 11/7/2000	MW101D 35-40 6/1/2001	MW101D 35-40 12/13/2001	MW101D 35-40 3/14/2002	MW101D 35-40 6/17/2002	MW101D 35-40 9/23/2002
BTEX											
Benzene	5	200	2	ND	ND	ND	ND	ND	ND	NR	ND
Toluene	790	140	12	5	ND	15	ND	ND	ND	NR	1
Ethylbenzene	74	187	170	1,450	500	410	500	200	600	NR	560
Xylenes	280	35	872	4,800	4,200	4,700	6,800	5,000	7,300	NR	5,000
PAHs											
Naphthalene	1,500	113	3,100	4,500	4,600	5,100	9,800	6,800	5,100	NR	8,100
2-Methylnaphthalene	750	ID	210	120	400	530	710	380	270	NR	500
Acenaphthylene	150	ID	150	150	250	370	880	120	160	NR	300
Acenaphthene	3,800	19	65	5	ND	ND	ND	ND	ND	NR	26
Fluorene	2,000	12	25	55	20	37	ND	ND	60	NR	44
Phenanthrene	150	336	ND	5	ND	ND	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	5	ND	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
INORGANICS											
Arsenic	50	150	16	23	23	23	27	25	25	23	25
Barium	2,000	1,200	420	450	430	390	330	280	330	340	370
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	1.4	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS											
pH (pH units)	NL	NL	NE	7.34	8.04	--	7.42	7.40	7.63	7.50	7.60
Specific Conductivity (umhos/cm)	NL	NL	NE	1,970	2,510	3,090	1,217	1,256	1,780	1,522	2,100
Dissolved Oxygen (ppm)	NA	7	NE	2.59	1.27	0.65	0.68	0.31	0.33	0.41	0.31
Iron	300	NA	NE	3,300	3,000	2,300	2,600	1,800	2,300	2,100	2,300
Nitrate	10,000	NA	NE	ND	ND	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	15,000	15,000	15,000	11,000	18,000	10,000	11,000	20,000
Alkalinity (as CaCO3)	NL	NL	NE	330,000	410,000	340,000	360,000	350,000	360,000	360,000	360,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial/Industrial Drinking Water Criteria	Sample Location Screen Depth (feet) Date Collected / GSI Criteria	MW102 10-15 6/22/1999	MW102 10-15 2/16/2000	MW102 10-15 5/22/2000	MW102 10-15 11/7/2000	MW102 10-15 6/4/2001	MW102 10-15 12/13/2001	MW102 10-15 3/15/2002	MW102 10-15 6/14/2002	MW102 10-15 9/19/2002
BTEX											
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	NR	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND	NR	ND
PAHs											
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	NR	ND
2-Methylnaphthalene	750	ID	ND	ND	9	ND	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
INORGANICS											
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	5	ND	ND	ND	ND	ND
Selenium	50	1	ND	6	ND	9	ND	8	ND	7	7
Zinc	5,000	270	ND	250	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS											
pH (pH units)	NL	NL	NE	7.46	7.76	7.10	7.11	7.32	7.63	7.54	7.01
Specific Conductivity (umhos/cm)	NL	NL	NE	590	1,590	1,090	649	555	590	671	647
Dissolved Oxygen (ppm)	NA	NA	NE	3.67	7.53	3.97	4.4	1.33	1.03	0.84	2.36
Iron	300	NA	NE	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate	10,000	NA	NE	3,100	1,300	2,100	950	1,100	460	720	670
Sulfate	250,000	NA	NE	54,000	38,000	68,000	60,000	48,000	30,000	41,000	38,000
Alkalinity (as CaCO3)	NL	NL	NE	240,000	280,000	290,000	330,000	320,000	340,000	350,000	290,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	Sample Location Screen Depth (feet) Date Collected / GSI Criteria	MW103 11-16 6/22/1999	MW103 11-16 2/16/2000	MW103 11-16 5/22/2000	MW103 11-16 11/7/2000	MW103 11-16 5/31/2001	MW103 11-16 12/13/2001	MW103 11-16 3/15/2002	MW103 11-16 6/17/2002	MW103 11-16 9/20/2002
BTEX											
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND
Ethylbenzene	74	18	2	ND	ND	ND	ND	ND	ND	NR	ND
Xylenes	280	35	2	ND	ND	ND	ND	ND	ND	NR	ND
PAHs											
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	NR	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
INORGANICS											
Arsenic	50	150	ND	5	11	14	ND	11	ND	ND	7
Barium	2,000	1,200	ND	ND	160	ND	480	ND	390	600	240
Chromium (total)	100	11**	ND	ND	ND	9	ND	7	ND	ND	ND
Selenium	50	[illegible]	ND	ND	38	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	0.6	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS											
pH (pH units)	NL	NL	NE	7.84	8.65	7.64	7.37	7.79	7.77	7.35	7.64
Specific Conductivity (umhos/cm)	NL	NL	NE	2,370	6,370	2,390	4,680	1,608	1,389	9,370	6,020
Dissolved Oxygen (ppm)	NA	7	NE	1.38	1.5	1.85	1.9	1.12	5.33	3.11	1.01
Iron	300	NA	NE	ND	370	ND	100	ND	210	84	250
Nitrate	10,000	NA	NE	410	2,500	1,400	3,300	720	2,100	2,400	640
Sulfate	250,000	NA	NE	19,000	58,000	27,000	150,000	15,000	110,000	130,000	35,000
Alkalinity (as CaCO3)	NL	NL	NE	430,000	410,000	490,000	230,000	480,000	330,000	290,000	450,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW104 5-10 6/23/1999	MW104 5-10 2/15/2000	MW104 5-10 5/24/2000	MW104 5-10 11/6/2000	MW104 5-10 5/31/2001	MW104 5-10 12/11/2001	MW104 5-10 3/13/2002	MW104 5-10 6/13/2002	MW104 5-10 9/19/2002
Constituent	Commercial II Drinking Water Criteria	GSI Criteria									
BTEX											
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	NR	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND	NR	ND
PAHs											
Naphthalene	1,500	13	ND	ND	ND	10	ND	ND	ND	NR	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
INORGANICS											
Arsenic	50	150	5	ND	ND	ND	ND	ND	ND	ND	6
Barium	2,000	1,200	340	190	420	220	310	140	150	400	270
Cadmium	5	4	ND	ND	0.8	ND	ND	ND	ND	ND	0.8
Chromium (total)	100	11**	ND	ND	ND	10.0	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	230	ND	240	100	210	150	64	88	120	210
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS											
pH (pH units)	NL	NL	NE	7.37	6.88	7.42	7.20	7.29	7.37	7.26	7.33
Specific Conductivity (umhos/cm)	NL	NL	NE	3,570	4,600	4,180	2,580	1,373	1,790	4,240	4,060
Dissolved Oxygen (ppm)	NA	7	NE	0.49	0.54	0.39	0.39	0.43	0.93	0.39	0.48
Iron	300	NA	NE	5,700	4,700	5,000	6,200	5,200	5,400	4,400	3,100
Nitrate	10,000	NA	NE	340	220	ND	ND	ND	460	ND	ND
Sulfate	250,000	NA	NE	18,000	43,000	16,000	45,000	29,000	48,000	36,000	25,000
Alkalinity (as CaCO3)	NL	NL	NE	490,000	440,000	590,000	380,000	450,000	320,000	390,000	550,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW104D 30-35 6/23/1999	MW104D 30-35 2/15/2000	MW104D 30-35 5/24/2000	MW104D 30-35 11/6/2000	MW104D 30-35 5/31/2001	MW104D 30-35 12/12/2001	MW104D 30-35 3/14/2002	MW104D 30-35 6/13/2002	MW104D 30-35 9/19/2002
BTEX											
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND
Toluene	790	140	1	ND	ND	ND	ND	ND	ND	NR	ND
Ethylbenzene	74	18	1	ND	ND	ND	ND	ND	ND	NR	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND	NR	ND
PAH											
Naphthalene	1,500	13	16	ND	ND	ND	ND	ND	ND	NR	9
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
INORGANICS											
Arsenic	50	150	16	28	27	25	25	22	24	23	25
Barium	2,000	1,200	230	260	250	270	240	230	270	300	270
Chromium (total)	100	11**	ND	ND	ND	5	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	28	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS											
pH (pH units)	NL	NL	NE	7.34	7.44	7.52	7.34	7.34	7.35	7.3	7.48
Specific Conductivity (umhos/cm)	NL	NL	NE	1,540	1,090	1,660	742	721	1,100	1,168	1,383
Dissolved Oxygen (ppm)	NA	7	NE	3.5	2.42	1.18	1.52	0.46	0.52	0.30	0.25
Iron	300	NA	NE	3,800	4,700	5,900	5,300	5,300	4,300	5,800	6,500
Nitrate	10,000	NA	NE	ND	ND	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	77,000	71,000	76,000	71,000	70,000	71,000	76,000	76,000
Alkalinity (as CaCO3)	NL	NL	NE	280,000	320,000	320,000	310,000	320,000	310,000	310,000	300,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	Sample Location Screen Depth (feet) Date Collected / City Criteria	MW105 11-16 6/24/1999	MW105 11-16 2/16/2000	MW105 11-16 5/22/2000	MW105 11-16 11/7/2000	MW105 11-16 6/1/2001	MW105 11-16 12/14/2001	MW105 11-16 3/14/2002	MW105 11-16 6/14/2002	MW105 11-16 9/19/2002
BTEX											
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	NR	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND	NR	ND
PAHs											
Naphthalene	1,500	13	6	ND	ND	ND	ND	ND	ND	NR	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
INORGANICS											
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	7	ND	5	ND	ND	ND
Selenium	50	[illegible]	ND	ND	ND	[illegible]	ND	[illegible]	ND	[illegible]	10
Silver	98	[illegible]	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND
Zinc	5,000	[illegible]	ND	ND	160	ND	ND	10	[illegible]	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS											
pH (pH units)	NL	NL	NE	7.50	8.43	7.24	7.48	7.44	7.44	7.68	7.66
Specific Conductivity (umhos/cm)	NL	NL	NE	730	1,690	1,460	878	662	600	759	890
Dissolved Oxygen (ppm)	NA	7	NE	2.76	5.84	2.10	3.25	1.07	0.94	0.78	1.19
Iron	300	NA	NE	ND	150	ND	ND	ND	ND	ND	ND
Nitrate	10,000	NA	NE	5,300	1,400	2,900	1,100	940	220	790	830
Sulfate	250,000	NA	NE	90,000	51,000	80,000	50,000	50,000	23,000	47,000	64,000
Alkalinity (as CaCO3)	NL	NL	NE	270,000	370,000	350,000	410,000	420,000	400,000	430,000	370,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
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Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW105D 39-44 6/24/1999	MW105D 39-44 2/16/2000	MW105D 39-44 5/22/2000	MW105D 39-44 11/7/2000	MW105D 39-44 6/1/2001	MW105D 39-44 12/14/2001	MW105D 39-44 3/14/2002	MW105D 39-44 6/17/2002	MW105D 39-44 9/20/2002
BTEX											
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	NR	ND
Xylenes	280	35	2	ND	ND	ND	ND	ND	ND	NR	ND
PAHs											
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	NR	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND
INORGANICS											
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	150	150	150	180	160	150	170	160	190
Lead	4	29	ND	ND	ND	ND	ND	ND	ND	ND	4
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	210	200	230	180	110	680	830
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS											
pH (pH units)	NL	NL	NE	7.37	8.15	7.15	7.45	7.34	7.4	7.52	7.32
Specific Conductivity (umhos/cm)	NL	NL	NE	1,030	1,920	1,830	878	871	1,330	1,138	1,652
Dissolved Oxygen (ppm)	NA	7	NE	2.21	2.46	1.72	2.25	0.36	0.37	0.94	0.39
Iron	300	NA	NE	ND	340	200	52	ND	110	ND	99
Nitrate	10,000	NA	NE	540	640	400	730	770	420	1,000	170
Sulfate	250,000	NA	NE	73,000	76,000	86,000	76,000	74,000	76,000	69,000	69,000
Alkalinity (as CaCO3)	NL	NL	NE	300,000	380,000	300,000	300,000	310,000	310,000	310,000	300,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
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Constituent	Commercial Drinking Water Criteria	GSI Criteria	MW201 3-8 5/23/2000	MW201 3-8 11/6/2000	MW201 3-8 5/29/2001	MW201 3-8 12/10/2001	MW201R 3-8 6/13/2002	MW201R 3-8 9/18/2002
BTEX								
Benzene	5	200	150	20	ND	170	NR	110
Toluene	790	140	5	ND	ND	ND	NR	4
Ethylbenzene	74	16	180	16	ND	40	NR	61
Xylenes	280	35	130	11	ND	50	NR	90
PAHs								
Naphthalene	1,500	12	760	950	ND	ND	NR	ND
2-Methylnaphthalene	750	ID	10	27	ND	ND	NR	8
Acenaphthylene	150	ID	ND	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	11	30	ND	ND	NR	34
Fluorene	2,000	12	ND	8	ND	ND	NR	12
Phenanthrene	150	5	ND	ND	ND	ND	NR	8
Anthracene	43	ID	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	NR	ND
INORGANICS								
Arsenic	50	150	ND	ND	8	8	ND	6
Barium	2,000	1,200	200	190	120	140	180	210
Chromium (total)	100	11**	ND	8	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	9.9	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	6.59	7.07	7.17	7.10	6.95	7.05
Specific Conductivity (umhos/cm)	NL	NL	1,970	2,480	1,164	1,368	2,240	2,570
Dissolved Oxygen (ppm)	NA	7	0.35	0.34	0.41	0.38	0.36	0.41
Iron	300	NA	4,600	6,200	4,700	10,000	6,400	7,000
Nitrate	10,000	NA	ND	ND	100	ND	ND	ND
Sulfate	250,000	NA	34,000	ND	21,000	3,000	3,700	2,000
Alkalinity (as CaCO3)	NL	NL	490,000	450,000	440,000	500,000	490,000	480,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	GSI Criteria	MW202D 55-60 5/23/2000	MW202D 55-60 11/7/2000	MW202D 55-60 6/1/2001	MW202D 55-60 12/13/2001	MW202D 55-60 3/15/2002	MW202D 55-60 6/14/2002	MW202D 55-60 9/23/2002
BTEX									
Benzene	5	200	ND	ND	ND	ND	ND	NR	ND
Toluene	790	140	ND	ND	ND	ND	ND	NR	2
Ethylbenzene	74	18	ND	ND	ND	ND	ND	NR	5
Xylenes	280	35	5	8	ND	ND	ND	NR	6
PAHs									
Naphthalene	1,500	13	35	68	47	17	ND	NR	23
2-Methylnaphthalene	750	ID	ND	6	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	NR	ND
INORGANICS									
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	170	180	170	160	170	180	180
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	7.53	–	7.17	7.38	7.53	7.41	7.38
Specific Conductivity (umhos/cm)	NL	NL	1,720	1,770	877	843	1,190	1,132	1,362
Dissolved Oxygen (ppm)	NA	7	1.48	0.55	1.02	0.29	0.33	0.32	0.59
Iron	300	NA	310	170	39	ND	86	25	36
Nitrate	10,000	NA	560	300	540	330	170	190	ND
Sulfate	250,000	NA	66,000	68,000	67,000	68,000	65,000	65,000	66,000
Alkalinity (as CaCO3)	NL	NL	310,000	330,000	300,000	300,000	310,000	310,000	310,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial Drinking Water Criteria	Sample Location / Screen Depth (feet) / Date Collected	MW301 5-10 6/1/2001	MW301 5-10 12/12/2001	MW301 5-10 3/14/2002	MW301 5-10 6/14/2002	MW301 5-10 9/24/2002
BTEX							
Benzene	5	200	3,900	3,400	2,200	NR	9,900
Toluene	790	140	30	ND	ND	NR	13
Ethylbenzene	700	18	1,100	1,300	990	NR	1,500
Xylenes	200	5	200	1,300	1,300	NR	227
PAHs							
Naphthalene	1,500	13	3,300	5,000	3,800	NR	8,200
2-Methylnaphthalene	750	ID	290	250	190	NR	590
Acenaphthylene	150	ID	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	37	68	70	NR	200
Fluorene	2,000	12	ND	ND	60	NR	52
Phenanthrene	150	5	ND	ND	ND	NR	41
Anthracene	43	ID	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	NR	ND
INORGANICS							
Arsenic	50	150	51	51	50	51	71
Barium	2,000	1,200	160	160	170	180	190
Chromium (total)	100	11**	ND	5	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	6.93	7.09	7.13	7.07	7.24
Specific Conductivity (umhos/cm)	NL	NL	968	852	1,410	1,516	1,839
Dissolved Oxygen (ppm)	NA	7	0.74	0.39	0.41	0.46	0.43
Iron	300	NA	14,000	15,000	20,000	18,000	18,000
Nitrate	10,000	NA	ND	ND	ND	ND	ND
Sulfate	250,000	NA	ND	ND	ND	ND	1,400
Alkalinity (as CaCO3)	NL	NL	400,000	410,000	420,000	410,000	380,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
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		Sample Location Screen Depth (feet) Date Collected	MW302 4-9 5/29/2001	MW302 4-9 12/10/2001	MW302 4-9 3/13/2002	MW302 4-9 6/12/2002	MW302 4-9 9/17/2002
Constituent	Connecticut II Drinking Water Criteria	GSI Criteria					
BTEX							
Benzene	5	200	ND	ND	ND	NR	ND
Toluene	790	140	ND	ND	ND	NR	ND
Ethylbenzene	74	18	ND	ND	ND	NR	ND
Xylenes	280	35	ND	ND	ND	NR	ND
PAHs							
Naphthalene	1,500	13	ND	6	ND	NR	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	NR	ND
INORGANICS							
Arsenic	50	150	9	8	ND	7	16
Barium	2,000	1,200	ND	ND	ND	ND	100
Chromium (total)	100	11**	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	7.33	7.11	7.28	7.16	7.2
Specific Conductivity (mmhos/cm)	NL	NL	750	526	1,410	816	1,011
Dissolved Oxygen (ppm)	NA	7	0.55	0.45	1.2	0.67	0.98
Iron	300	NA	7,500	5,500	4,500	7,000	9,500
Nitrate	10,000	NA	ND	ND	210	ND	ND
Sulfate	250,000	NA	20,000	5,400	18,000	19,000	6,900
Alkalinity (as CaCO3)	NL	NL	230,000	330,000	270,000	230,000	310,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
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Constituent	Commercial R Drinking Water Criteria	Sample Location Screen Depth (feet) Date Collected / GSI Criteria	MW302I 20-25 5/29/2001	MW302I 20-25 12/10/2001	MW302I 20-25 3/13/2002	MW302I 20-25 6/12/2002	MW302I 20-25 9/17/2002
BTEX							
Benzene	5	4200	ND	160	170	NR	77
Toluene	790	140	ND	ND	ND	NR	2
Ethylbenzene	74	78	ND	ND	39	NR	43
Xylenes	280	55	ND	ND	92	NR	10
PAHs							
Naphthalene	1,500	13	ND	ND	ND	NR	5
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	NR	ND
INORGANICS							
Arsenic	50	150	15	20	20	19	20
Barium	2,000	1,200	890	1,200	650	460	330
Chromium (total)	100	11**	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	7.33	7.11	7.23	7.2	7.3
Specific Conductivity (umhos/cm)	NL	NL	2,550	2,960	3,020	1,766	1,262
Dissolved Oxygen (ppm)	NA	7	0.52	0.45	0.50	0.29	0.36
Iron	300	NA	20,000	18,000	16,000	13,000	9,700
Nitrate	10,000	NA	ND	ND	ND	ND	ND
Sulfate	250,000	NA	32,000	25,000	14,000	ND	ND
Alkalinity (as CaCO3)	NL	NL	330,000	420,000	330,000	300,000	270,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
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Constituent	Commercial Drinking Water Criteria	Sample Location Screen Depth (feet) Date Collected	MW302D 55-60 5/29/2001	MW302D 55-60 12/11/2001	MW302D 55-60 3/13/2002	MW302D 55-60 6/12/2002	MW302D 55-60 9/18/2002
BTEX							
Benzene	5	200	ND	ND	ND	NR	ND
Toluene	790	140	ND	ND	ND	NR	ND
Ethylbenzene	74	18	ND	ND	ND	NR	ND
Xylenes	280	35	ND	ND	ND	NR	ND
PAHs							
Naphthalene	1,500	13	ND	ND	ND	NR	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	NR	ND
INORGANICS							
Arsenic	50	150	29	26	30	29	30
Barium	2,000	1,200	200	180	200	210	210
Chromium (total)	100	11**	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	7.5	7.34	7.33	7.33	7.52
Specific Conductivity (umhos/cm)	NL	NL	953	816	1,410	1,272	1,376
Dissolved Oxygen (ppm)	NA	7	0.76	0.56	0.55	0.33	0.29
Iron	300	NA	3,100	2,800	3,400	3,300	3,200
Nitrate	10,000	NA	ND	ND	ND	ND	ND
Sulfate	250,000	NA	6,400	23,000	19,000	17,000	62,000
Alkalinity (as CaCO3)	NL	NL	330,000	330,000	330,000	340,000	300,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Compound	Kalamazoo H Drinking Water Criteria	GSI Criteria	MW303 3-8 5/29/2001	MW303 3-8 12/10/2001	MW303 3-8 3/12/2002	MW303 3-8 6/11/2002	MW303 3-8 9/16/2002
BTEX							
Benzene	5	1,300	290	ND	ND	NR	ND
Toluene	790	140	10	ND	ND	NR	ND
Ethylbenzene	74	18	19	ND	ND	NR	ND
Xylenes	280	350	47	ND	ND	NR	ND
PAHs							
Naphthalene	1,500	15	39	5	ND	NR	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	NR	ND
INORGANICS							
Arsenic	50	150	ND	ND	ND	260	6
Barium	2,000	1,200	370	150	180	ND	420
Chromium (total)	100	11**	ND	8	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	20	ND	ND	ND
Cyanide (free)	200	20	ND	10	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	6.94	6.9	7.23	6.96	6.84
Specific Conductivity (umhos/cm)	NL	NL	1,702	1,236	1,013	2,440	3,060
Dissolved Oxygen (ppm)	NA	7	0.67	0.85	0.89	0.36	0.68
Iron	300	NA	8,200	7,200	11,000	11,000	21,000
Nitrate	10,000	NA	ND	ND	ND	ND	ND
Sulfate	250,000	NA	130,000	3,600	53,000	1,500	ND
Alkalinity (as CaCO3)	NL	NL	680,000	720,000	620,000	710,000	430,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	Sample Location Screen Depth (feet) Date Collected / GSI Criteria	MW304 5-10 5/30/2001	MW304 5-10 12/10/2001	MW304 5-10 3/12/2002	MW304 5-10 6/11/2002	MW304 5-10 9/16/2002
BTEX							
Benzene	5	200	130	260	270	NR	78
Toluene	790	140	7	5	5	NR	180
Ethylbenzene	74	18	320	150	110	NR	3,100
Xylenes	280	35	810	210	147	NR	7,100
PAHs*							
Naphthalene	1,500	43	90	20	922	NR	120
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	120
Acenaphthylene	150	ID	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	NR	ND
INORGANICS*							
Arsenic	50	150	36	28	27	32	51
Barium	2,000	1,200	220	180	200	200	190
Chromium (total)	100	11**	ND	ND	ND	ND	ND
Lead	4	29	4.0	4.0	4.0	4.0	4
Selenium	50	5	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	7.06	6.95	6.91	7.04	6.66
Specific Conductivity (umhos/cm)	NL	NL	1,079	1,595	787	1,965	1.423
Dissolved Oxygen (ppm)	NA	7	0.44	0.8	0.83	0.41	0.51
Iron	300	NA	27,000	18,000	37,000	21,000	32,000
Nitrate	10,000	NA	ND	ND	ND	ND	ND
Sulfate	250,000	NA	3,200	ND	ND	ND	ND
Alkalinity (as CaCO3)	NL	NL	380,000	390,000	460,000	410,000	570,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial & Drinking Water Criteria	Sample Location Screen Depth (feet) Date Collected GSI Criteria	MW304D 65-70 5/30/2001	MW304D 65-70 12/10/2001	MW304D 65-70 3/12/2002	MW304D 65-70 6/11/2002	MW304D 65-70 9/26/2002
BTEX							
Benzene	5	200	ND	ND	ND	NR	ND
Toluene	790	140	ND	ND	ND	NR	2
Ethylbenzene	74	18	ND	ND	ND	NR	ND
Xylenes	280	35	ND	ND	ND	NR	1
PAHs							
Naphthalene	1,500	13	ND	ND	ND	NR	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	ND
Acenaphthylene	150	ID	ND	ND	ND	NR	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND
Anthracene	43	ID	ND	ND	ND	NR	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND
Pyrene	140	ID	ND	ND	ND	NR	ND
INORGANICS							
Arsenic	50	150	23	22	25	25	24
Barium	2,000	1,200	270	270	290	300	300
Chromium (total)	100	11**	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS							
pH (pH units)	NL	NL	7.4	7.37	7.37	7.76	7.39
Specific Conductivity (umhos/cm)	NL	NL	896	896	618	1,298	1,332
Dissolved Oxygen (ppm)	NA	7	0.58	0.7	0.83	0.68	0.73
Iron	300	NA	5,600	5,600	6,700	6,000	7,400
Nitrate	10,000	NA	ND	ND	ND	ND	ND
Sulfate	250,000	NA	68,000	69,000	67,000	65,000	78,000
Alkalinity (as CaCO3)	NL	NL	290,000	300,000	300,000	310,000	290,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	CST Criteria	MW401 5 - 15 9/24/2002
BTEX			
Benzene	5	200	19,000
Toluene	700	140	19,000
Ethylbenzene	74	18	3,000
Xylenes	280	35	22,000
PAHs			
Naphthalene	1,500	13	4,200
2-Methylnaphthalene	750	ID	100
Acenaphthylene	150	ID	59
Acenaphthene	3,800	19	ND
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS			
Arsenic	50	150	28
Barium	2,000	1,200	150
Chromium (total)	100	11**	ND
Lead	4	29	ND
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	7.29
Specific Conductivity (umhos/cm)	NL	NL	2,460
Dissolved Oxygen (ppm)	NA	7	0.48
Iron	300	NA	8,900
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	91,000
Alkalinity (as CaCO3)	NL	NL	370,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW401I 35 - 40 9/23/2002
Constituent	Commercial IE Drinking Water Criteria	GSI Criteria	
BTEX			
Benzene	5	200	300
Toluene	790	140	9
Ethylbenzene	74	18	40
Xylenes	280	85	56
PAHs			
Naphthalene	1,500	13	1,200
2-Methylnaphthalene	750	ID	46
Acenaphthylene	150	ID	7
Acenaphthene	3,800	19	23
Fluorene	2,000	12	9
Phenanthrene	150	9	23
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS			
Arsenic	50	150	43
Barium	2,000	1,200	230
Chromium (total)	100	11**	ND
Lead	4	29	ND
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	7.28
Specific Conductivity (umhos/cm)	NL	NL	1,590
Dissolved Oxygen (ppm)	NA	7	0.47
Iron	300	NA	9,100
Nitrate	10,000	NA	250
Sulfate	250,000	NA	2,600
Alkalinity (as CaCO3)	NL	NL	330,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SMB Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW401D 66 - 71 9/24/2002
Constituent	Commercial II Drinking Water Criteria	GSI Criteria	
BTEX			
Benzene	5	200	12
Toluene	790	140	57
Ethylbenzene	14	18	75
Xylenes	280	35	102
PAHs			
Naphthalene	1,300	13	2,300*
2-Methylnaphthalene	730	ID	500
Acenaphthylene	150	ID	200
Acenaphthene	3,800	19	74
Fluorene	2,000	17	81
Phenanthrene	150	4	61
Anthracene	43	ID	14
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS			
Arsenic	50	150	ND
Barium	2,000	1,200	210
Chromium (total)	100	11**	ND
Lead	4	29	ND
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	7.55
Specific Conductivity (umhos/cm)	NL	NL	1,576
Dissolved Oxygen (ppm)	NA	7	0.37
Iron	300	NA	1,500
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	35,000
Alkalinity (as CaCO3)	NL	NL	340,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW402 4 - 9 9/24/2002
Constituent	Commercial II Drinking Water Criteria	GSI Criteria	
BTEX			
Benzene	5	200	3
Toluene	790	140	8
Ethylbenzene	74	18	2
Xylenes	280	35	10
PAHs*			
Naphthalene	1,500	13	15
2-Methylnaphthalene	750	ID	ND
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	5
Fluorene	2,000	12	6
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS*			
Arsenic	50	150	8
Barium	2,000	1,200	ND
Chromium (total)	100	11**	ND
Lead	4	29	ND
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	6.78
Specific Conductivity (umhos/cm)	NL	NL	4,100
Dissolved Oxygen (ppm)	NA	7	0.5
Iron	300	NA	51,000
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	490,000
Alkalinity (as CaCO3)	NL	NL	500,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial-1 Drinking Water Criteria	GSI Criteria	MW402 D 65 - 70 9/24/2002
BTEX			
Benzene	5	200	5
Toluene	790	140	26
Ethylbenzene	74	18	3
Xylenes	280	35	11
PAHs*			
Naphthalene	1,500	13	ND
2-Methylnaphthalene	750	ID	ND
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	ND
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS*			
Arsenic	50	150	ND
Barium	2,000	1,200	150
Chromium (total)	100	11**	ND
Lead	4	29	ND
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	7.72
Specific Conductivity (umhos/cm)	NL	NL	1,264
Dissolved Oxygen (ppm)	NA	7	0.46
Iron	300	NA	52
Nitrate	10,000	NA	1,000
Sulfate	250,000	NA	56,000
Alkalinity (as CaCO3)	NL	NL	310,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW403 3 - 8 9/17/2002
Constituent	Commercial II Drinking Water Criteria	GSI Criteria	
BTEX			
Benzene	5	200	250
Toluene	790	140	14
Ethylbenzene	74	18	170
Xylenes	280	35	57
PAHs			
Naphthalene	1,500	13	540
2-Methylnaphthalene	750	ID	120
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	ND
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS			
Arsenic	50	150	180
Barium	2,000	1,200	150
Chromium (total)	100	11**	ND
Lead	4	29	4
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	7.23
Specific Conductivity (umhos/cm)	NL	NL	914
Dissolved Oxygen (ppm)	NA	7	0.55
Iron	300	NA	6,500
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	35,000
Alkalinity (as CaCO3)	NL	NL	280,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW403D 60 - 65 9/17/2002
Constituent	Commercial II Drinking Water Criteria	GRC Criteria	
BTEX			
Benzene	5	200	ND
Toluene	790	140	ND
Ethylbenzene	74	18	ND
Xylenes	280	35	ND
PAHs			
Naphthalene	1,500	13	ND
2-Methylnaphthalene	750	ID	ND
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	ND
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS			
Arsenic	50	150	12
Barium	2,000	1,200	250
Chromium (total)	100	11**	ND
Lead	4	29	ND
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	7.37
Specific Conductivity (umhos/cm)	NL	NL	1,324
Dissolved Oxygen (ppm)	NA	7	0.59
Iron	300	NA	8,200
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	64,000
Alkalinity (as CaCO3)	NL	NL	300,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Constituent	Commercial II Drinking Water Criteria	Sample Location Screen Depth (feet) Date Collected Cal Criteria	MW404 3 - 8 Sep (15)
BTEX			
Benzene	5	200	ND
Toluene	790	140	ND
Ethylbenzene	74	18	ND
Xylenes	280	35	ND
PAHs *			
Naphthalene	1,500	13	ND
2-Methylnaphthalene	750	ID	ND
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	ND
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS *			
Arsenic	50	150	ND
Barium	2,000	1,200	260
Chromium (total)	100	11**	ND
Lead	4	29	ND
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	11
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	NE
Specific Conductivity (umhos/cm)	NL	NL	NE
Dissolved Oxygen (ppm)	NA	7	NE
Iron	300	NA	24
Nitrate	10,000	NA	630
Sulfate	250,000	NA	80,000
Alkalinity (as CaCO3)	NL	NL	500,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW404I 35 - 40 9/18/2002
Constituent	Commercial I Drinking Water Criteria	GSI Criteria	
BTEX			
Benzene	5	1,500	4,600
Toluene	790	140	8
Ethylbenzene	74	18	50
Xylenes	280	35	57
PAHs			
Naphthalene	1,500	13	170
2-Methylnaphthalene	750	ID	ND
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	ND
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS			
Arsenic	50	150	25
Barium	2,000	1,200	450
Chromium (total)	100	11**	ND
Lead	4	29	ND
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	7.47
Specific Conductivity (umhos/cm)	NL	NL	1,672
Dissolved Oxygen (ppm)	NA	7	0.88
Iron	300	NA	8,200
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	1,000
Alkalinity (as CaCO3)	NL	NL	320,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

		Sample Location Screen Depth (feet) Date Collected	MW404D 75 - 80 9/19/2002
Constituent	Commercial II Drinking Water Criteria	CSI Criteria	
BTEX			
Benzene	5	200	620
Toluene	790	140	5
Ethylbenzene	74	18	760
Xylenes	280	35	206
PAHs			
Naphthalene	1,500	13	2,100
2-Methylnaphthalene	750	ID	ND
Acenaphthylene	150	ID	ND
Acenaphthene	3,800	19	84
Fluorene	2,000	12	ND
Phenanthrene	150	5	ND
Anthracene	43	ID	ND
Fluoranthene	210	1.6	ND
Pyrene	140	ID	ND
INORGANICS			
Arsenic	50	150	9
Barium	2,000	1,200	290
Chromium (total)	100	11**	ND
Lead	4	29	ND
Selenium	50	5	ND
Silver	98	0.2	ND
Zinc	5,000	270	ND
Cyanide (available)	200	20	ND
Cyanide (free)	200	20	ND
NATURAL ATTENUATION PARAMETERS			
pH (pH units)	NL	NL	7.43
Specific Conductivity (umhos/cm)	NL	NL	1,911
Dissolved Oxygen (ppm)	NA	7	0.28
Iron	300	NA	4,600
Nitrate	10,000	NA	ND
Sulfate	250,000	NA	ND
Alkalinity (as CaCO3)	NL	NL	350,000

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TABLE 5
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb) unless otherwise noted.
(2) Analytical results were compared to Part 201 Generic Commercial II Cleanup Criteria dated June 2000.
(3) ND= Analytical result was less than target detection limit.
(4) ID = Inadequate data to develop criterion.
(5) NA= Criterion or value is not available.
(6) NL = Not listed under Part 201 Generic Commercial II Cleanup Criteria dated June 2000.
(7) NE = Chemical not evaluated by analytical laboratory.
(8) NS = Monitoring well not sampled.
(9) * = Constituents listed for PAHs and metals are limited to those constituents that indicated detectable concentrations for at least one sampling event.
(10) ** = Part 201 GSI Cleanup Criteria for Hexavalent Chromium used as a conservative comparison.
(11) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(12) The above data was compared to criteria for volatilization to indoor air, groundwater contact, water solubility, flammability/explosivity and acute inhalation and the data did not exceed these criteria.
(13) Groundwater samples were collected on different dates due to insufficient recharge. BTEX and cyanide = 2/25/99. PAHs = 2/27/99. Metals = 3/1/99
(14) Groundwater samples were collected on different dates due to insufficient recharge. BTEX, PAHs and metals = 6/1/01. Other inorganics = 6/4/01
(15) Groundwater samples were collected on different dates due to insufficient recharge. BTEX = 9/19/02. PAHs and cyanide = 9/20/02. Metals and other inorganics = 9/23/02.
(16) NR = Analytical result not reported. Lab reported BTEX analysis conducted after holding time and PAH results were invalid.

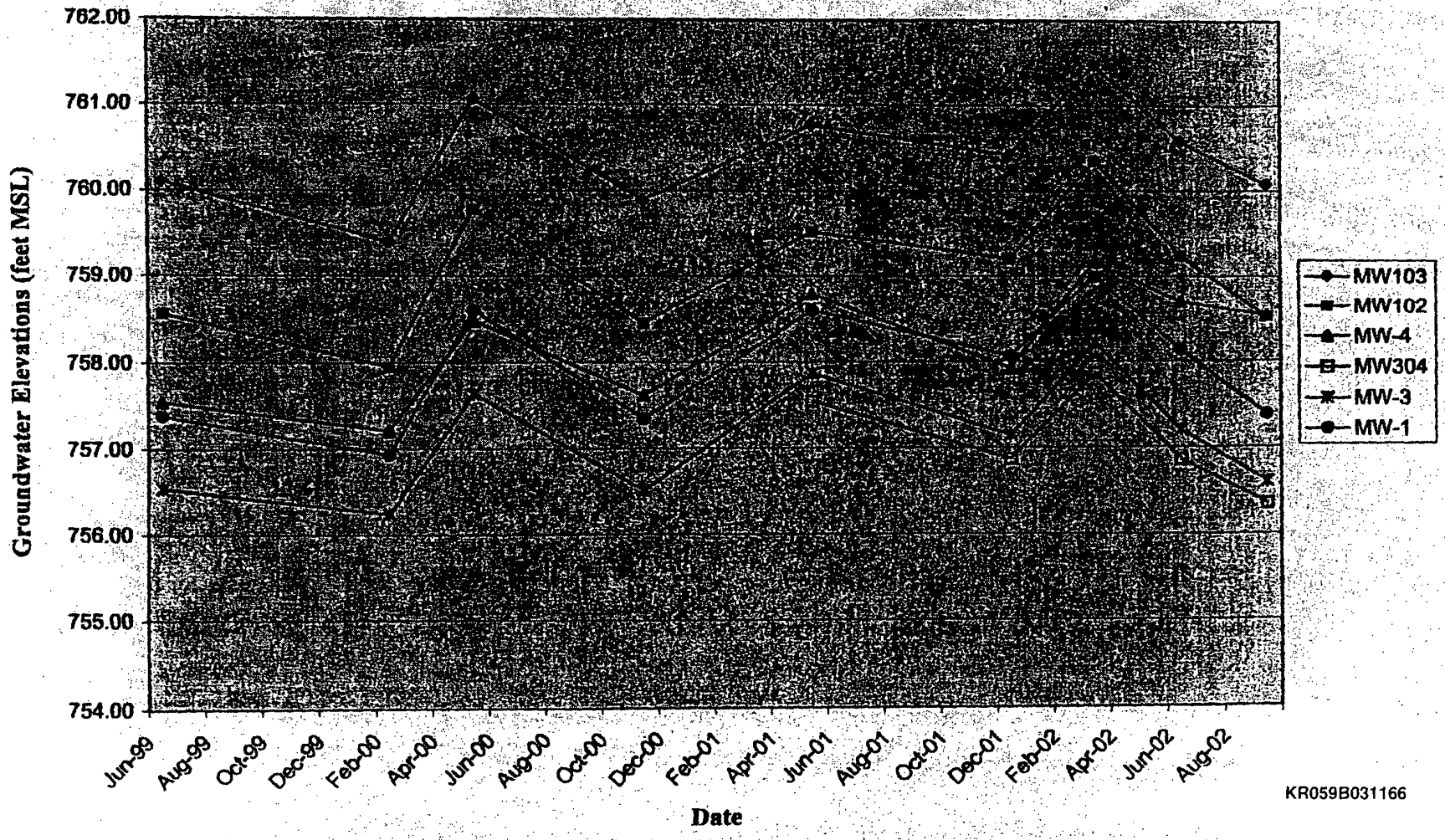
APPENDIX D

KR059B031164

APPENDIX D

GROUNDWATER ELEVATION CHART

TREND PLOT FOR GROUNDWATER ELEVATIONS



KR059B031166

TREND PLOT FOR GROUNDWATER ELEVATIONS KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 11-28-02 Drawn By GM Scale AS SHOWN Job KE 31823B-	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and motor engineers

Chart No. 1

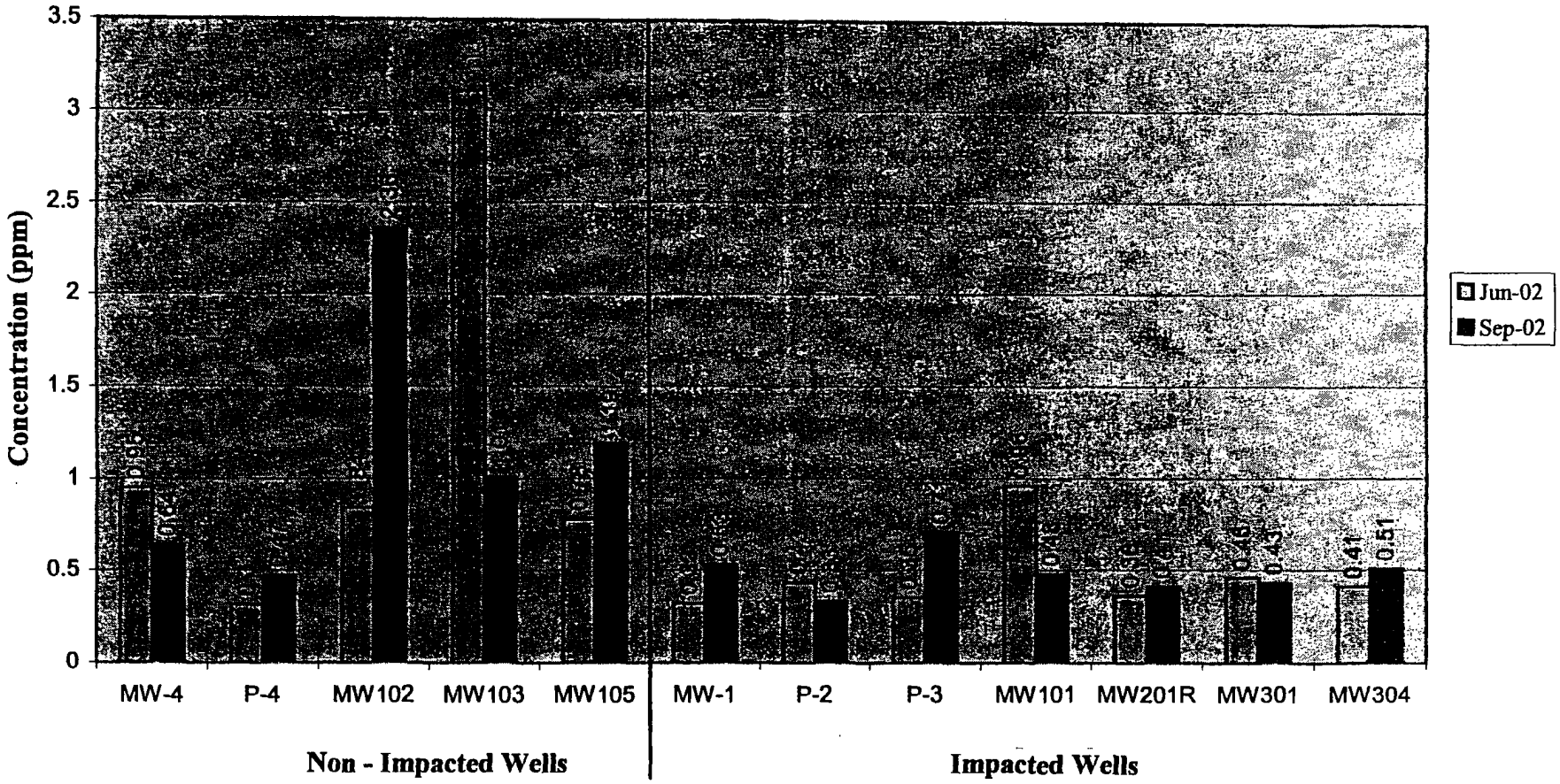
APPENDIX E

KR059B031167

APPENDIX E

NATURAL ATTENUATION CHARTS

DISSOLVED OXYGEN
June and September 2002
Non Impacted Wells vs. Impacted Wells



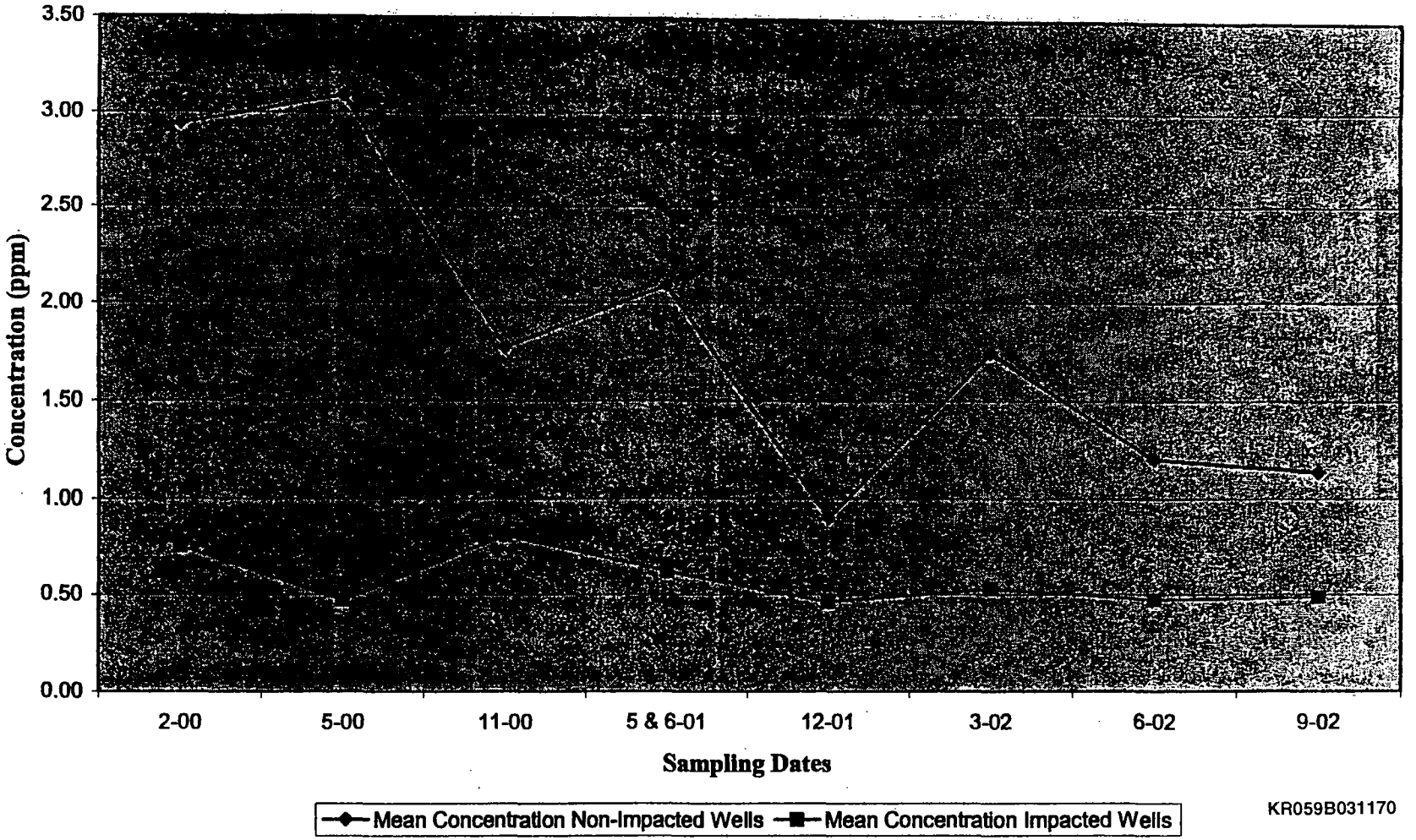
KR059B031169

DISSOLVED OXYGEN KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 11-19-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-7	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 1

TREND PLOT - DISSOLVED OXYGEN

Non-Impacted Wells vs. Impacted Wells

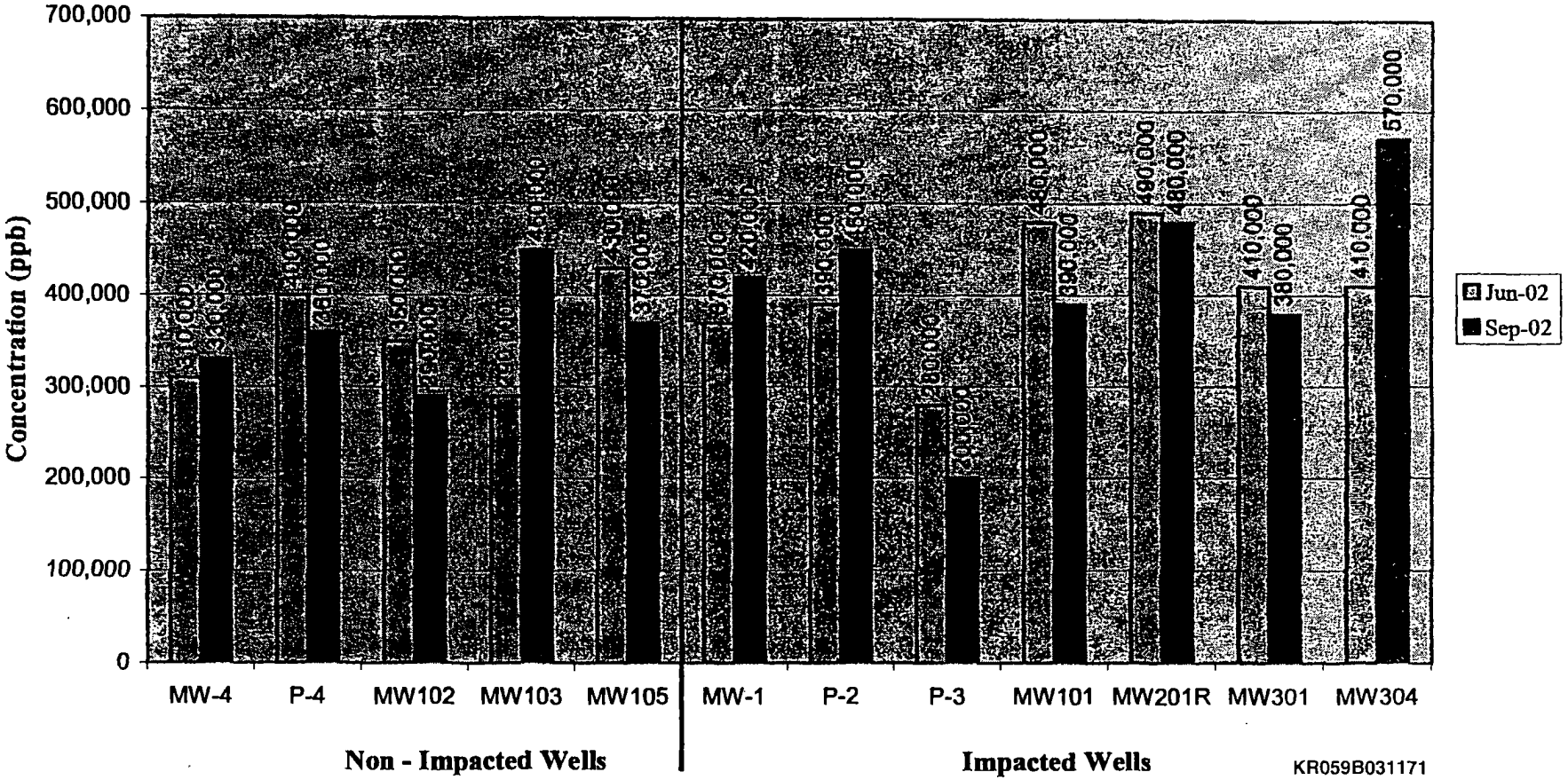


KR059B031170

TREND PLOT - DISSOLVED OXYGEN KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 11-19-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-7	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 24

ALKALINITY
June and September 2002
Non Impacted Wells vs. Impacted Wells

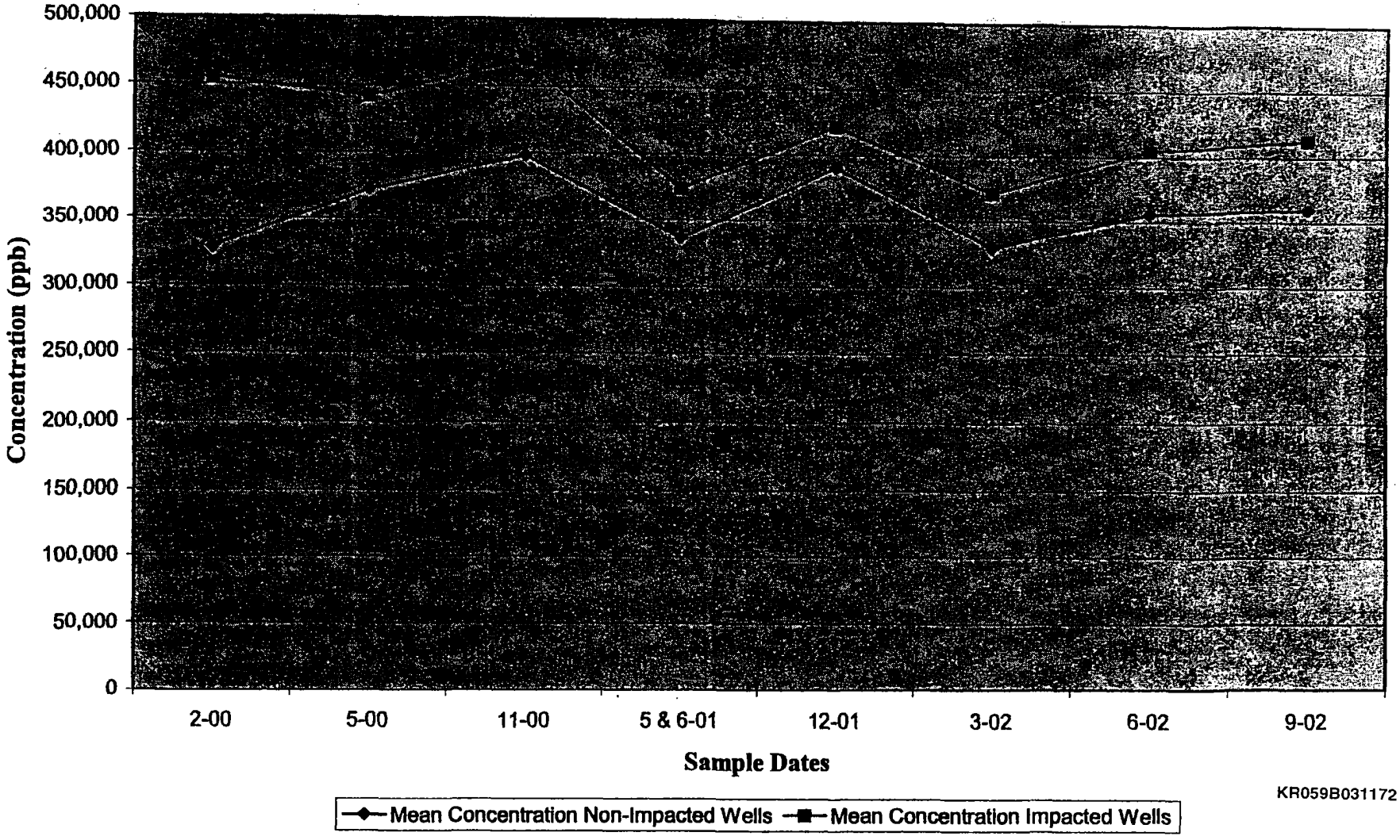


ALKALINITY **KALAMAZOO MGP** **CONSUMERS ENERGY COMPANY** **KALAMAZOO, MICHIGAN**	Date 11-19-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-7	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 53

TREND PLOT - ALKALINITY

Non-Impacted Wells vs. Impacted Wells

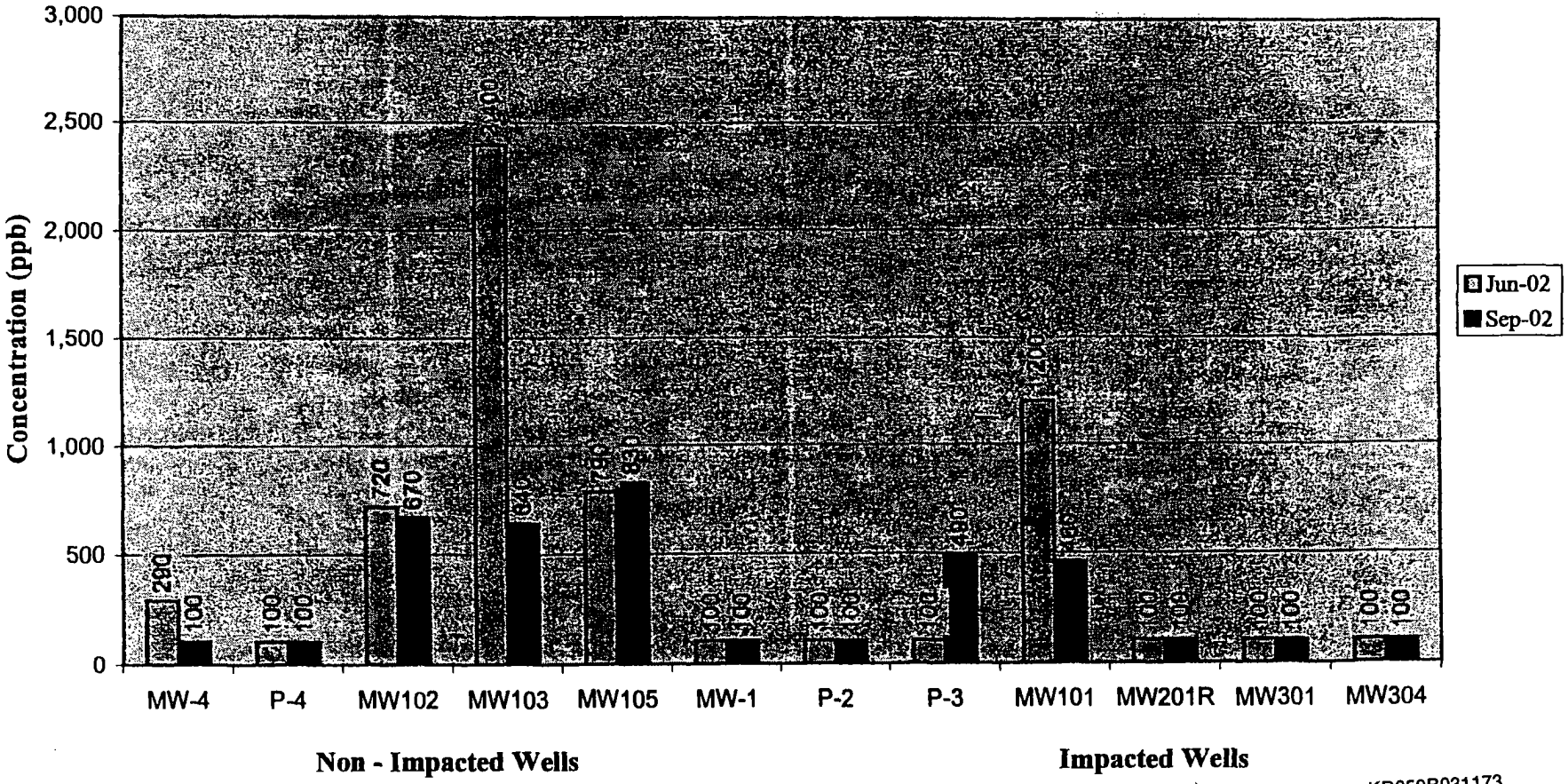


KR059B031172

TREND PLOT - ALKALINITY KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 11-19-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-7	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 34

NITRATE
June and September 2002
Non Impacted Wells vs. Impacted Wells



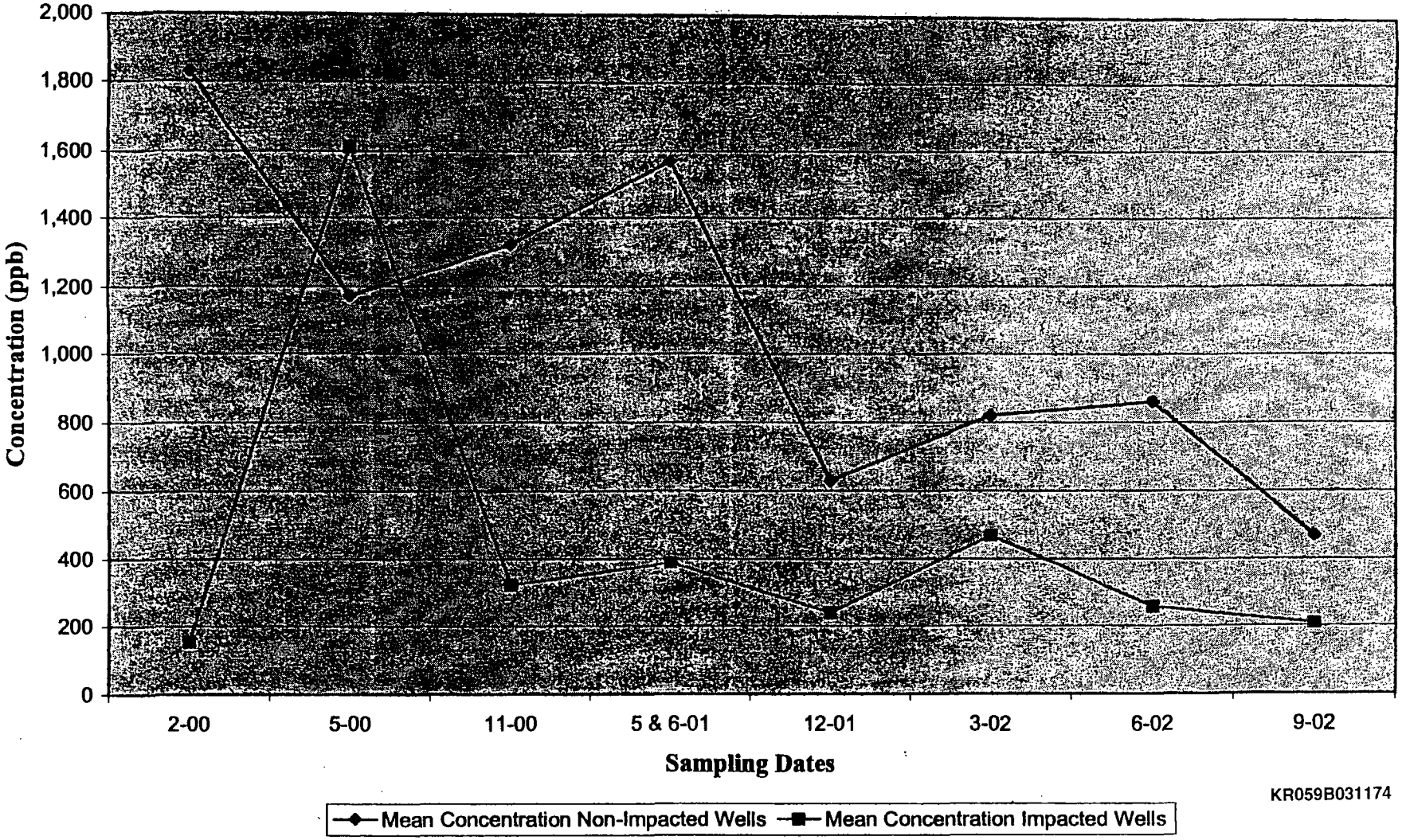
KR059B031173

NITRATE KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 11-28-02 Drawn By GM Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 5

TREND PLOT - NITRATE

Non-Impacted Wells vs. Impacted Wells

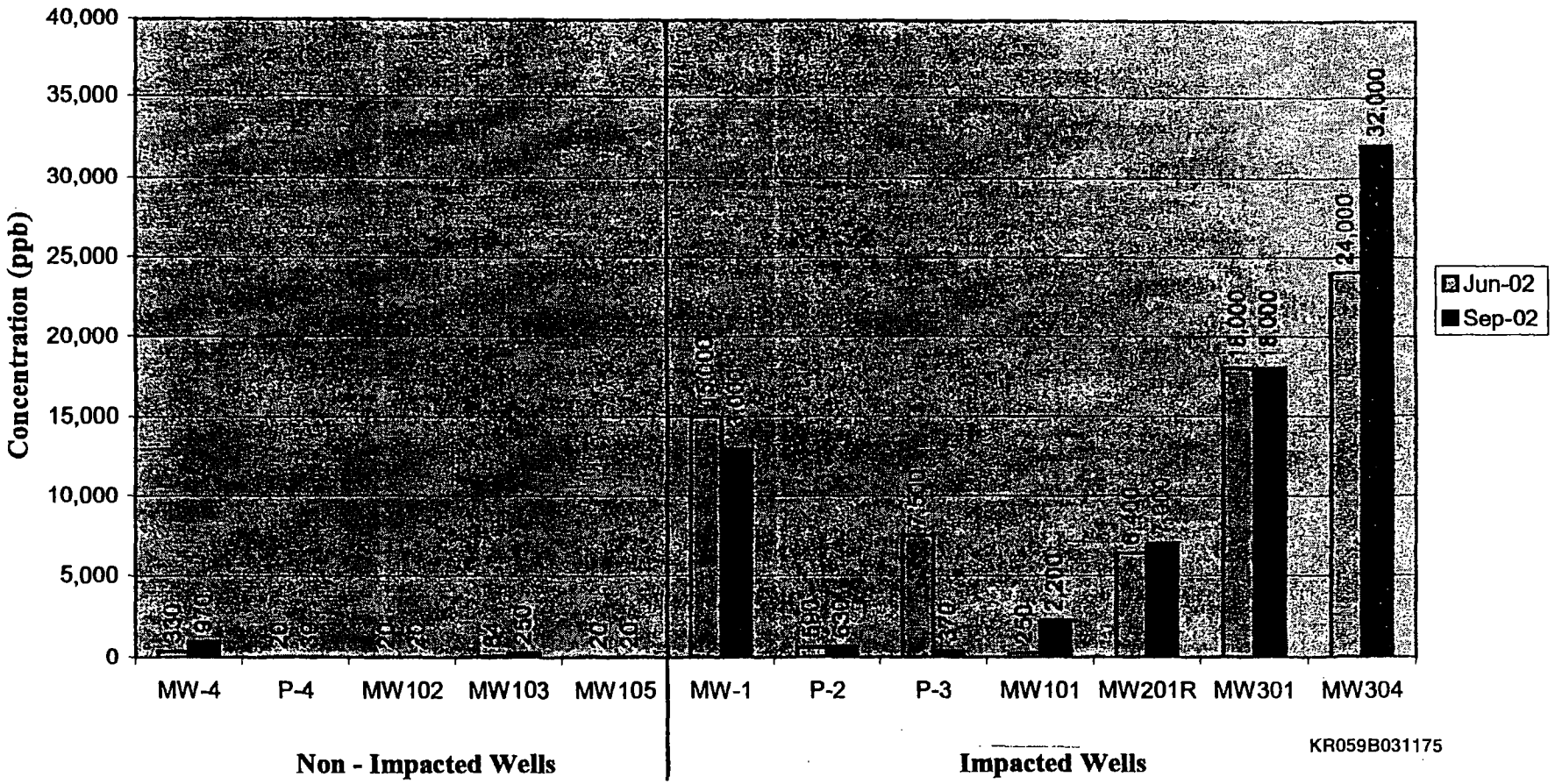


KR059B031174

TREND PLOT – NITRATE KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 11-28-02 Drawn By GM Scale AS SHOWN Job KE 31823B-8	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 8

DISSOLVED IRON
June and September 2002
Non-Impacted Wells vs. Impacted Wells

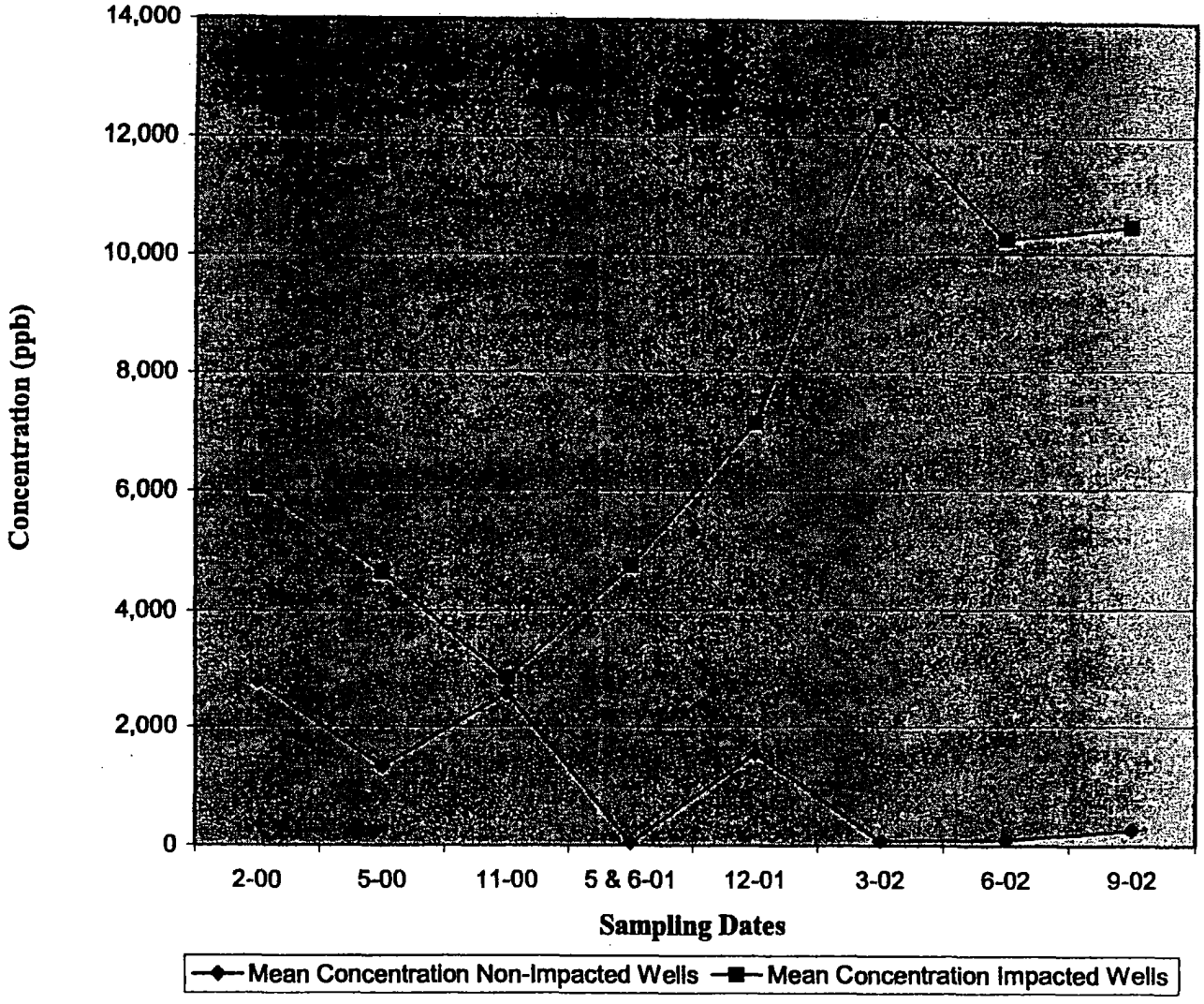


DISSOLVED IRON KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 11-19-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-7	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 7

TREND PLOT - DISSOLVED IRON

Non-Impacted Wells vs. Impacted Wells

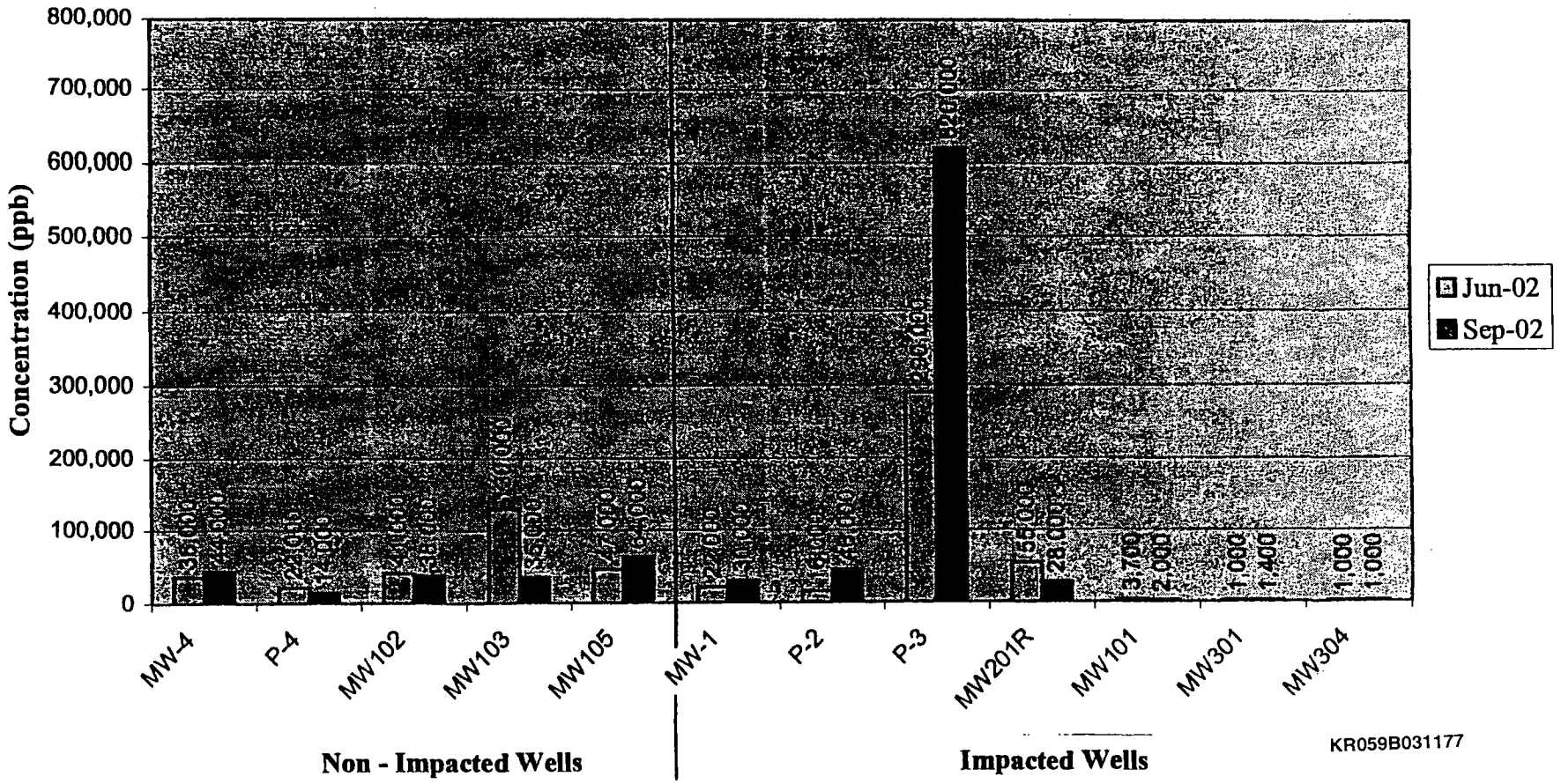


KR059B031176

TREND PLOT - DISSOLVED IRON KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 11-19-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-7	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 8

SULFATE
June and September 2002
Non-Impacted Wells vs. Impacted Wells

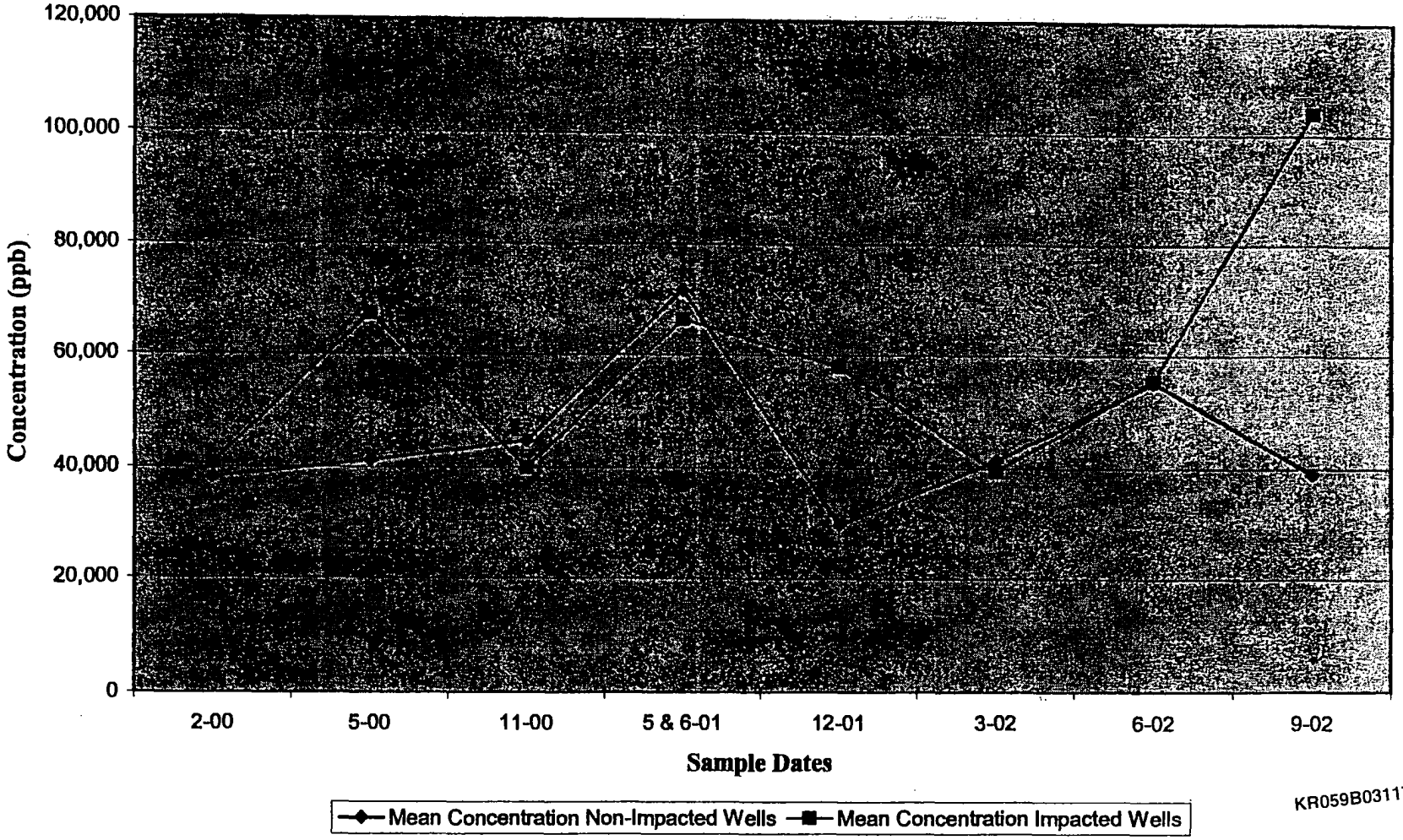


SULFATE KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 11-19-02 Drawn By ARR Scale AS SHOWN Job KE 318238-7	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 9

TREND PLOT - SULFATE

Non-Impacted Wells vs. Impacted Wells



KR059B031178

TREND PLOT - SULFATE KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN	Date 11-19-02 Drawn By ARR Scale AS SHOWN Job KE 31823B-7	BAY CITY GRAND RAPIDS KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc

Chart No. 10

APPENDIX F

KR059B031179

APPENDIX F

LABORATORY ANALYTICAL REPORTS FOR SOIL SAMPLE COLLECTED IN AUGUST 2002

00596

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-251, Jackson

RECD SEP 30 2002

Date: September 24, 2002

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823B
- Sampling Date of August 05, 2002

File Index: 520217-410-288

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On August 06, 2002 the Chemistry Section (CHEM) of Laboratory Services received soil samples collected at the KALAMAZOO FORMER MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Michigan-10 Metals
Amenable Cyanide

Analytical Notes: (1) PAH determinations were subcontracted to Brighton Analytical. All other determinations were performed by CHEM.

Analytical results are attached for your review.

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Unless otherwise indicated, all methods are from SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

VOC Sample Collection - Soil VOC samples were collected according to "Procedure for Collection and Methanol Preservation of Soil Samples for Volatile Organics", Environmental Response Division, Michigan Department of Environmental Quality (Method 5035).

Aromatic Volatile Organics (BTEX) - Method 8260, Volatile Organic Compounds By Gas Chromatography / Mass Spectrometry.

PAH Sample Extraction and Preparation – Method 3550, Sonication Extraction.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique.

Cyanide Soil Extraction - Method 9013, Cyanide Extraction Procedure For Solids and Oils.

Cyanide, Total and Amenable - Method 9010, Total and Amenable Cyanide.

Total Metals Preparation - Method 3051, Microwave Assisted Acid Digestion Of Sediments, Sludges, Soils and Oils.

Total Metals Preparation (Mercury) – Method 7471, Mercury in Solid or Semisolid Waste.

Metal Analytes

Analyte	SW-846 Method
Arsenic	6020
Barium	6020
Cadmium	6020
Chromium	6020
Copper	6020
Lead	6020
Mercury	7471
Selenium	6020
Silver	6020
Zinc	6020

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 05, 2002	Project Number CHEM-02-1288

Sample Identification	SP606	Sample Identification	SP606
Sample Depth, ft	0.5-1	Sample Depth, ft	0.5-1
Sample Type	soil	Sample Type	soil
Sample Date	08-05-02	Sample Date	08-05-02
Received Date	08-06-02	Received Date	08-06-02
Report Date	09-24-02	Report Date	09-24-02
Percent Solids, %w/w	92	Percent Solids, %w/w	92
Preparation Dates	08-14-02 & 08-20-02	Extraction Date	08-07-02
Analysis Date, Start	09-03-02	Analysis Date, Amenable	08-12-02
Analysis Date, End	09-05-02	Analyst	bek
Analyst(s)	eb & clh		
Control Number	021288-01	Control Number	021288-01

METALS	ug/kg	TDL
Arsenic - 6020	3,800	100
Barium - 6020	16,000	1,000
Cadmium - 6020	nd	50
Chromium (total) - 6020	5,500	500
Copper - 6020	6,800	1,000
Lead - 6020	5,400	1,000
Mercury - 7471	nd	100
Selenium - 6020	nd	200
Silver - 6020	nd	500
Zinc - 6020	27,000	1,000
Metal Results Are Reported As	Totals	Totals

INORGANICS	ug/kg	TDL
Cyanide, Amenable - 9010/9013	nd	500

KR059B031183

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By _____ Date _____

Data File	Kalamazoo
SP606	0.5-1

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 05, 2002	Project Number CHEM-02-1288

Sample Identification	SP606	Sample Identification	SP606
Sample Depth, ft	4-5	Sample Depth, ft	4-5
Sample Type	soil	Sample Type	soil
Sample Date	08-05-02	Sample Date	08-05-02
Received Date	08-06-02	Received Date	08-06-02
Report Date	09-24-02	Report Date	09-24-02
Percent Solids, %w/w	96	Percent Solids, %w/w	96
Preparation Dates	08-14-02 & 08-20-02	Extraction Date	08-07-02
Analysis Date, Start	09-03-02	Analysis Date, Amenable	08-12-02
Analysis Date, End	09-05-02	Analyst	bek
Analyst(s)	eb & clh		
Control Number	021288-02	Control Number	021288-02

METALS	ug/kg	TDL
Arsenic - 6020	12,000	100
Barium - 6020	23,000	1,000
Cadmium - 6020	84	50
Chromium (total) - 6020	14,000	500
Copper - 6020	16,000	1,000
Lead - 6020	10,000	1,000
Mercury - 7471	nd	100
Selenium - 6020	nd	200
Silver - 6020	nd	500
Zinc - 6020	52,000	1,000
Metal Results Are Reported As	Totals	Totals

INORGANICS	ug/kg	TDL
Cyanide, Amenable - 9010/9013	nd	500

KR059B031184

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By _____ Date _____

Data File	Kalamazoo
SP606	4-5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 05, 2002	Project Number CHEM-02-1288

Sample Identification	SP607	Sample Identification	SP607
Sample Depth, ft	0-1	Sample Depth, ft	0-1
Sample Type	soil	Sample Type	soil
Sample Date	08-05-02	Sample Date	08-05-02
Received Date	08-06-02	Received Date	08-06-02
Report Date	09-24-02	Report Date	09-24-02
Percent Solids, %w/w	81	Percent Solids, %w/w	81
Preparation Dates	08-14-02 & 08-20-02	Extraction Date	08-07-02
Analysis Date, Start	09-03-02	Analysis Date, Amenable	08-12-02
Analysis Date, End	09-05-02	Analyst	bek
Analyst(s)	eb & clh		
Control Number	021288-03	Control Number	021288-03

METALS	ug/kg	TDL
Arsenic - 6020	11,000	100
Barium - 6020	100,000	1,000
Cadmium - 6020	100	50
Chromium (total) - 6020	14,000	500
Copper - 6020	22,000	1,000
Lead - 6020	77,000	1,000
Mercury - 7471	230	100
Selenium - 6020	1,800	200
Silver - 6020	nd	500
Zinc - 6020	130,000	1,000
Metal Results Are Reported As	Totals	Totals

INORGANICS	ug/kg	TDL
Cyanide, Amenable - 9010/9013	3,100	500

KR059B031185

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By _____ Date _____

Data File	Kalamazoo
SP607	0-1

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 05, 2002	Project Number CHEM-02-1288

Sample Identification	SP607	Sample Identification	SP607
Sample Depth, ft	4.5	Sample Depth, ft	4.5
Sample Type	soil	Sample Type	soil
Sample Date	08-05-02	Sample Date	08-05-02
Received Date	08-06-02	Received Date	08-06-02
Report Date	09-24-02	Report Date	09-24-02
Percent Solids, %w/w	74	Percent Solids, %w/w	74
Preparation Dates	08-14-02 & 08-20-02	Extraction Date	08-07-02
Analysis Date, Start	09-03-02	Analysis Date, Amenable	08-12-02
Analysis Date, End	09-05-02	Analyst	bek
Analyst(s)	eb & clh		
Control Number	021288-04	Control Number	021288-04

METALS	ug/kg	TDL
Arsenic - 6020	4,300	100
Barium - 6020	34,000	1,000
Cadmium - 6020	nd	50
Chromium (total) - 6020	4,600	500
Copper - 6020	4,000	1,000
Lead - 6020	11,000	1,000
Mercury - 7471	nd	100
Selenium - 6020	1,400	200
Silver - 6020	nd	500
Zinc - 6020	23,000	1,000
Metal Results Are Reported As	Totals	Totals

INORGANICS	ug/kg	TDL
Cyanide, Amenable - 9010/9013	nd	500

KR059B031186

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By [signature] Date 9-24-02

Data File	Kalamazoo
SP607	4.5

INORG

00608

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - *Sampling Date of August 05, 2002*	Project Number CHEM-02-1288

Sample Identification	SP606	**Sample Identification**	SP606
Sample Depth, ft	0.5-1	Sample Depth, ft	0.5-1
Sample Type	soil	Sample Type	soil
Sample Date	08-05-02	Sample Date	08-05-02
Received Date	08-06-02	Received Date	08-06-02
Report Date	09-24-02	Report Date	09-24-02
Percent Solids, %w/w	92	Percent Solids, %w/w	92
Preservation Date	08-06-02	Extraction Date	08-08-02
Preservation Type	MeOH	Analysis Date	08-29-02
Analysis Date	08-10-02	Analyst	<outsource>
Analyst	jdm		
Control Number	021288-01	Control Number	021288-01

BTEX, Method 8260	**ug/kg**	**TDL**
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	70-121
Toluene-d8	98	84-138
4-Bromofluorobenzene	101	59-113

PAHs, Method 8270	**ug/kg**	**TDL**
Acenaphthene	nd	330
Acenaphthylene	nd	330
Anthracene	nd	330
Benzo(a)anthracene	nd	330
Benzo(a)pyrene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(g,h,i)perylene	nd	330
Benzo(k)fluoranthene	nd	330
Chrysene	nd	330
Dibenzo(a,h)anthracene	nd	330
Fluoranthene	nd	330
Fluorene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
2-Methylnaphthalene	nd	330
Naphthalene	nd	330
Phenanthrene	nd	330
Pyrene	nd	330
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	77	60-140

KR059B031187

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By AU Date 9-24-02

Data File	Kalamazoo
SP606	0.5-1

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 05, 2002	Project Number CHEM-02-1288

Sample Identification	SP606
Sample Depth, ft	4-5
Sample Type	soil
Sample Date	08-05-02
Received Date	08-06-02
Report Date	09-24-02
Percent Solids, %w/w	96
Preservation Date	08-06-02
Preservation Type	MeOH
Analysis Date	08-10-02
Analyst	jdm
Control Number	021288-02

BTEX, Method 8260	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	70-121
Toluene-d8	85	84-138
4-Bromofluorobenzene	86	59-113

Sample Identification	SP606
Sample Depth, ft	4-5
Sample Type	soil
Sample Date	08-05-02
Received Date	08-06-02
Report Date	09-24-02
Percent Solids, %w/w	96
Extraction Date	08-08-02
Analysis Date	08-29-02
Analyst	<outsource>
Control Number	021288-02

PAHs, Method 8270	ug/kg	TDL
Acenaphthene	nd	330
Acenaphthylene	nd	330
Anthracene	nd	330
Benzo(a)anthracene	nd	330
Benzo(a)pyrene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(g,h,i)perylene	nd	330
Benzo(k)fluoranthene	nd	330
Chrysene	nd	330
Dibenzo(a,h)anthracene	nd	330
Fluoranthene	nd	330
Fluorene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
2-Methylnaphthalene	nd	330
Naphthalene	nd	330
Phenanthrene	nd	330
Pyrene	nd	330
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	68	60-140

KR059B031188

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By _____ Date _____

Data File	Kalamazoo
SP606	4-5

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 05, 2002	Project Number CHEM-02-1288

Sample Identification	SP607
Sample Depth, ft	0-1
Sample Type	soil
Sample Date	08-05-02
Received Date	08-06-02
Report Date	09-24-02
Percent Solids, %w/w	81
Preservation Date	08-06-02
Preservation Type	MeOH
Analysis Date	08-10-02
Analyst	jdm
Control Number	021288-03

BTEX, Method 8260	ug/kg	TDL
Benzene	nd	50
Toluene	100	50
Ethylbenzene	nd	50
m/p-Xylene	120	100
o-Xylene	70	50
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	97	70-121
Toluene-d8	101	84-138
4-Bromofluorobenzene	103	59-113

Sample Identification	SP607
Sample Depth, ft	0-1
Sample Type	soil
Sample Date	08-05-02
Received Date	08-06-02
Report Date	09-24-02
Percent Solids, %w/w	81
Extraction Date	08-08-02
Analysis Date	08-29-02
Analyst	<outsource>
Control Number	021288-03

PAHs, Method 8270	ug/kg	TDL
Acenaphthene	nd	330
Acenaphthylene	nd	330
Anthracene	1,100	330
Benzo(a)anthracene	3,500	330
Benzo(a)pyrene	4,000	330
Benzo(b)fluoranthene	2,500	330
Benzo(g,h,i)perylene	4,200	330
Benzo(k)fluoranthene	2,200	330
Chrysene	3,300	330
Dibenzo(a,h)anthracene	350	330
Fluoranthene	4,300	330
Fluorene	nd	330
Indeno(1,2,3-cd)pyrene	3,000	330
2-Methylnaphthalene	430	330
Naphthalene	600	330
Phenanthrene	2,200	330
Pyrene	4,200	330
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	58	60-140

KR059B031189

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By [signature] Date 9-24-02

Data File	Kalamazoo
SP607	0-1

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 05, 2002	Project Number CHEM-02-1288

Sample Identification	SP607	Sample Identification	SP607
Sample Depth, ft	4.5	Sample Depth, ft	4.5
Sample Type	soil	Sample Type	soil
Sample Date	08-05-02	Sample Date	08-05-02
Received Date	08-06-02	Received Date	08-06-02
Report Date	09-24-02	Report Date	09-24-02
Percent Solids, %w/w	74	Percent Solids, %w/w	74
Preservation Date	08-06-02	Extraction Date	08-08-02
Preservation Type	MeOH	Analysis Date	08-29-02
Analysis Date	08-10-02	Analyst	<outsource>
Analyst	jdm		
Control Number	021288-04	Control Number	021288-04

BTEX, Method 8260	ug/kg	TDL
Benzene	80	50
Toluene	160	50
Ethylbenzene	nd	50
m/p-Xylene	150	100
o-Xylene	100	50
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	100	70-121
Toluene-d8	105	84-138
4-Bromofluorobenzene	104	59-113

PAHs, Method 8270	ug/kg	TDL
Acenaphthene	nd	330
Acenaphthylene	nd	330
Anthracene	1,200	330
Benzo(a)anthracene	3,300	330
Benzo(a)pyrene	5,600	330
Benzo(b)fluoranthene	2,800	330
Benzo(g,h,i)perylene	6,400	330
Benzo(k)fluoranthene	2,900	330
Chrysene	3,100	330
Dibenzo(a,h)anthracene	430	330
Fluoranthene	3,500	330
Fluorene	nd	330
Indeno(1,2,3-cd)pyrene	4,700	330
2-Methylnaphthalene	510	330
Naphthalene	660	330
Phenanthrene	2,400	330
Pyrene	3,200	330
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	57	60-140

KR059B031190

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By Ad Date 9-24-02

Data File	Kalamazoo
SP607	4.5

ORG

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: 16 3 1823B

SAMPLING TEAM: N. Larsel

DATE SHIPPED: 8/6/02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Bannasee

PHONE: 734-454-9200

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAHs	10 metals	Amenable CN		REMARKS
02-1233-01	8/5/02	1140	Soil	SP606	0.5-1	3	X	X	X	X		
-02		1145		SP606	4-5	3						
-03		1215		SP607	0-1	3						
-04		1230		SP607	4-5	3						

KR059B031191

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	8/5/02 1600	Sue Cole Sprague
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Sue Cole Sprague	8/6/02 4:00	Gabe Sutton
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MDL's on method
- Contact Bob Newsom w/ Results

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: 02-1233

SAMPLING TEAM: —

DATE SHIPPED: 08/29/02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: GL Carell, Consumers, PHONE (517) 788-2334

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	ANALYSIS REQUESTED: PAH-8270							REMARKS
02-1233-01	8/5/02	11:40	soil	SP606	0.5-1'	1 eq 6L vial	X							
-02		11:45		SP606	4-5'		X							
-03		12:15		SP607	0-1'		X							
-04		12:30		SP607	4-5'		X							

KR059B031192

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	8/30/02	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

- MDEQ op. memo. 6 Reg 6 TBLS
- Routine turnaround
- No fax

4°C

ORIGINAL TO LAB COPY TO CUSTOMER

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-251, Jackson

Date: September 24, 2002

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823B
- Sampling Date of August 05, 2002

File Index: 520217-410-288

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On August 06, 2002 the Chemistry Section (CHEM) of Laboratory Services received soil samples collected at the KALAMAZOO FORMER MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Michigan-10 Metals
Amenable Cyanide

Analytical Notes: (1) PAH determinations were subcontracted to Brighton Analytical. All other determinations were performed by CHEM.

Analytical results are attached for your review.

KR059B031193

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Unless otherwise indicated, all methods are from SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

VOC Sample Collection - Soil VOC samples were collected according to "Procedure for Collection and Methanol Preservation of Soil Samples for Volatile Organics", Environmental Response Division, Michigan Department of Environmental Quality (Method 5035).

Aromatic Volatile Organics (BTEX) - Method 8260, Volatile Organic Compounds By Gas Chromatography / Mass Spectrometry.

PAH Sample Extraction and Preparation – Method 3550, Sonication Extraction.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique.

Cyanide Soil Extraction - Method 9013, Cyanide Extraction Procedure For Solids and Oils.

Cyanide, Total and Amenable - Method 9010, Total and Amenable Cyanide.

Total Metals Preparation - Method 3051, Microwave Assisted Acid Digestion Of Sediments, Sludges, Soils and Oils.

Total Metals Preparation (Mercury) – Method 7471, Mercury in Solid or Semisolid Waste.

Metal Analytes

Analyte	SW-846 Method
Arsenic	6020
Barium	6020
Cadmium	6020
Chromium	6020
Copper	6020
Lead	6020
Mercury	7471
Selenium	6020
Silver	6020
Zinc	6020

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 05, 2002	Project Number CHEM-02-1288

Sample Identification	SP606
Sample Depth, ft	0.5-1
Sample Type	soil
Sample Date	08-05-02
Received Date	08-06-02
Report Date	09-24-02
Percent Solids, %w/w	92
Preservation Date	08-06-02
Preservation Type	MeOH
Analysis Date	08-10-02
Analyst	jdm
Control Number	021288-01

BTEX, Method 8260	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	70-121
Toluene-d8	98	84-138
4-Bromofluorobenzene	101	59-113

Sample Identification	SP606
Sample Depth, ft	0.5-1
Sample Type	soil
Sample Date	08-05-02
Received Date	08-06-02
Report Date	09-24-02
Percent Solids, %w/w	92
Extraction Date	08-08-02
Analysis Date	08-29-02
Analyst	<outsource>
Control Number	021288-01

PAHs, Method 8270	ug/kg	TDL
Acenaphthene	nd	330
Acenaphthylene	nd	330
Anthracene	nd	330
Benzo(a)anthracene	nd	330
Benzo(a)pyrene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(g,h,i)perylene	nd	330
Benzo(k)fluoranthene	nd	330
Chrysene	nd	330
Dibenzo(a,h)anthracene	nd	330
Fluoranthene	nd	330
Fluorene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
2-Methylnaphthalene	nd	330
Naphthalene	nd	330
Phenanthrene	nd	330
Pyrene	nd	330
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	77	60-140

KR059B031195

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By [illegible] Date 9-24-02

Data File	Kalamazoo
SP606	0.5-1

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 05, 2002	Project Number CHEM-02-1288

Sample Identification	SP606
Sample Depth, ft	4-5
Sample Type	soil
Sample Date	08-05-02
Received Date	08-06-02
Report Date	09-24-02
Percent Solids, %w/w	96
Preservation Date	08-06-02
Preservation Type	MeOH
Analysis Date	08-10-02
Analyst	jdm
Control Number	021288-02

BTEX, Method 8260	ug/kg	TDL
Benzene	nd	50
Toluene	nd	50
Ethylbenzene	nd	50
m/p-Xylene	nd	100
o-Xylene	nd	50
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	70-121
Toluene-d8	85	84-138
4-Bromofluorobenzene	86	59-113

Sample Identification	SP606
Sample Depth, ft	4-5
Sample Type	soil
Sample Date	08-05-02
Received Date	08-06-02
Report Date	09-24-02
Percent Solids, %w/w	96
Extraction Date	08-08-02
Analysis Date	08-29-02
Analyst	<outsource>
Control Number	021288-02

PAHs, Method 8270	ug/kg	TDL
Acenaphthene	nd	330
Acenaphthylene	nd	330
Anthracene	nd	330
Benzo(a)anthracene	nd	330
Benzo(a)pyrene	nd	330
Benzo(b)fluoranthene	nd	330
Benzo(g,h,i)perylene	nd	330
Benzo(k)fluoranthene	nd	330
Chrysene	nd	330
Dibenzo(a,h)anthracene	nd	330
Fluoranthene	nd	330
Fluorene	nd	330
Indeno(1,2,3-cd)pyrene	nd	330
2-Methylnaphthalene	nd	330
Naphthalene	nd	330
Phenanthrene	nd	330
Pyrene	nd	330
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	68	60-140

KR059B031196

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By [illegible] Date [illegible]

Data File	Kalamazoo
SP606	4-5

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 05, 2002	Project Number CHEM-02-1288

Sample Identification	SP607
Sample Depth, ft	0-1
Sample Type	soil
Sample Date	08-05-02
Received Date	08-06-02
Report Date	09-24-02
Percent Solids, %w/w	81
Preservation Date	08-06-02
Preservation Type	MeOH
Analysis Date	08-10-02
Analyst	jdm
Control Number	021288-03

BTEX, Method 8260	ug/kg	TDL
Benzene	nd	50
Toluene	100	50
Ethylbenzene	nd	50
m/p-Xylene	120	100
o-Xylene	70	50
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	97	70-121
Toluene-d8	101	84-138
4-Bromofluorobenzene	103	59-113

Sample Identification	SP607
Sample Depth, ft	0-1
Sample Type	soil
Sample Date	08-05-02
Received Date	08-06-02
Report Date	09-24-02
Percent Solids, %w/w	81
Extraction Date	08-08-02
Analysis Date	08-29-02
Analyst	<outsource>
Control Number	021288-03

PAHs, Method 8270	ug/kg	TDL
Acenaphthene	nd	330
Acenaphthylene	nd	330
Anthracene	1,100	330
Benzo(a)anthracene	3,500	330
Benzo(a)pyrene	4,000	330
Benzo(b)fluoranthene	2,500	330
Benzo(g,h,I)perylene	4,200	330
Benzo(k)fluoranthene	2,200	330
Chrysene	3,300	330
Dibenzo(a,h)anthracene	350	330
Fluoranthene	4,300	330
Fluorene	nd	330
Indeno(1,2,3-cd)pyrene	3,000	330
2-Methylnaphthalene	430	330
Naphthalene	600	330
Phenanthrene	2,200	330
Pyrene	4,200	330
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	58	60-140

KR059B031197

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By [signature] Date 8-24-02

Data File	Kalamazoo
SP607	0-1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 05, 2002	Project Number CHEM-02-1288

Sample Identification	SP607
Sample Depth, ft	4.5
Sample Type	soil
Sample Date	08-05-02
Received Date	08-06-02
Report Date	09-24-02
Percent Solids, %w/w	74
Preservation Date	08-06-02
Preservation Type	MeOH
Analysis Date	08-10-02
Analyst	jdm
Control Number	021288-04

BTEX, Method 8260	ug/kg	TDL
Benzene	80	50
Toluene	160	50
Ethylbenzene	nd	50
m/p-Xylene	150	100
o-Xylene	100	50
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	100	70-121
Toluene-d8	105	84-138
4-Bromofluorobenzene	104	59-113

Sample Identification	SP607
Sample Depth, ft	4.5
Sample Type	soil
Sample Date	08-05-02
Received Date	08-06-02
Report Date	09-24-02
Percent Solids, %w/w	74
Extraction Date	08-08-02
Analysis Date	08-29-02
Analyst	<outsource>
Control Number	021288-04

PAHs, Method 8270	ug/kg	TDL
Acenaphthene	nd	330
Acenaphthylene	nd	330
Anthracene	1,200	330
Benzo(a)anthracene	3,300	330
Benzo(a)pyrene	5,600	330
Benzo(b)fluoranthene	2,800	330
Benzo(g,h,i)perylene	6,400	330
Benzo(k)fluoranthene	2,900	330
Chrysene	3,100	330
Dibenzo(a,h)anthracene	430	330
Fluoranthene	3,500	330
Fluorene	nd	330
Indeno(1,2,3-cd)pyrene	4,700	330
2-Methylnaphthalene	510	330
Naphthalene	660	330
Phenanthrene	2,400	330
Pyrene	3,200	330
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	57	60-140

KR059B031198

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By _____ Date _____

Data File	Kalamazoo
SP607	4.5

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 05, 2002	Project Number CHEM-02-1288

Sample Identification	SP606	Sample Identification	SP606
Sample Depth, ft	0.5-1	Sample Depth, ft	0.5-1
Sample Type	soil	Sample Type	soil
Sample Date	08-05-02	Sample Date	08-05-02
Received Date	08-06-02	Received Date	08-06-02
Report Date	09-24-02	Report Date	09-24-02
Percent Solids, %w/w	92	Percent Solids, %w/w	92
Preparation Dates	08-14-02 & 08-20-02	Extraction Date	08-07-02
Analysis Date, Start	09-03-02	Analysis Date, Amenable	08-12-02
Analysis Date, End	09-05-02	Analyst	bek
Analyst(s)	eb & clh		
Control Number	021288-01	Control Number	021288-01

METALS	ug/kg	TDL
Arsenic - 6020	3,800	100
Barium - 6020	16,000	1,000
Cadmium - 6020	nd	50
Chromium (total) - 6020	5,500	500
Copper - 6020	6,800	1,000
Lead - 6020	5,400	1,000
Mercury - 7471	nd	100
Selenium - 6020	nd	200
Silver - 6020	nd	500
Zinc - 6020	27,000	1,000
Metal Results Are Reported As	Totals	Totals

INORGANICS	ug/kg	TDL
Cyanide, Amenable - 9010/9013	nd	500

KR059B031199

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By _____ Date _____

Data File	Kalamazoo
SP606	0.5-1

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 05, 2002	Project Number CHEM-02-1288

Sample Identification	SP606	Sample Identification	SP606
Sample Depth, ft	4-5	Sample Depth, ft	4-5
Sample Type	soil	Sample Type	soil
Sample Date	08-05-02	Sample Date	08-05-02
Received Date	08-06-02	Received Date	08-06-02
Report Date	09-24-02	Report Date	09-24-02
Percent Solids, %w/w	96	Percent Solids, %w/w	96
Preparation Dates	08-14-02 & 08-20-02	Extraction Date	08-07-02
Analysis Date, Start	09-03-02	Analysis Date, Amenable	08-12-02
Analysis Date, End	09-05-02	Analyst	bek
Analyst(s)	eb & clh		
Control Number	021288-02	Control Number	021288-02

METALS	ug/kg	TDL
Arsenic - 6020	12,000	100
Barium - 6020	23,000	1,000
Cadmium - 6020	84	50
Chromium (total) - 6020	14,000	500
Copper - 6020	16,000	1,000
Lead - 6020	10,000	1,000
Mercury - 7471	nd	100
Selenium - 6020	nd	200
Silver - 6020	nd	500
Zinc - 6020	52,000	1,000
Metal Results Are Reported As	Totals	Totals

INORGANICS	ug/kg	TDL
Cyanide, Amenable - 9010/9013	nd	500

KR059B031200

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By _____ Date _____

Data File	Kalamazoo
SP606	4-5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 05, 2002	Project Number CHEM-02-1288

Sample Identification	SP607	Sample Identification	SP607
Sample Depth, ft	0-1	Sample Depth, ft	0-1
Sample Type	soil	Sample Type	soil
Sample Date	08-05-02	Sample Date	08-05-02
Received Date	08-06-02	Received Date	08-06-02
Report Date	09-24-02	Report Date	09-24-02
Percent Solids, %w/w	81	Percent Solids, %w/w	81
Preparation Dates	08-14-02 & 08-20-02	Extraction Date	08-07-02
Analysis Date, Start	09-03-02	Analysis Date, Amenable	08-12-02
Analysis Date, End	09-05-02	Analyst	bek
Analyst(s)	eb & clh		
Control Number	021288-03	Control Number	021288-03

METALS	ug/kg	TDL
Arsenic - 6020	11,000	100
Barium - 6020	100,000	1,000
Cadmium - 6020	100	50
Chromium (total) - 6020	14,000	500
Copper - 6020	22,000	1,000
Lead - 6020	77,000	1,000
Mercury - 7471	230	100
Selenium - 6020	1,800	200
Silver - 6020	nd	500
Zinc - 6020	130,000	1,000
Metal Results Are Reported As	Totals	Totals

INORGANICS	ug/kg	TDL
Cyanide, Amenable - 9010/9013	3,100	500

KR059B031201

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By [illegible] Date 9/24/02

Data File	Kalamazoo
SP607	0-1

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 05, 2002	Project Number CHEM-02-1288

Sample Identification	SP607	Sample Identification	SP607
Sample Depth, ft	4.5	Sample Depth, ft	4.5
Sample Type	soil	Sample Type	soil
Sample Date	08-05-02	Sample Date	08-05-02
Received Date	08-06-02	Received Date	08-06-02
Report Date	09-24-02	Report Date	09-24-02
Percent Solids, %w/w	74	Percent Solids, %w/w	74
Preparation Dates	08-14-02 & 08-20-02	Extraction Date	08-07-02
Analysis Date, Start	09-03-02	Analysis Date, Amenable	08-12-02
Analysis Date, End	09-05-02	Analyst	bek
Analyst(s)	eb & clh		
Control Number	021288-04	Control Number	021288-04

METALS	ug/kg	TDL
Arsenic - 6020	4,300	100
Barium - 6020	34,000	1,000
Cadmium - 6020	nd	50
Chromium (total) - 6020	4,600	500
Copper - 6020	4,000	1,000
Lead - 6020	11,000	1,000
Mercury - 7471	nd	100
Selenium - 6020	1,400	200
Silver - 6020	nd	500
Zinc - 6020	23,000	1,000
Metal Results Are Reported As	Totals	Totals

INORGANICS	ug/kg	TDL
Cyanide, Amenable - 9010/9013	nd	500

KR059B031202

NOTES:
TDL = Target Detection Limit, ug/kg (parts-per-billion)
nd = Parameter Not Detected At TDL
Results Reported As Dry-Weight Basis

Reviewed By [signature] Date 9-24-02

Data File	Kalamazoo
SP607	4.5

INORG

00515

CHAIN OF CUSTODY

CONSUMERS POWER COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: 16 3 1823B

SAMPLING TEAM: N. Lapsel

DATE SHIPPED: 8/6/02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Bannaske

PHONE: 734-454-9900

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAHs	10 metals	Amenable CN		REMARKS
02-1288-01	8/5/02	1140	Soil	SP606	0.5-1	3	X	X	X	X		
-02		1145		SP606	4-5	3						
-03		1215		SP607	0-1	3						
-04		1230		SP607	4-5	3						

KR059B031203

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[illegible]	8/5/02 1600	[illegible]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[illegible]	8/6/02 4:00	[illegible]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ MDLs method
- Contact Bob Newman w/ results

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: 02-1233

SAMPLING TEAM: —

DATE SHIPPED: 08/29/02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: GL Carrell, Consumers, PHONE (517) 788-2334

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	ANALYSIS REQUESTED: 8270	REMARKS
02-1233-01	8/5/02	11:40	soil	SP606	0.5-1'	1 eq 6L vol	X	
-02		11:45		SP606	4-5'		X	
-03		12:15		SP607	0-1'		X	
-04		12:30		SP607	4-5'		X	

KR059B031204

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	8/29/02	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

- MDEQ op. memo. 6 Reg 6 TILs
- Routine turnaround
- No fax

APPENDIX G

KR059B031205

APPENDIX G

LABORATORY ANALYTICAL REPORT FOR GROUNDWATER SAMPLES COLLECTED DURING VERTICAL SAMPLING IN AUGUST 2002

smec

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-251, Jackson

Date: August 20, 2002

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823B
- Sampling Dates of August 06 – 09, 2002

File Index: 520217-410-290
520217-410-307
520217-410-321

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On August 06 - 12, 2002 the Chemistry Section (CHEM) of Laboratory Services received groundwater samples collected at the KALAMAZOO FORMER MGP site.

The samples were returned to CHEM for determination of:

<u>Aromatic Volatile Organics (BTEX-plus)</u>

Analytical Notes: (1) Target Detection Limits (TDLs) for several samples were raised due to sample dilution. (2) All determinations were performed by CHEM and analytical results are attached for your review. (3) Results were faxed to SME on August 12 & 16.

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Aromatic Volatile Organics (BTEX-plus) - Method 8260, Volatile Organic Compounds By Gas Chromatography / Mass Spectrometry. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 06, 2002	Project Number CHEM-02-1290

Sample Identification	B403	**Sample Identification**	B403
Sample Depth, ft	5-8.5	Sample Depth, ft	5-8.5
Sample Type	water	Sample Type	water
Sample Date	08-06-02	Sample Date	08-06-02
Received Date	08-06-02	Received Date	08-06-02
Report Date	08-12-02	Report Date	08-12-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	08-09-02	-	
		-	
Control Number	021290-01	Control Number	021290-01

BTEX-Plus, Method 8260	**ug/L**	**TDL**
Benzene	5,000	1,000
Toluene	1,200	1,000
Ethylbenzene	7,500	1,000
m/p-Xylene	13,000	2,000
- Xylene	600	10
phthalene	5,500	5,000

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	110	76-114
Toluene-d8	104	88-110
4-Bromofluorobenzene	106	86-115

no entry	**ug/L**	**no entry**

KR059B031209

OTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By *Jd* Date 8-12-02

Data File	Kzoo
B403	5-8.5

Org

00623

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 06, 2002	Project Number CHEM-02-1290

Sample Identification	B403	Sample Identification	B403
Sample Depth, ft	20-25	Sample Depth, ft	20-25
Sample Type	water	Sample Type	water
Sample Date	08-06-02	Sample Date	08-06-02
Received Date	08-06-02	Received Date	08-06-02
Report Date	08-12-02	Report Date	08-12-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	08-09-02	-	
		-	
Control Number	021290-02	Control Number	021290-02

BTEX-Plus, Method 8260	ug/L	TDL
Benzene	19	1
Toluene	4	1
Ethylbenzene	90	1
m/p-Xylene	170	2
Xylene	21	1
phthalene	840	50

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	106	76-114
Toluene-d8	108	88-110
4-Bromofluorobenzene	104	86-115

no entry	ug/L	no entry

KR059B031210

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8-12-02

Data File	Kzoo
B403	20-25

Org

00624

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 06, 2002	Project Number CHEM-02-1290

Sample Identification	B403	Sample Identification	B403
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	08-06-02	Sample Date	08-06-02
Received Date	08-06-02	Received Date	08-06-02
Report Date	08-12-02	Report Date	08-12-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	08-09-02	-	
		-	
Control Number	021290-03	Control Number	021290-03

BTEX-Plus, Method 8260	ug/L	TDL
Benzene	140	10
Toluene	27	1
Ethylbenzene	570	10
m/p-Xylene	760	20
o-Xylene	30	10
Naphthalene	100	50

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	104	76-114
Toluene-d8	98	88-110
4-Bromofluorobenzene	94	86-115

no entry	ug/L	no entry

KR059B031211

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8-12-02

Data File	Kzoo
B403	35-40

Org

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 06, 2002	Project Number CHEM-02-1290

Sample Identification	B403	**Sample Identification**	B403
Sample Depth, ft	50-55	Sample Depth, ft	50-55
Sample Type	water	Sample Type	water
Sample Date	08-06-02	Sample Date	08-06-02
Received Date	08-06-02	Received Date	08-06-02
Report Date	08-12-02	Report Date	08-12-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	08-09-02	-	
		-	
Control Number	021290-04	Control Number	021290-04

BTEX-Plus, Method 8260	**ug/L**	**TDL**
Benzene	7	1
Toluene	nd	1
Ethylbenzene	33	1
m/p-Xylene	62	2
-Xylene	nd	1
aphthalene	nd	5

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	81	76-114
Toluene-d8	89	88-110
4-Bromofluorobenzene	88	86-115

no entry	**ug/L**	**no entry**

KR059B031212

'OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8-12-02

Data File	Kzoo
B403	50-55

Org

00626

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 07, 2002	Project Number CHEM-02-1307

Sample Identification	B404	Sample Identification	B404
Sample Depth, ft	6-10	Sample Depth, ft	6-10
Sample Type	water	Sample Type	water
Sample Date	08-07-02	Sample Date	08-07-02
Received Date	08-08-02	Received Date	08-08-02
Report Date	08-12-02	Report Date	08-12-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	08-10-02	-	
		-	
Control Number	021307-01	Control Number	021307-01

BTEX-Plus, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
-Xylene	nd	1
aphthalene	nd	5

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	100	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	100	86-115

no entry	ug/L	no entry

KR059B031213

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ad Date 8/20/02

Data File	Kzoo
B404	6-10

Org

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 07, 2002	Project Number CHEM-02-1307

Sample Identification	B404	Sample Identification	B404
Sample Depth, ft	20-25	Sample Depth, ft	20-25
Sample Type,	water	Sample Type	water
Sample Date	08-07-02	Sample Date	08-07-02
Received Date	08-08-02	Received Date	08-08-02
Report Date	08-12-02	Report Date	08-12-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	08-10-02	-	
		-	
Control Number	021307-02	Control Number	021307-02

BTEX-Plus, Method 8260	ug/L	TDL
Benzene	290	10
Toluene	nd	1
Ethylbenzene	3	1
m/p-Xylene	5	2
Xylene	nd	1
phthalene	nd	5

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	108	76-114
Toluene-d8	107	88-110
4-Bromofluorobenzene	110	86-115

no entry	ug/L	no entry

KR059B031214

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8-12-02

Data File	Kzoo
B404	20-25

Org

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

OJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 07, 2002	Project Number CHEM-02-1307

Sample Identification	B404	**Sample Identification**	B404
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	08-07-02	Sample Date	08-07-02
Received Date	08-08-02	Received Date	08-08-02
Report Date	08-12-02	Report Date	08-12-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	08-10-02	-	
		-	
Control Number	021307-03	Control Number	021307-03

BTEX-Plus, Method 8260	**ug/L**	**TDL**
Benzene	20,000	1,000
Toluene	10	1
Ethylbenzene	56	1
m/p-Xylene	36	2
o-Xylene	46	1
phthalene	4,000	500

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	107	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	98	86-115

no entry	**ug/L**	**no entry**

KR059B031215

OTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8-12-02

Data File	Kzoo
B404	35-40

Org

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 07, 2002	Project Number CHEM-02-1307

Sample Identification	B404	**Sample Identification**	B404
Sample Depth, ft	50-55	Sample Depth, ft	50-55
Sample Type	water	Sample Type	water
Sample Date	08-07-02	Sample Date	08-07-02
Received Date	08-08-02	Received Date	08-08-02
Report Date	08-12-02	Report Date	08-12-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	08-10-02	-	
		-	
Control Number	021307-04	Control Number	021307-04

BTEX-Plus, Method 8260	**ug/L**	**TDL**
Benzene	3,100	100
Toluene	nd	1
Ethylbenzene	22	1
m/p-Xylene	30	2
Xylene	6	1
phthalene	144	5

Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	109	76-114
Toluene-d8	97	88-110
4-Bromofluorobenzene	96	86-115

no entry	**ug/L**	**no entry**

KR059B031216

OTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8-12-02

Date File	Kzoo
B404	50-55

Org

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 07, 2002	Project Number CHEM-02-1321

Sample Identification	B402	**Sample Identification**	B402
Sample Depth, ft	20-25	Sample Depth, ft	20-25
Sample Type	water	Sample Type	water
Sample Date	08-08-02	Sample Date	08-08-02
Received Date	08-12-02	Received Date	08-12-02
Report Date	08-16-02	Report Date	08-16-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	08-15-02	-	
		-	
Control Number	021321-01	Control Number	021321-01

BTEX-Plus, Method 8260	**ug/L**	**TDL**
Benzene	1,100	100
Toluene	5,400	100
Ethylbenzene	3,200	100
m/p-Xylene	6,400	200
o-Xylene	4,200	100
Naphthalene	7,800	500

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	89	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	96	86-115

no entry	**ug/L**	**no entry**

KR059B031217

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8-16-02

Data File	Kzoo
B402	20-25

BTEX+

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 07, 2002	Project Number CHEM-02-1321

Sample Identification	B402	**Sample Identification**	B402
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	08-08-02	Sample Date	08-08-02
Received Date	08-12-02	Received Date	08-12-02
Report Date	08-16-02	Report Date	08-16-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	08-15-02	-	
		-	
Control Number	021321-02	Control Number	021321-02

BTEX-Plus, Method 8260	**ug/L**	**TDL**
Benzene	11	1
Toluene	17	1
Ethylbenzene	400	10
m/p-Xylene	360	20
-Xylene	250	10
phthalene	200	50

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	89	76-114
Toluene-d8	95	88-110
4-Bromofluorobenzene	101	86-115

no entry	**ug/L**	**no entry**

KR059B031218

OTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8/16/02

Data File	Kzoo
B402	35-40

BTEX+

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 07, 2002	Project Number CHEM-02-1321

Sample Identification	B402	**Sample Identification**	B402
Sample Depth, ft	50-55	Sample Depth, ft	50-55
Sample Type	water	Sample Type	water
Sample Date	08-08-02	Sample Date	08-08-02
Received Date	08-12-02	Received Date	08-12-02
Report Date	08-16-02	Report Date	08-16-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	08-15-02	-	
		-	
Control Number	021321-03	Control Number	021321-03

BTEX-Plus, Method 8260	**ug/L**	**TDL**
Benzene	21	1
Toluene	110	100
Ethylbenzene	1,700	100
m/p-Xylene	2,000	200
o-Xylene	800	100
ophthalene	2,400	500

Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	94	76-114
Toluene-d8	110	88-110
4-Bromofluorobenzene	103	86-115

no entry	**ug/L**	**no entry**

KR059B031219

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8-16-02

Data File	Kzoo
B402	50-55

BTEX+

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 07, 2002	Project Number CHEM-02-1321

Sample Identification	B401	Sample Identification	B401
Sample Depth, ft	10-15	Sample Depth, ft	10-15
Sample Type	water	Sample Type	water
Sample Date	08-08-02	Sample Date	08-08-02
Received Date	08-12-02	Received Date	08-12-02
Report Date	08-16-02	Report Date	08-16-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	08-15-02	-	
		-	
Control Number	021321-04	Control Number	021321-04

BTEX-Plus, Method 8260	ug/L	TDL
Benzene	5,100	1,000
Toluene	42,000	1,000
Ethylbenzene	23,000	1,000
m/p-Xylene	44,000	2,000
o-Xylene	34,000	1,000
Naphthalene	34,000	5,000

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	102	76-114
Toluene-d8	95	88-110
4-Bromofluorobenzene	108	86-115

no entry	ug/L	no entry

KR059B031220

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8-16-02

Data File	Kzoo
B401	10-15

BTEX+

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 07, 2002	Project Number CHEM-02-1321

Sample Identification	B401	Sample Identification	B401
Sample Depth, ft	20-25	Sample Depth, ft	20-25
Sample Type	water	Sample Type	water
Sample Date	08-09-02	Sample Date	08-09-02
Received Date	08-12-02	Received Date	08-12-02
Report Date	08-16-02	Report Date	08-16-02
Percent Solids, %w/w		Percent Solids, %w/w	
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	08-15-02	-	
		-	
Control Number	021321-05	Control Number	021321-05

BTEX-Plus, Method 8260	ug/L	TDL
Benzene	90	10
Toluene	39,000	1,000
Ethylbenzene	19,000	1,000
m/p-Xylene	31,000	2,000
o-Xylene	25,000	1,000
Naphthalene	29,000	5,000

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	88	88-110
4-Bromofluorobenzene	104	86-115

no entry	ug/L	no entry

KR059B031221

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8/6/02

Data File	Kzoo
B401	20-25

BTEX+

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

JECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 07, 2002	Project Number CHEM-02-1321

Sample Identification	B401	**Sample Identification**	B401
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	08-09-02	Sample Date	08-09-02
Received Date	08-12-02	Received Date	08-12-02
Report Date	08-16-02	Report Date	08-16-02
Percent Solids, %w/w		Percent Solids, %w/w	
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	08-15-02	-	
		-	
Control Number	021321-06	Control Number	021321-06

BTEX-Plus, Method 8260	**ug/L**	**TDL**
Benzene	50	10
Toluene	4,000	1,000
Ethylbenzene	22,000	1,000
m/p-Xylene	14,000	2,000
o-Xylene	13,000	1,000
phthalene	23,000	5,000

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	94	88-110
4-Bromofluorobenzene	99	86-115

no entry	**ug/L**	**no entry**

KR059B031222

OTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By *Dll* Date *8-16-02*

Data File	Kzoo
B401	35-40

BTEX+

0B63S

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B - Sampling Date of August 07, 2002	Project Number CHEM-02-1321

Sample Identification	B401	**Sample Identification**	B401
Sample Depth, ft	50-55	Sample Depth, ft	50-55
Sample Type	water	Sample Type	water
Sample Date	08-09-02	Sample Date	08-09-02
Received Date	08-12-02	Received Date	08-12-02
Report Date	08-16-02	Report Date	08-16-02
Percent Solids, %w/w		Percent Solids, %w/w	
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	08-15-02	-	
		-	
Control Number	021321-07	Control Number	021321-07

BTEX-Plus, Method 8260	**ug/L**	**TDL**
Benzene	220	10
Toluene	12,000	1,000
Ethylbenzene	5,500	1,000
m/p-Xylene	7,200	2,000
o-Xylene	4,900	1,000
Naphthalene	15,000	5,000

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	88	86-115

no entry	**ug/L**	**no entry**

KR059B031223

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8/16/02

Data File	Kzoo
B401	50-55

BTEX+

00037

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: 16 31823 B

SAMPLING TEAM: N. LALAZEL

DATE SHIPPED: 8/7/02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARNESS, SMG - PLYMOUTH

PHONE: 734-454-2100

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	Naphthalene					REMARKS
02-1290-01	8/6/02	0930	W	B403 (5-8.5)	5-8.5	2	+	+					
-02	↓	1050	↓	B403 (20-25)	20-25	2	+	+					
-03	↓	1300	↓	B403 (35-40)	35-40	2	+	+					
-04	↓	1400	↓	B403 (50-55)	50-55	2	+	+					

KR059B031224

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	8/6/02	SMG cooler storage
SMG cooler storage	8/6/02 4:00	Grace Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MEG MS/MSD method
- RUSH 7-DAY TAT per Green Cattell

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: 103182 3

SAMPLING TEAM: N. Larsel

DATE SHIPPED: 8/7/02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Barnesia, SMG - Plymouth

PHONE: 734-454-5500

ANALYSIS REQUESTED: BTEX, Naphthalene

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	Naphthalene	REMARKS
CR-130701	8/7/02	1115	W	B404 6-10	6-10	2	X	X	
-02		1225		B404 20-25	20-25				
-03		1325		B404 35-40	35-40				
-04				B404 50-55	50-55				

KR059B031225

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	8/7/02 1700	SMG Cold Stage 2
RELINQUISHED BY: (SIGNATURE) SMG Cold Stage	DATE / TIME 8/8/02 3:00	RECEIVED BY: (SIGNATURE) Gabe Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MEG MRLs methods
- Rush TAT per B

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: KG 31823

SAMPLING TEAM: N. Warabel

DATE SHIPPED: 8/9/02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: Pat Barrette, SMG - Plymouth, PHONE: 734-454-9500

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	Naphthalene					REMARKS
02-13321-01	8/8/02	1020	W	B402 (20-25)	20-25	2	+	+					
-02	↓	1145	↓	B402 (35-40)	35-40	↓	+	+					
-03	↓	1245	↓	B402 (50-55)	50-55	↓	+	+					
✓ -04	8/8/02	1645	↓	B401 (10-15)	10-15	2	X	X					

KR059B031226

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	8/8/02 1800	SMG cold storage
RELINQUISHED BY: (SIGNATURE) SMG cold storage	DATE / TIME 8/12/02 1245	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

- MSE as methods
- Rush TAT per Bob M

ORIGINAL TO LAB COPY TO

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823

SAMPLING TEAM: DAVIN OJALA

DATE SHIPPED: 8-12-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARASE SME - PLYMOUTH

PHONE: 734-454-9900

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	NAPHTHALENE						REMARKS
02-1321-05	8-9-02	8:35	W	B401 (20-25)	20-25	2	X	X						
-06	↓	9:55	↓	B401 (35-40)	35-40	2	X	X						
-07	↓	10:45	↓	B401 (50-55)	50-55	2	X	X						

KR059B031227

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	8/9/02 5:00 PM	SME COLD STORAGE
	DATE / TIME 8/12/02 1245	RECEIVED BY: (SIGNATURE) [signature]
		RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ METHODS + MDLs
- RUSH TAT PER BOB NEUMAN

APPENDIX H

KR059B031228

APPENDIX H

LABORATORY ANALYTICAL REPORT FOR GROUNDWATER SAMPLES COLLECTED FROM WELLS IN JUNE AND SEPTEMBER 2002

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-251, Jackson

RECD SEP 17 2002

Date: September 13, 2002

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823B-5
- Sampling Dates of June 11 - 17, 2002

File Index: 510217-410-992
520217-410-008

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On June 13 & 18, 2002 the Chemistry Section (CHEM) of Laboratory Services received groundwater samples collected at the KALAMAZOO FORMER MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Dissolved Michigan 10 Metals
Available (OIA) and Free Cyanide
Dissolved Iron
Nitrate
Sulfate
Alkalinity

Analytical Notes: (1) Sulfate and BTEX determinations were performed by Brighton Analytical. All other determinations were performed by CHEM. (2) BTEX TDLs for samples MW-304, MW-201R, MW-1, Duplicate 1, MW-301, MW-101, Duplicate 2 and MW-101D were raised due to sample dilution. (3) BTEX determinations were performed past the maximum recommended holding time. (4) Review of PAH results indicated they are invalid and will not be reported for this particular sample round.

Analytical results are attached for your review.

KR059B031230

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ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 or parameter specific recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Aromatic Volatile Organics (BTEX) - Method 8260, Volatile Organic Compounds By Gas Chromatography / Mass Spectrometry. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

PAH Sample Extraction and Preparation (Aqueous) – Method 3510, Separatory Funnel Liquid-Liquid Extraction. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Free - Method ASTM-D4282-95, Determination Of Free Cyanide In Water And Wastewater By Micro-diffusion, ASTM.

Cyanide, Available - Method OIA-1677, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry. EPA-821-R-99-013.

Dissolved Metals Preparation – Waters (Mercury) – Method 7470, Mercury in Liquid Waste. SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	EPA Method
Arsenic	6020
Barium	6020
Cadmium	6020
Chromium	6020
Copper	6020
Iron	7380
Lead	6020
Mercury	7470
Selenium	6020
Silver	6020
Zinc	6020

SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.
Methods For Chemical Analysis of Water and Wastes, USEPA, EMSL.

ANALYTICAL METHODS

Inorganic Analytes

Analyte	Test Method
Nitrate	353.2
Sulfate	375.2; 300.0
Alkalinity	310.1

Methods For Chemical Analysis of Water and Wastes, USEPA, EMSL.

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-304	Sample Identification	MW-304
Sample Depth, ft	4-10.1	Sample Depth, ft	4-10.1
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-12-02	-	
Analyst	<outsource>	-	
Control Number	020992-01	Control Number	020992-01

BTEX, Method 8260	ug/L	TDL
Benzene	120	5
Ethylbenzene	94	5
Toluene	8	5
Xylenes, total	35	15

rrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	108	70-130
Toluene-d8	92	70-130
Dibromofluoromethane	105	70-130

no entry	ug/L	no entry

KR059B031233

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date [signature]

Data File	Kalama
MW-304	4-10.1

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-304	Sample Identification	MW-304
Sample Depth, ft	4-10.1	Sample Depth, ft	4-10.1
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	08-19-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	020992-01	Control Number	020992-01

METALS	ug/L	TDL
Arsenic - 6020	32	5
Barium - 6020	200	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	4	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	24,000	20

KR059B031234

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8-13-02

Data File	Kalan
MW-304	4-10.1

00548

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-304	Sample Identification	MW-304
Sample Depth, ft	4-10.1	Sample Depth, ft	4-10.1
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	020992-01	Control Number	020992-01

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	410,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031235

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalama
MW-304	4-10.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-303	Sample Identification	MW-303
Sample Depth, ft	3.2-7.6	Sample Depth, ft	3.2-7.6
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-15-02	-	
Analyst	<outsource>	-	
Control Number	020992-02	Control Number	020992-02

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3

urrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	106	70-130
Toluene-d8	83	70-130
Dibromofluoromethane	107	70-130

no entry	ug/L	no entry

KR059B031236

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 2/13/03

Data File	Kalama
MW-303	3.2-7.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-303	Sample Identification	MW-303
Sample Depth, ft	3.2-7.6	Sample Depth, ft	3.2-7.6
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	08-19-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	020992-02	Control Number	020992-02

METALS	ug/L	TDL
Arsenic - 6020	260	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
ead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	11,000	20

KR059B031237

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9/13/02

Data File	Kalamazo
MW-303	3.2-7.6

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-303
Sample Depth, ft	3.2-7.6
Sample Type	water
Sample Date	06-11-02
Received Date	06-13-02
Report Date	09-13-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02
Analysis Date, Sulfate	06-20-02
Analysis Date, Alkalinity	06-19-02
Analysts	bek & <outsource>
Control Number	020992-02

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	1,500	1,000
Alkalinity, as CaCO3 - 310.1	710,000	-

Sample Identification	MW-303
Sample Depth, ft	3.2-7.6
Sample Type	water
Sample Date	06-11-02
Received Date	06-13-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	06-19-02 / 06-19-02
Analyst	bek
Control Number	020992-02

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031238

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date _____

Data File	Kalamazo
MW-303	3.2-7.6

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-4	Sample Identification	MW-4
Sample Depth, ft	2.2-6.8	Sample Depth, ft	2.2-6.8
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	020992-03	Control Number	020992-03

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3

urrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	114	70-130
Toluene-d8	93	70-130
Dibromofluoromethane	106	70-130

no entry	ug/L	no entry

KR059B031239

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AH Date 8/13/02

Data File	Kalam
MW-4	2.2-6.8

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00053

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-4	Sample Identification	MW-4
Sample Depth, ft	2.2-6.8	Sample Depth, ft	2.2-6.8
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	08-19-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	020992-03	Control Number	020992-03

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	17	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	330	20

KR059B031240

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalam
MW-4	2.2-6.8

0054

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-4	Sample Identification	P-4
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	020992-04	Control Number	020992-04

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3

rrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	118	70-130
Toluene-d8	93	70-130
Dibromofluoromethane	107	70-130

no entry	ug/L	no entry

KR059B031241

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *ML* Date *2/30*

Data File	Kalama
P-4	2.9-7.9

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-4	Sample Identification	P-4
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	08-19-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	020992-04	Control Number	020992-04

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	nd	20

KR059B031242

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalam
P-4	2.9-7.9

INORG-1

00655

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-4	Sample Identification	P-4
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	020992-04	Control Number	020992-04

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	22,000	1,000
Alkalinity, as CaCO3 - 310.1	400,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031243

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 9/30

Data File	Kalamazoo
P-4	2.9-7.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-4
Sample Depth, ft	2.2-6.8
Sample Type	water
Sample Date	06-11-02
Received Date	06-13-02
Report Date	09-13-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02
Analysis Date, Sulfate	06-20-02
Analysis Date, Alkalinity	06-19-02
Analysts	bek & <outsource>
Control Number	020992-03

INORGANICS	ug/L	TDL
Nitrate - 353.2	290	100
Sulfate - 375.2; 300.0	36,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

Sample Identification	MW-4
Sample Depth, ft	2.2-6.8
Sample Type	water
Sample Date	06-11-02
Received Date	06-13-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	06-19-02 / 06-19-02
Analyst	bek
Control Number	020992-03

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031244

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date _____

Data File	Kalamazoo
MW-4	2.2-6.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-304D	Sample Identification	MW-304D
Sample Depth, ft	64.5-69.5	Sample Depth, ft	64.5-69.5
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	020992-05	Control Number	020992-05

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	119	70-130
Toluene-d8	93	70-130
Dibromofluoromethane	106	70-130

no entry	ug/L	no entry

KR059B031245

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 2/13/03

Data File	Kalama
MW-304D	64.5-69

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-304D	Sample Identification	MW-304D
Sample Depth, ft	64.5-69.5	Sample Depth, ft	64.5-69.5
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	08-19-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	020992-05	Control Number	020992-05

METALS	ug/L	TDL
Arsenic - 6020	25	5
Barium - 6020	300	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	6,000	20

KR059B031246

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8/13/02

Data File	Kalamazoo
MW-304D	64.5-69.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-304D	Sample Identification	MW-304D
Sample Depth, ft	64.5-69.5	Sample Depth, ft	64.5-69.5
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	020992-05	Control Number	020992-05

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	65,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031247

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalamazoo
MW-304D	64.5-69.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-3	Sample Identification	MW-3
Sample Depth, ft	2.9-7.8	Sample Depth, ft	2.9-7.8
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	020992-06	Control Number	020992-06

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3

irrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	120	70-130
Toluene-d8	93	70-130
Dibromofluoromethane	106	70-130

no entry	ug/L	no entry

KR059B031248

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 9/13/02

Data File	Kalamazoo
MW-3	2.9-7.8

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00652

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-3	Sample Identification	MW-3
Sample Depth, ft	2.9-7.8	Sample Depth, ft	2.9-7.8
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	08-19-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	020992-06	Control Number	020992-06

METALS	ug/L	TDL	METALS	ug/L	TDL
Arsenic - 6020	nd	5	Iron (dissolved) - 7380	nd	20
Barium - 6020	nd	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	1			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031249

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date [signature]

Data File	Kalamazoo
MW-3	2.9-7.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-3	Sample Identification	MW-3
Sample Depth, ft	2.9-7.8	Sample Depth, ft	2.9-7.8
Sample Type	water	Sample Type	water
Sample Date	06-11-02	Sample Date	06-11-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	020992-06	Control Number	020992-06

INORGANICS	ug/L	TDL
Nitrate - 353.2	110	100
Sulfate - 375.2; 300.0	10,000	1,000
Alkalinity, as CaCO3 - 310.1	180,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031250

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 8/30

Data File	Kalamazo
MW-3	2.9-7.8

00554

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-3	Sample Identification	P-3
Sample Depth, ft	2.9-7.3	Sample Depth, ft	2.9-7.3
Sample Type	water	Sample Type	water
Sample Date	06-12-02	Sample Date	06-12-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	020992-07	Control Number	020992-07

BTEX, Method 8260	ug/L	TDL
Benzene	2	1
Ethylbenzene	8	1
Toluene	1	1
Xylenes, total	10	3

Surrogate Recovery	%Recovery	Criteria
a,a-Bromofluorobenzene	110	70-130
Toluene-d8	92	70-130
Dibromofluoromethane	106	70-130

no entry	ug/L	no entry

KR059B031251

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AL Date 9/13-02

Data File	Kalamazo
P-3	2.9-7.3

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00665

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-3	Sample Identification	P-3
Sample Depth, ft	2.9-7.3	Sample Depth, ft	2.9-7.3
Sample Type	water	Sample Type	water
Sample Date	06-12-02	Sample Date	06-12-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	08-19-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	020992-07	Control Number	020992-07

METALS	ug/L	TDL
Arsenic - 6020	14	5
Barium - 6020	150	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	7	5
Silver - 6020	nd	1
Zinc - 6020	14	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	7,500	20

KR059B031252

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AU Date 9/13/02

Data File	Kalamazo
P-3	2.9-7.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	06-12-02
Received Date	06-13-02
Report Date	09-13-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02
Analysis Date, Sulfate	06-20-02
Analysis Date, Alkalinity	06-19-02
Analysts	bek & <outsource>
Control Number	020992-07

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	290,000	1,000
Alkalinity, as CaCO3 - 310.1	280,000	-

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	06-12-02
Received Date	06-13-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	06-19-02 / 06-19-02
Analyst	bek
Control Number	020992-07

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031253

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 9/30/02

Data File	Kalamazoo
P-3	2.9-7.3

98667

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-2	Sample Identification	MW-2
Sample Depth, ft	4-7.7	Sample Depth, ft	4-7.7
Sample Type	water	Sample Type	water
Sample Date	06-12-02	Sample Date	06-12-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	020992-08	Control Number	020992-08

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	117	70-130
Toluene-d8	94	70-130
Dibromofluoromethane	106	70-130

no entry	ug/L	no entry

KR059B031254

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AL Date 8/30/02

Data File	Kalam
MW-2	4-7.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-2	Sample Identification	MW-2
Sample Depth, ft	4-7.7	Sample Depth, ft	4-7.7
Sample Type	water	Sample Type	water
Sample Date	06-12-02	Sample Date	06-12-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	08-19-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	020992-08	Control Number	020992-08

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	56	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	3,900	20

KR059B031255

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date [signature]

Data File	Kalamazo
MW-2	4-7.7

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-2	Sample Identification	MW-2
Sample Depth, ft	4-7.7	Sample Depth, ft	4-7.7
Sample Type	water	Sample Type	water
Sample Date	06-12-02	Sample Date	06-12-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	020992-08	Control Number	020992-08

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	610,000	1,000
Alkalinity, as CaCO3 - 310.1	160,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031256

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date _____

Data File	Kalamazo
MW-2	4-7.7

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-302	Sample Identification	MW-302
Sample Depth, ft	3.5-8.7	Sample Depth, ft	3.5-8.7
Sample Type	water	Sample Type	water
Sample Date	06-12-02	Sample Date	06-12-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	020992-09	Control Number	020992-09

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	120	70-130
Toluene-d8	94	70-130
Dibromofluoromethane	106	70-130

no entry	ug/L	no entry

KR059B031257

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalam
MW-302	3.5-8.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-302	Sample Identification	MW-302
Sample Depth, ft	3.5-8.7	Sample Depth, ft	3.5-8.7
Sample Type	water	Sample Type	water
Sample Date	06-12-02	Sample Date	06-12-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	08-19-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	020992-09	Control Number	020992-09

METALS	ug/L	TDL	METALS	ug/L	TDL
Arsenic - 6020	7	5	Iron (dissolved) - 7380	7,000	20
Barium - 6020	nd	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	1			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031258

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date _____

Data File	Kalamazoo
MW-302	3.5-8.7

INORG-1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-302	Sample Identification	MW-302
Sample Depth, ft	3.5-8.7	Sample Depth, ft	3.5-8.7
Sample Type	water	Sample Type	water
Sample Date	06-12-02	Sample Date	06-12-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	020992-09	Control Number	020992-09

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	19,000	1,000
Alkalinity, as CaCO3 - 310.1	230,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031259

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 8/30/02

Data File	Kalar
MW-302	3.5-8

INORG-2

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-302I	Sample Identification	MW-302I
Sample Depth, ft	19.8-24.8	Sample Depth, ft	19.8-24.8
Sample Type	water	Sample Type	water
Sample Date	06-12-02	Sample Date	06-12-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	020992-10	Control Number	020992-10

BTEX, Method 8260	ug/L	TDL
Benzene	180	1
Ethylbenzene	300	1
Toluene	nd	1
Xylenes, total	70	3

irrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	114	70-130
Toluene-d8	92	70-130
Dibromofluoromethane	101	70-130

no entry	ug/L	no entry

KR059B031260

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 2/30

Data File	Kalamaz
MW-302I	19.8-24.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-302I	Sample Identification	MW-302I
Sample Depth, ft	19.8-24.8	Sample Depth, ft	19.8-24.8
Sample Type	water	Sample Type	water
Sample Date	06-12-02	Sample Date	06-12-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	08-19-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	020992-10	Control Number	020992-10

METALS	ug/L	TDL
Arsenic - 6020	19	5
Barium - 6020	460	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
ead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	13,000	20

KR059B031261

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8/20/02

Data File	Kalamazoo
MW-302I	19.8-24.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-302I	Sample Identification	MW-302I
Sample Depth, ft	19.8-24.8	Sample Depth, ft	19.8-24.8
Sample Type	water	Sample Type	water
Sample Date	06-12-02	Sample Date	06-12-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	020992-10	Control Number	020992-10

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031262

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Sll* Date *9/13/02*

Data File	Kalamazo
MW-302I	19.8-24.8

. ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-302D	Sample Identification	MW-302D
Sample Depth, ft	55.3-60.3	Sample Depth, ft	55.3-60.3
Sample Type	water	Sample Type	water
Sample Date	06-12-02	Sample Date	06-12-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	020992-11	Control Number	020992-11

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3

urrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	120	70-130
Toluene-d8	94	70-130
Dibromofluoromethane	106	70-130

no entry	ug/L	no entry

KR059B031263

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date [signature]

Data File	Kalam
MW-302D	55.3-6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-302D	Sample Identification	MW-302D
Sample Depth, ft	55.3-60.3	Sample Depth, ft	55.3-60.3
Sample Type	water	Sample Type	water
Sample Date	06-12-02	Sample Date	06-12-02
Received Date	06-13-02	Received Date	06-13-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	08-19-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	020992-11	Control Number	020992-11

METALS	ug/L	TDL	METALS	ug/L	TDL
Arsenic - 6020	29	5	Iron (dissolved) - 7380	3,300	20
Barium - 6020	210	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
ead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	1			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031264

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9/30/02

Data File	Kalamazo
MW-302D	55.3-60.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-302D
Sample Depth, ft	55.3-60.3
Sample Type	water
Sample Date	06-12-02
Received Date	06-13-02
Report Date	09-13-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02
Analysis Date, Sulfate	06-20-02
Analysis Date, Alkalinity	06-19-02
Analysts	bek & <outsource>
Control Number	020992-11

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	17,000	1,000
Alkalinity, as CaCO3 - 310.1	340,000	-

Sample Identification	MW-302D
Sample Depth, ft	55.3-60.3
Sample Type	water
Sample Date	06-12-02
Received Date	06-13-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	06-19-02 / 06-19-02
Analyst	bek
Control Number	020992-11

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031265

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date _____

Data File	Kalamazoo
MW-302D	55.3-60.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-201R	Sample Identification	MW-201R
Sample Depth, ft	1.7-6.7	Sample Depth, ft	1.7-6.7
Sample Type	water	Sample Type	water
Sample Date	06-13-02	Sample Date	06-13-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-01	Control Number	021008-01

BTEX, Method 8260	ug/L	TDL
Benzene	250	20
Ethylbenzene	1,700	20
Toluene	240	20
Xylenes, total	410	60

rrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	115	70-130
Toluene-d8	101	70-130
Dibromofluoromethane	102	70-130

no entry	ug/L	no entry

KR059B031266

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AU Date 9/13/02

Data File	Kalamazoo
MW-201R	1.7-6.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-201R	Sample Identification	MW-201R
Sample Depth, ft	1.7-6.7	Sample Depth, ft	1.7-6.7
Sample Type	water	Sample Type	water
Sample Date	06-13-02	Sample Date	06-13-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	06-27-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	021008-01	Control Number	021008-01

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	180	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	6,400	20

KR059B031267

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8/30

Data File	Kalamazo
MW-201R	1.7-6.7

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-201R
Sample Depth, ft	1.7-6.7
Sample Type	water
Sample Date	06-13-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02
Analysis Date, Sulfate	06-20-02
Analysis Date, Alkalinity	06-19-02
Analysts	bek & <outsource>
Control Number	021008-01

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	3,700	1,000
Alkalinity, as CaCO3 - 310.1	490,000	-

Sample Identification	MW-201R
Sample Depth, ft	1.7-6.7
Sample Type	water
Sample Date	06-13-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	06-19-02 / 06-19-02
Analyst	bek
Control Number	021008-01

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031268

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9/30/02

Data File	Kalamazo
MW-201R	1.7-6.7

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-104	Sample Identification	MW-104
Sample Depth, ft	4.4-9.4	Sample Depth, ft	4.4-9.4
Sample Type	water	Sample Type	water
Sample Date	06-13-02	Sample Date	06-13-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-02	Control Number	021008-02

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3
irrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	116	70-130
Toluene-d8	102	70-130
Dibromofluoromethane	106	70-130

no entry	ug/L	no entry

KR059B031269

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8/30

Data File	Kalamazoo
MW-104	4.4-9.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-104	Sample Identification	MW-104
Sample Depth, ft	4.4-9.4	Sample Depth, ft	4.4-9.4
Sample Type	water	Sample Type	water
Sample Date	06-13-02	Sample Date	06-13-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	06-27-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	021008-02	Control Number	021008-02

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	400	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	120	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	4,400	20

KR059B031270

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date [signature]

Data File	Kalam
MW-104	4.4-9.

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-104	Sample Identification	MW-104
Sample Depth, ft	4.4-9.4	Sample Depth, ft	4.4-9.4
Sample Type	water	Sample Type	water
Sample Date	06-13-02	Sample Date	06-13-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	021008-02	Control Number	021008-02

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	36,000	1,000
Alkalinity, as CaCO3 - 310.1	390,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031271

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalam
MW-104	4.4-9.4

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-3D	Sample Identification	P-3D
Sample Depth, ft	34.6-39.6	Sample Depth, ft	34.6-39.6
Sample Type	water	Sample Type	water
Sample Date	06-13-02	Sample Date	06-13-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-03	Control Number	021008-03

BTEX, Method 8260	ug/L	TDL
Benzene	70	1
Ethylbenzene	nd	1
Toluene	2	1
Xylenes, total	8	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	113	70-130
Toluene-d8	102	70-130
Dibromofluoromethane	105	70-130

no entry	ug/L	no entry

KR059B031272

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 9/13/02

Data File	Kalam
P-3D	34.6-3

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-3D	Sample Identification	P-3D
Sample Depth, ft	34.6-39.6	Sample Depth, ft	34.6-39.6
Sample Type	water	Sample Type	water
Sample Date	06-13-02	Sample Date	06-13-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	06-27-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	021008-03	Control Number	021008-03

METALS	ug/L	TDL
Arsenic - 6020	35	5
Barium - 6020	210	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	5,600	20

KR059B031273

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9/13/02

Data File	Kalamazo
P-3D	34.6-39.6

00587

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-3D	Sample Identification	P-3D
Sample Depth, ft	34.6-39.6	Sample Depth, ft	34.6-39.6
Sample Type	water	Sample Type	water
Sample Date	06-13-02	Sample Date	06-13-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	021008-03	Control Number	021008-03

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	360,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031274

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 9/30

Data File	Kalamazoo
P-3D	34.6-39.6

00588

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-1	Sample Identification	MW-1
Sample Depth, ft	7.9-11.6	Sample Depth, ft	7.9-11.6
Sample Type	water	Sample Type	water
Sample Date	06-13-02	Sample Date	06-13-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-04	Control Number	021008-04

BTEX, Method 8260	ug/L	TDL
Benzene	nd	50
Ethylbenzene	5,000	50
Toluene	1,500	50
Xylenes, total	4,300	150

ırrogate Recovery	%Recovery	Criteria
₊-Bromofluorobenzene	108	70-130
Toluene-d8	111	70-130
Dibromofluoromethane	104	70-130

no entry	ug/L	no entry

KR059B031275

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalamazo
MW-1	7.9-11.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-1	Sample Identification	MW-1
Sample Depth, ft	7.9-11.6	Sample Depth, ft	7.9-11.6
Sample Type	water	Sample Type	water
Sample Date	06-13-02	Sample Date	06-13-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	06-27-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	021008-04	Control Number	021008-04

METALS	ug/L	TDL
Arsenic - 6020	14	5
Barium - 6020	260	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	15,000	20

KR059B031276

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalam
MW-1	7.9-11

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-1	Sample Identification	MW-1
Sample Depth, ft	7.9-11.6	Sample Depth, ft	7.9-11.6
Sample Type	water	Sample Type	water
Sample Date	06-13-02	Sample Date	06-13-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	021008-04	Control Number	021008-04

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	22,000	1,000
Alkalinity, as CaCO3 - 310.1	370,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031277

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalama
MW-1	7.9-11.

.ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-104D	Sample Identification	MW-104D
Sample Depth, ft	29.9-34.9	Sample Depth, ft	29.9-34.9
Sample Type	water	Sample Type	water
Sample Date	06-13-02	Sample Date	06-13-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-05	Control Number	021008-05

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3

ırrogate Recovery	%Recovery	Criteria
⁴-Bromofluorobenzene	115	70-130
Toluene-d8	100	70-130
Dibromofluoromethane	104	70-130

no entry	ug/L	no entry

KR059B031278

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date _____

Data File	Kalamazo
MW-104D	29.9-34.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-104D	Sample Identification	MW-104D
Sample Depth, ft	29.9-34.9	Sample Depth, ft	29.9-34.9
Sample Type	water	Sample Type	water
Sample Date	06-13-02	Sample Date	06-13-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	06-27-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	021008-05	Control Number	021008-05

METALS	ug/L	TDL	METALS	ug/L	TDL
Arsenic - 6020	23	5	Iron (dissolved) - 7380	5,800	20
Barium - 6020	300	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
ead - 6020	nd	3			
ercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	1			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031279

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date _____

Data File	Kalamazo
MW-104D	29.9-34.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-104D	Sample Identification	MW-104D
Sample Depth, ft	29.9-34.9	Sample Depth, ft	29.9-34.9
Sample Type	water	Sample Type	water
Sample Date	06-13-02	Sample Date	06-13-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	021008-05	Control Number	021008-05

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	76,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031280

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9/13/02

Data File	Kalamazo:
MW-104D	29.9-34.9

00694

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-2	Sample Identification	P-2
Sample Depth, ft	7.6-12.1	Sample Depth, ft	7.6-12.1
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-13-02	-	
Analyst	<outsource>	-	
Control Number	021008-07	Control Number	021008-07

BTEX, Method 8260	ug/L	TDL
Benzene	86	1
Ethylbenzene	170	1
Toluene	26	1
Xylenes, total	320	3

urrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	94	70-130
Toluene-d8	91	70-130
Dibromofluoromethane	107	70-130

no entry	ug/L	no entry

KR059B031281

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ad Date 9/13/02

Data File	Kalama
P-2	7.6-12.

ORG

00635

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-2	Sample Identification	P-2
Sample Depth, ft	7.6-12.1	Sample Depth, ft	7.6-12.1
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	06-27-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	021008-07	Control Number	021008-07

METALS	ug/L	TDL
Arsenic - 6020	10	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	590	20

KR059B031282

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8/30

Data File	Kalam
P-2	7.6-12

. ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-2	Sample Identification	P-2
Sample Depth, ft	7.6-12.1	Sample Depth, ft	7.6-12.1
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	021008-07	Control Number	021008-07

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	16,000	1,000
Alkalinity, as CaCO3 - 310.1	390,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031283

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9-13-02

Data File	Kalamazo
P-2	7.6-12.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-301	Sample Identification	MW-301
Sample Depth, ft	4-10.1	Sample Depth, ft	4-10.1
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-08	Control Number	021008-08

BTEX, Method 8260	ug/L	TDL
Benzene	11,000	50
Ethylbenzene	2,300	50
Toluene	nd	50
Xylenes, total	690	150

ırrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	108	70-130
Toluene-d8	101	70-130
Dibromofluoromethane	102	70-130

no entry	ug/L	no entry

KR059B031284

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 9/13/02

Data File	Kalama
MW-301	4-10.1

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00598

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-301	Sample Identification	MW-301
Sample Depth, ft	4-10.1	Sample Depth, ft	4-10.1
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	06-27-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	021008-08	Control Number	021008-08

METALS	ug/L	TDL
Arsenic - 6020	51	5
Barium - 6020	180	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
' ead - 6020	nd	3
.ercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	18,000	20

KR059B031285

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9/3[illegible]

Data File	Kalamazoo
MW-301	4-10.1

INORG-1

00599

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-301	Sample Identification	MW-301
Sample Depth, ft	4-10.1	Sample Depth, ft	4-10.1
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	021008-08	Control Number	021008-08

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	410,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031286

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9-13-02

Data File	Kalamazoo
MW-301	4-10.1

08709

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-2D	Sample Identification	P-2D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-09	Control Number	021008-09

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3

rrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	116	70-130
Toluene-d8	101	70-130
Dibromofluoromethane	106	70-130

no entry	ug/L	no entry

KR059B031287

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 2/13/02

Data File	Kalama
P-2D	35-40

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-2D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	06-14-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02
Analyst(s)	eb & clh
Control Number	021008-09

METALS	ug/L	TDL
Arsenic - 6020	6	5
Barium - 6020	120	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	P-2D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	06-14-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date	06-27-02
Analyst	clh
Control Number	021008-09

METALS	ug/L	TDL
Iron (dissolved) - 7380	3,400	20

KR059B031288

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalamazoo
P-2D	35-40

50702

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-2D	Sample Identification	P-2D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	021008-09	Control Number	021008-09

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	110,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031289

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 9/13/02

Data File	Kalamaz
P-2D	35-40

00783

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbe CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-102	**Sample Identification**	MW-102
Sample Depth, ft	10.3-14.9	Sample Depth, ft	10.3-14.9
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-10	Control Number	021008-10

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3

rrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	111	70-130
Toluene-d8	100	70-130
Dibromofluoromethane	112	70-130

no entry	**ug/L**	**no entry**

KR059B031290

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By SM Date 8/30/02

Data File	Kalama
MW-102	10.3-14.

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-102		Sample Identification	MW-102	
Sample Depth, ft	10.3-14.9		Sample Depth, ft	10.3-14.9	
Sample Type	water		Sample Type	water	
Sample Date	06-14-02		Sample Date	06-14-02	
Received Date	06-18-02		Received Date	06-18-02	
Report Date	09-13-02		Report Date	09-13-02	
Percent Solids, %w/w	-		Percent Solids, %w/w	-	
Preservation Date	at collection		Preservation Date	at collection	
Preservation Type	HNO3		Preservation Type	HNO3	
Analysis Date, Start/End	06-24-02 / 07-16-02		Analysis Date	06-27-02	
Analyst(s)	eb & clh		Analyst	clh	
Control Number	021008-10		Control Number	021008-10	
METALS	**ug/L**	**TDL**	**METALS**	**ug/L**	**TDL**
Arsenic - 6020	nd	5	Iron (dissolved) - 7380	nd	20
Barium - 6020	nd	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	7	5			
Silver - 6020	nd	1			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031291

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ale Date 8/30/02

Data File	Kalama
MW-102	10.3-1

00705

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-102	**Sample Identification**	MW-102
Sample Depth, ft	10.3-14.9	Sample Depth, ft	10.3-14.9
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	021008-10	Control Number	021008-10

INORGANICS	**ug/L**	**TDL**	**INORGANICS**	**ug/L**	**TDL**
Nitrate - 353.2	720	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2; 300.0	41,000	1,000	Cyanide, Free - D4282	nd	10
Alkalinity, as CaCO3 - 310.1	350,000	-			

KR059B031292

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9-13-02

Data File	Kalamaz
MW-102	10.3-14.!

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-105	Sample Identification	MW-105
Sample Depth, ft	10.8-15.3	Sample Depth, ft	10.8-15.3
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-11	Control Number	021008-11

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3
urrogate Recovery	**%Recovery**	**Criteria**
-Bromofluorobenzene	121	70-130
Toluene-d8	102	70-130
Dibromofluoromethane	111	70-130

no entry	ug/L	no entry

KR059B031293

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalam
MW-105	10.8-1

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80707

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-105	Sample Identification	MW-105
Sample Depth, ft	10.8-15.3	Sample Depth, ft	10.8-15.3
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	06-27-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	021008-11	Control Number	021008-11

METALS	ug/L	TDL	METALS	ug/L	TDL
Arsenic - 6020	nd	5	Iron (dissolved) - 7380	nd	20
Barium - 6020	nd	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	9	5			
Silver - 6020	nd	1			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031294

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date [signature]

Data File	Kalamazoo
MW-105	10.8-15.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-105	Sample Identification	MW-105
Sample Depth, ft	10.8-15.3	Sample Depth, ft	10.8-15.3
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	021008-11	Control Number	021008-11

INORGANICS	ug/L	TDL
Nitrate - 353.2	790	100
Sulfate - 375.2; 300.0	47,000	1,000
Alkalinity, as CaCO3 - 310.1	430,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031295

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date _____

Data File	Kalamaz
MW-105	10.8-15.

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numb. CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-101	Sample Identification	MW-101
Sample Depth, ft	12.2-16.9	Sample Depth, ft	12.2-16.9
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-12	Control Number	021008-12

BTEX, Method 8260	ug/L	TDL
Benzene	35	20
Ethylbenzene	250	20
Toluene	2,100	20
Xylenes, total	760	60

urrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	118	70-130
Toluene-d8	103	70-130
Dibromofluoromethane	112	70-130

no entry	ug/L	no entry

KR059B031296

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalamaz
MW-101	12.2-16.9

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00712

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-101
Sample Depth, ft	12.2-16.9
Sample Type	water
Sample Date	06-14-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02
Analyst(s)	eb & clh
Control Number	021008-12

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	200	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW-101
Sample Depth, ft	12.2-16.9
Sample Type	water
Sample Date	06-14-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date	06-27-02
Analyst	clh
Control Number	021008-12

METALS	ug/L	TDL
Iron (dissolved) - 7380	250	20

KR059B031297

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9/30

Data File	Kalamazoo
MW-101	12.2-16.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-101	Sample Identification	MW-101
Sample Depth, ft	12.2-16.9	Sample Depth, ft	12.2-16.9
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	021008-12	Control Number	021008-12

INORGANICS	ug/L	TDL
Nitrate - 353.2	1,200	100
Sulfate - 375.2; 300.0	55,000	1,000
Alkalinity, as CaCO3 - 310.1	480,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031298

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date [signature]

Data File	Kalamaz
MW-101	12.2-16.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-202D	Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4	Sample Depth, ft	55.4-60.4
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-13	Control Number	021008-13

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	2	1
Toluene	nd	1
Xylenes, total	4	3

rrogate Recovery	%Recovery	Criteria
Bromofluorobenzene	115	70-130
Toluene-d8	101	70-130
Dibromofluoromethane	111	70-130

no entry	ug/L	no entry

KR059B031299

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9/30

Data File	Kalamaz
MW-202D	55.4-60.

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00713

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-202D	Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4	Sample Depth, ft	55.4-60.4
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	06-27-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	021008-13	Control Number	021008-13

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	180	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	25	20

KR059B031300

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date [signature]

Data File	Kalama
MW-202D	55.4-6(

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00714

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-202D	Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4	Sample Depth, ft	55.4-60.4
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	021008-13	Control Number	021008-13

INORGANICS	ug/L	TDL
Nitrate - 353.2	190	100
Sulfate - 375.2; 300.0	65,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031301

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalama
MW-202D	55.4-60

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-105D	Sample Identification	MW-105D
Sample Depth, ft	38.4-43.4	Sample Depth, ft	38.4-43.4
Sample Type	water	Sample Type	water
Sample Date	06-17-02	Sample Date	06-17-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-15	Control Number	021008-15

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	115	70-130
Toluene-d8	100	70-130
Dibromofluoromethane	109	70-130

no entry	ug/L	no entry

KR059B031302

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8-13-02

Data File	Kalamaz
MW-105D	38.4-43.

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-105D	Sample Identification	MW-105D
Sample Depth, ft	38.4-43.4	Sample Depth, ft	38.4-43.4
Sample Type	water	Sample Type	water
Sample Date	06-17-02	Sample Date	06-17-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	06-27-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	021008-15	Control Number	021008-15

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	160	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	680	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	nd	20

KR059B031303

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date [signature]

Data File	Kalamaz
MW-105D	38.4-43.

INORG-1

08717

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-105D	Sample Identification	MW-105D
Sample Depth, ft	38.4-43.4	Sample Depth, ft	38.4-43.4
Sample Type	water	Sample Type	water
Sample Date	06-17-02	Sample Date	06-17-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	021008-15	Control Number	021008-15

INORGANICS	ug/L	TDL
Nitrate - 353.2	1,000	100
Sulfate - 375.2; 300.0	69,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031304

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date 9-13-02

Data File	Kalama
MW-105D	38.4-43

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-101D	Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5	Sample Depth, ft	34.5-39.5
Sample Type	water	Sample Type	water
Sample Date	06-17-02	Sample Date	06-17-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-12-02	-	
Analyst	<outsource>	-	
Control Number	021008-16	Control Number	021008-16

BTEX, Method 8260	ug/L	TDL
Benzene	nd	20
Ethylbenzene	430	20
Toluene	nd	20
Xylenes, total	5,100	60

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	93	70-130
Toluene-d8	90	70-130
Dibromofluoromethane	119	70-130

no entry	ug/L	no entry

KR059B031305

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalama
MW-101D	34.5-39

ORG

00719

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Number CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	06-17-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02
Analyst(s)	eb & clh
Control Number	021008-16

METALS	ug/L	TDL
Arsenic - 6020	23	5
Barium - 6020	340	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	06-17-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date	06-27-02
Analyst	clh
Control Number	021008-16

METALS	ug/L	TDL
Iron (dissolved) - 7380	2,100	20

KR059B031306

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9-13-02

Data File	Kalama
MW-101D	34.5-39

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-101D	Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5	Sample Depth, ft	34.5-39.5
Sample Type	water	Sample Type	water
Sample Date	06-17-02	Sample Date	06-17-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	021008-16	Control Number	021008-16

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0	11,000	1,000
Alkalinity, as CaCO3 - 310.1	360,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031307

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9/13/02

Data File	Kalama
MW-101D	34.5-39

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-103	Sample Identification	MW-103
Sample Depth, ft	10.7-15.3	Sample Depth, ft	10.7-15.3
Sample Type	water	Sample Type	water
Sample Date	06-17-02	Sample Date	06-17-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-17	Control Number	021008-17

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3

urrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	111	70-130
Toluene-d8	98	70-130
Dibromofluoromethane	108	70-130

no entry	ug/L	no entry

KR059B031308

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AU Date 9/13/02

Data File	Kalama
MW-103	10.7-15

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-103	Sample Identification	MW-103
Sample Depth, ft	10.7-15.3	Sample Depth, ft	10.7-15.3
Sample Type	water	Sample Type	water
Sample Date	06-17-02	Sample Date	06-17-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	HNO3
Analysis Date, Start/End	06-24-02 / 07-16-02	Analysis Date	06-27-02
Analyst(s)	eb & clh	Analyst	clh
Control Number	021008-17	Control Number	021008-17

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	600	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	1
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	84	20

KR059B031309

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date [signature]

Data File	Kalam
MW-103	10.7-1

00723

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	MW-103	Sample Identification	MW-103
Sample Depth, ft	10.7-15.3	Sample Depth, ft	10.7-15.3
Sample Type	water	Sample Type	water
Sample Date	06-17-02	Sample Date	06-17-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	06-18-02	Preservation Date	at collection
Analysis Date, Sulfate	06-20-02	Preservation Type	PbCO3 / NaOH
Analysis Date, Alkalinity	06-19-02	Analysis Date, Available / Free	06-19-02 / 06-19-02
Analysts	bek & <outsource>	Analyst	bek
Control Number	021008-17	Control Number	021008-17

INORGANICS	ug/L	TDL
Nitrate - 353.2	2,400	100
Sulfate - 375.2; 300.0	130,000	1,000
Alkalinity, as CaCO3 - 310.1	290,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031310

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date [illegible]

Data File	Kalama
MW-103	10.7-15

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbe. CHEM-02-0992 CHEM-02-1008

Sample Identification	P-1	Sample Identification	P-1
Sample Depth, ft	9.3-11.1	Sample Depth, ft	9.3-11.1
Sample Type	water	Sample Type	water
Sample Date	06-17-02	Sample Date	06-17-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-18	Control Number	021008-18

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3

rrogate Recovery	%Recovery	Criteria
Bromofluorobenzene	118	70-130
Toluene-d8	100	70-130
Dibromofluoromethane	111	70-130

no entry	ug/L	no entry

KR059B031311

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9/13/02

Data File	Kalama
P-1	9.3-11.

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-1	Sample Identification	P-1
Sample Depth, ft	9.3-11.1	Sample Depth, ft	9.3-11.1
Sample Type	water	Sample Type	water
Sample Date	06-17-02	Sample Date	06-17-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	no sample	Preservation Date	no sample
Preservation Type	no sample	Preservation Type	no sample
Analysis Date, Start/End	no sample	Analysis Date	no sample
Analyst(s)	no sample	Analyst	no sample
Control Number	021008-18	Control Number	021008-18

METALS	ug/L	TDL
Arsenic - 6020	-	5
Barium - 6020	-	100
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5
Copper - 6020	-	25
Lead - 6020	-	3
Mercury - 7470	-	0.2
Selenium - 6020	-	5
Silver - 6020	-	1
Zinc - 6020	-	10
Metal Results Are Reported As	-	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	-	20

KR059B031312

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 9-13-02

Data File	Kalama
P-1	9.3-11.

INORG-1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-17-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	no sample
Analysis Date, Sulfate	no sample
Analysis Date, Alkalinity	no sample
Analysts	no sample
Control Number	021008-18

INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100
Sulfate - 375.2; 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

Sample Identification	P-1
Sample Depth, ft	9.3-11.1
Sample Type	water
Sample Date	06-17-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date, Available / Free	no sample
Analyst	no sample
Control Number	021008-18

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B031313

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date 9-13-02

Data File	Kalama
P-1	9.3-11.1

00727

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	Trip Blank	Sample Identification	Trip Blank
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	-	Sample Date	-
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-19	Control Number	021008-19

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Ethylbenzene	nd	1
Toluene	nd	1
Xylenes, total	nd	3

urrogate Recovery	%Recovery	Criteria
Bromofluorobenzene	107	70-130
Toluene-d8	100	70-130
Dibromofluoromethane	111	70-130

no entry	ug/L	no entry

KR059B031314

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9/30

Data File	Kalam
Trip Blank	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	Trip Blank	Sample Identification	Trip Blank
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	-	Sample Date	-
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	no sample	Preservation Date	no sample
Preservation Type	no sample	Preservation Type	no sample
Analysis Date, Start/End	no sample	Analysis Date	no sample
Analyst(s)	no sample	Analyst	no sample
Control Number	021008-19	Control Number	021008-19

METALS	ug/L	TDL
Arsenic - 6020	-	5
Barium - 6020	-	100
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5
Copper - 6020	-	25
Lead - 6020	-	3
Mercury - 7470	-	0.2
Selenium - 6020	-	5
Silver - 6020	-	1
Zinc - 6020	-	10
Metal Results Are Reported As	-	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 7380	-	20

KR059B031315

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ad Date 9/30

Data File	Kalama
Trip Blank	-

INORG-1

00729

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	Trip Blank	Sample Identification	Trip Blank
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	-	Sample Date	-
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	no sample	Preservation Date	no sample
Analysis Date, Sulfate	no sample	Preservation Type	no sample
Analysis Date, Alkalinity	no sample	Analysis Date, Available / Free	no sample
Analysts	no sample	Analyst	no sample
Control Number	021008-19	Control Number	021008-19

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100	Cyanide, Available - OIA1677	-	20
Sulfate - 375.2; 300.0	-	1,000	Cyanide, Free - D4282	-	10
Alkalinity, as CaCO3 - 310.1	-	-			

KR059B031316

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 9/3/02

Data File	Kalama
Trip Blank	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	Duplicate 1	Sample Identification	Duplicate 1
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	06-13-02	Sample Date	06-13-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-06	Control Number	021008-06

BTEX, Method 8260	ug/L	TDL
Benzene	240	20
Ethylbenzene	1,600	20
Toluene	230	20
Xylenes, total	410	60

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	111	70-130
Toluene-d8	99	70-130
Dibromofluoromethane	100	70-130

no entry	ug/L	no entry

KR059B031317

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AK Date 8/30/02

Data File	Kalamazoo
Duplicate 1	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	Duplicate 1
Sample Depth, ft	-
Sample Type	water
Sample Date	06-13-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date, Start/End	no sample
Analyst(s)	no sample
Control Number	021008-06

METALS	ug/L	TDL
Arsenic - 6020	-	5
Barium - 6020	-	100
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5
Copper - 6020	-	25
Lead - 6020	-	3
Mercury - 7470	-	0.2
Selenium - 6020	-	5
Silver - 6020	-	1
Zinc - 6020	-	10
Metal Results Are Reported As	-	Dissolved

Sample Identification	Duplicate 1
Sample Depth, ft	-
Sample Type	water
Sample Date	06-13-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date	no sample
Analyst	no sample
Control Number	021008-06

METALS	ug/L	TDL
Iron (dissolved) - 7380	-	20

KR059B031318

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date [signature]

Data File	Kalamazoo
Duplicate 1	-

INORG-1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	Duplicate 1
Sample Depth, ft	-
Sample Type	water
Sample Date	06-13-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	no sample
Analysis Date, Sulfate	no sample
Analysis Date, Alkalinity	no sample
Analysts	no sample
Control Number	021008-06

INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100
Sulfate - 375.2; 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

Sample Identification	Duplicate 1
Sample Depth, ft	-
Sample Type	water
Sample Date	06-13-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date, Available / Free	no sample
Analyst	no sample
Control Number	021008-06

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B031319

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 8/30/02

Data File	Kalamazoo
Duplicate 1	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	Duplicate 2	Sample Identification	Duplicate 2
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	06-14-02	Sample Date	06-14-02
Received Date	06-18-02	Received Date	06-18-02
Report Date	09-13-02	Report Date	09-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	-	
Preservation Type	HCl	-	
Analysis Date	07-11-02	-	
Analyst	<outsource>	-	
Control Number	021008-14	Control Number	021008-14

BTEX, Method 8260	ug/L	TDL
Benzene	30	20
Ethylbenzene	250	20
Toluene	2,000	20
Xylenes, total	760	60

rrogate Recovery	%Recovery	Criteria
-Bromofluorobenzene	111	70-130
Toluene-d8	99	70-130
Dibromofluoromethane	110	70-130

no entry	ug/L	no entry

KR059B031320

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ad Date 9/30

Data File	Kalamazoo
Duplicate 2	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	Duplicate 2
Sample Depth, ft	-
Sample Type	water
Sample Date	06-14-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date, Start/End	no sample
Analyst(s)	no sample
Control Number	021008-14

METALS	ug/L	TDL
Arsenic - 6020	-	5
Barium - 6020	-	100
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5
Copper - 6020	-	25
Lead - 6020	-	3
Mercury - 7470	-	0.2
Selenium - 6020	-	5
Silver - 6020	-	1
Zinc - 6020	-	10
Metal Results Are Reported As	-	Dissolved

Sample Identification	Duplicate 2
Sample Depth, ft	-
Sample Type	water
Sample Date	06-14-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date	no sample
Analyst	no sample
Control Number	021008-14

METALS	ug/L	TDL
Iron (dissolved) - 7380	-	20

KR059B031321

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By JU Date 9/13/02

Data File	Kalamazoo
Duplicate 2	-

INORG-1

00735

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of June 11 - 17, 2002	Project Numbers CHEM-02-0992 CHEM-02-1008

Sample Identification	Duplicate 2
Sample Depth, ft	-
Sample Type	water
Sample Date	06-14-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Analysis Date, Nitrate	no sample
Analysis Date, Sulfate	no sample
Analysis Date, Alkalinity	no sample
Analysts	no sample
Control Number	021008-14

INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100
Sulfate - 375.2; 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

Sample Identification	Duplicate 2
Sample Depth, ft	-
Sample Type	water
Sample Date	06-14-02
Received Date	06-18-02
Report Date	09-13-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date, Available / Free	no sample
Analyst	no sample
Control Number	021008-14

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B031322

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ac Date 9/13/02

Data File	Kalamazoo
Duplicate 2	-

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO BGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 6-13-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASE SME - PLYMOUTH

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX / PNAs	TOTAL METALS	FREE + AVAILABLE CYANIDE	ALKALINITY	DISSOLVED IRON	NITRATE	SULFATE	REMARKS
02-0992-01	6/11	12:45	W	MW304	4-10.1	10	X	X	X	X	X	X	X	
-02		1:35		MW303	3.2-7.6		X	X	X	X	X	X	X	
-03		2:50		MW4	2.2-6.8		X	X	X	X	X	X	X	
-04		4:55		P4	2.9-7.9		X	X	X	X	X	X	X	
-05		5:20		MW304A	64.5-69.5		X	X	X	X	X	X	X	
-06		6:30		MW3	2.9-7.8		X	X	X	X	X	X	X	

KR059B031323

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6-11-02 8:00 PM	SME REFRIGERATOR (SAMPLE ROOM)
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 6/13/02 11:30	RECEIVED BY: (SIGNATURE) [signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ METHODS + MDLS
- CALL PAT B. w/ QUESTIONS

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-S

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 6-13-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARRATE SME-PLYMOUTH

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX / PNAS	10 MI METALS	FREE + WEAK CYANIDE	ALKALINITY	DISSOLVED Iron	NITRATE	SULFATE	REMARKS
02-0992-07	6-12	9:05	W	P3	2.9-2.3	10								
-08		10:10		MW2	4-7.7									
-09		11:20		MW302	3.5-8.7									
-10		1:10		MW302I	19.8-24.8									
-11		2:40		MW302D	55.3-60.3									

KR059B031324

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
DAVIN OJALA	6/12/02 4:15	SME PLYMOUTH - (SAMPLE Room)
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 6/13/02 1130	RECEIVED BY: (SIGNATURE) [illegible]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

- ADEQ METHODS + MDLs
- CALL PAT B. w/ QUESTIONS

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – ENVIRONMENTAL AND TECHNICAL SERVICES
LABORATORY COMMERCIAL SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-1104

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-S

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 6-18-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRAGE, SME - PLYMOUTH

PHONE:

CPCO CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX, PNAS	10 PI METALS	FLUORIDE + AVAILABLE CYANIDE	ALKALINITY	DISSOLVED IRON	NITRATE	SULFATE	REMARKS
02-1008-1	6-13	9:00	W	MW201R	1.7-6.7	10	X	X	X	X	X	X	X	
-2		10:15		MW104	4.4-9.4	10	X	X	X	X	X	X	X	
-3		11:10		P3D	34.6-39.6	10	X	X	X	X	X	X	X	
-4		12:20		MW1	7.9-11.6	10	X	X	X	X	X	X	X	
-5		2:00		MW104D	29.9-34.9	10	X	X	X	X	X	X	X	
-6		—		DUPLICATE #1	—	3	X							

KR059B031325

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/13 3:30	SME SAMPLE Room - PROVE
SME	6/18/02 10:30	Gabe Smith

COMMENTS
- MDEQ METHODS + MDLs
- CALL PAT B. w/ QUESTIONS

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 6-18-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARASE, SME - PLYMOUTH

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX / PAHs	10 HI METALS	PCE & AVAILABLE CYANIDE	ALKALINITY	DISSOLVED IRON	NITRATE	SULFATE	REMARKS
00-1008-7	6/14	9:40	W	P2	26-12.1	10	X	X	X	X	X	X	X	
-8		11:00		MW301	4-10.1	10	X	X	X	X	X	X	X	
-9		11:30		P2D	35-40	10	X	X	X	X	X	X	X	
-10		12:45		MW102	10.3-14.9	10	X	X	X	X	X	X	X	
-11		1:45		MW105	10.8-15.3	10	X	X	X	X	X	X	X	
-12		2:35		MW101	12.2-16.9	10	X	X	X	X	X	X	X	
-13		3:50		MW202D	55.4-60.4	10	X	X	X	X	X	X	X	
-14		—		DUPLICATE #2	—	3	X							

KR059B031326

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/14/02 6:15	SME FRIDGE (SAMPLE LOCK)
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 6/18/02 10:30	RECEIVED BY: (SIGNATURE) Gabe Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MORE MDLs + METHODS
- CALL PAT B. W/ QUESTIONS

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-S

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 6-18-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARAISE SME-PLYMOUTH

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 hr METALS	FREE + AVAILABLE CYANIDE	ALKALINITY	DISSOLVED Mn	NITRATE / SULFATE	REMARKS
02-1008 -15	6-17	11:30	W	MW105D	38.4-43.4	10	X	X	X	X	X	X	X	
-16		12:30		MW101D	34.5-39.5	10	X	X	X	X	X	X	X	
-17		1:50		MW103	10.7-15.3	10	X	X	X	X	X	X	X	
-18		2:45		P1	9.3-11.1	2	X							
✓ -19				TripBlank		1								

KR059B031327

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/17/02 4:00	SME FridGE - SAMPLE LOCK
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 6/18/02 10:30	RECEIVED BY: (SIGNATURE) Grobesmith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- CALL PAT B. w/ QUESTIONS
- NDEQ MDLs + METHODS

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

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SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: 02-0992

SAMPLING TEAM:

DATE SHIPPED:

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: G.L. Carell, Consumers, PHONE: 517-788-2334

ANALYSIS REQUESTED: BTEX (8260)

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX (8260)	REMARKS
02-0992-01	6/11/02	12:45	L	MW-304	4-10.1	2 ea	X	
-02		1:35		MW-303	3.2-7.6			
-03		2:50		MW-4	2.2-6.8			
-04		4:55		P4	2.9-7.9			
-05		5:20		MW-304D	64.5-69.5			
-06		6:30		MW-3	2.9-7.8			
-07	6/12/02	9:05		P3	2.9-7.3			
-08		10:10		MW2	4-7.7			
-09		11:20		MW 302	3.5-8.7			
-10		1:10		MW 302I	19.8-24.8			
-11		2:40		MW 302D	55.3-60.3			

KR059B031328

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	7/10/02	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

Ref. RCRA Method only
use MDEQ TDL's op Memo 6 ver. 6
OK to run together with #1008
Report Batch QC with 02-1008

ORIGINAL TO LAB COPY TO CUSTOMER

4 oC

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: —

SAMPLING TEAM: —

DATE SHIPPED: —

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 2

SEND REPORT TO: GL Cottell, Consumers, PHONE (517) 788-2334

ANALYSIS REQUESTED: BTEX (8260)

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION/LOCATION	DEPTH	# OF CONTAINERS	BTEX (8260)	REMARKS
02-1008-01	6/13/02	9:00	L	MW-201R	1.7-6.7	2ea	X	
-02		10:15		MW-104	4.4-9.4			
-03		11:10		P3D	34.6-39.6			
-04		12:20		MW1	7.9-11.6			
-05		2:00		MW 104D	29.9-34.9			
-06		—		Duplicate #1	—			
-07	6/14/02	9:40		P2	7.6-12.1			
-08		11:00		MW301	4-10.1			
-09		11:30		P2D	35-40			
-10		12:45		MW102	10.3-14.9			
-11		1:45		MW105	10.8-15.3			KR059B031329
-12		2:35		MW101	12.2-16.9			

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	7/10/02	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

Ref RCRA Method only
Use MDEQ TDL's Op Memo 6 ver 6
OK to Run Together w/ 02-0992
Report Batch QC with #0992

4°C

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: 02-1008

SAMPLING TEAM: —

DATE SHIPPED: —

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 2

SEND REPORT TO: P.1

PHONE:

ANALYSIS REQUESTED: BTEX

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	REMARKS
02-1008-13	6/14/02	3:50	L	MW 202D	55.4-60.4	2ea	X	
-14	↓	—		Duplicate #2	—			
-15	6/17/02	11:30		MW 105D	38.4-43.4			
-16		12:30		MW 101D	34.5-39.5			
-17		1:50		MW 103	10.7-15.3			
-18		2:45		P1	9.3-11.1			
-19	6/07/02	12:00	↓	Trip Blank	—	1	↓	

KR059B031330

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	7/10/02	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
		[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS: P.1

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4°C

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo Former MGP

PROJECT NUMBER: —

PAGE 1 OF 2

SEND REPORT TO: G Cottell

SAMPLING TEAM: —

DATE SHIPPED: 6/18/02

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PHONE: (517) 788-2334

ANALYSIS REQUESTED: 5PH

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	5PH							REMARKS
02-1008-1	6-13-02	0900	Aq.	MW201R	—	1ea.	✓							
-2		1015		MW104			✓							
-3		1110		P3D			✓							
-4		1220		MW1			✓							
-5		1400		MW104D			✓							
-7	6/14/02	0940		P2			✓							(No -6)
-8		1100		MW301			✓							
-9		1130		P2D			✓							
-10		1245		MW102			✓							
-11		1345		MW105			✓							
-12		1435		MW101			✓							KR059B031331
-13		1550		MW202D			✓							

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/18/02	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- Routine turnaround
- MDEQ op.mem.6 Rev.6 TDL
- Pick 2 for MS/MSD loc

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4 of

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo Former MGP

PROJECT NUMBER: —

PAGE 2 OF 2

SEND REPORT TO: (PS.1)

PHONE:

SAMPLING TEAM: —

DATE SHIPPED: 6/18/02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

ANALYSIS REQUESTED: 6Hg

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	6Hg	REMARKS
02-098-1	6/11/02	1245	Aq.	MW304	—	1 ea.	✓	
-2		1335		MW303			✓	
-3		1450		MW4			✓	
-4		~~1455~~ 1655		P4			✓	
-5		1720		MW304D			✓	
-6		1830		MW3			✓	
-7	6/12/02	0905		P3			✓	
-8		1010		MW2			✓	
-9		1120		MW302			✓	
-10		1310		MW302I			✓	
-11		1440		MW302D			✓	
02-1008-15	6/17/02	1130		MW105D			✓	
-16		1230		MW101D			✓	

02-1008-17, 6/17/02, 1330, MW103, 6Hg

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	6/18/02	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
		[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS: (PS.1)

KR059B031332

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CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-251, Jackson

Date: November 13, 2002

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823B-5
- Sampling Dates of September 16 - 26, 2002

File Index: 520217-410-514
520217-410-526
520217-410-550
520217-410-562

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On September 18 - 27, 2002 the Chemistry Section (CHEM) of Laboratory Services received groundwater samples collected at the KALAMAZOO FORMER MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Dissolved Michigan 10 Metals
Available (OIA) and Free Cyanide
Dissolved Iron
Nitrate
Sulfate
Alkalinity

Analytical Notes: (1) All PAH and a portion of the sulfate determinations were performed by Brighton Analytical. All other determinations were performed by CHEM. (2) BTEX TDLs for samples MW-303, MW-4, MW-1, MW-404I, MW-105, MW-101, Duplicate 2, MW-401I, MW-401, MW-301 and MW-101D were raised due to required sample dilutions. (3) PAH TDLs for sample MW-404D were raised due to required sample dilution.

Analytical results are attached for your review.

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 or parameter specific recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Aromatic Volatile Organics (BTEX) - Method 8260, Volatile Organic Compounds By Gas Chromatography / Mass Spectrometry. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

PAH Sample Extraction and Preparation (Aqueous) – Method 3510, Separatory Funnel Liquid-Liquid Extraction. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Free - Method ASTM-D4282-95, Determination Of Free Cyanide In Water And Wastewater By Micro-diffusion, ASTM.

Cyanide, Available - Method OIA-1677, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry. EPA-821-R-99-013.

Dissolved Metals Preparation (Mercury) – Method 7470, Mercury in Liquid Waste. SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	EPA Method
Arsenic	6020
Barium	6020
Cadmium	6020
Chromium	6020
Copper	6020
Iron	6020
Lead	6020
Mercury	7470
Selenium	6020
Silver	6020
Zinc	6020

SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

ANALYTICAL METHODS

Inorganic Analytes

Analyte	Test Method
Nitrate	353.2
Sulfate	375.2; 300.0; SM4500-SO4-E
Alkalinity	310.1

Methods For Chemical Analysis of Water and Wastes, USEPA, EMSL.
Standard Methods For The Examination of Water and Wastewater, APHA-AWWA-WPCF, 19th Edition, 1995.

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-304
Sample Depth, ft	4-10.1
Sample Type	water
Sample Date	09-16-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021514-01

BTEX, Method 8260	ug/L	TDL
Benzene	78	1
Toluene	180	100
Ethylbenzene	3,100	100
m/p-Xylene	7,000	200
o-Xylene	100	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	100	88-110
4-Bromofluorobenzene	106	86-115

Sample Identification	MW-304
Sample Depth, ft	4-10.1
Sample Type	water
Sample Date	09-16-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-19-02
Analysis Date	09-22-02
Analyst	<outsource>
Control Number	021514-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	120	5
2-Methylnaphthalene	120	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	111	43-116

KR059B031336

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By JM Date 11/13/02

Data File	Kalamazoo
MW-304	4-10.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-303
Sample Depth, ft	3.2-7.6
Sample Type	water
Sample Date	09-16-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021514-02

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	93	76-114
Toluene-d8	106	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	MW-303
Sample Depth, ft	3.2-7.6
Sample Type	water
Sample Date	09-16-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-19-02
Analysis Date	09-22-02
Analyst	<outsource>
Control Number	021514-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	120	43-116

KR059B031337

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By JM Date 11/13/02

Data File	Kalamazoo
MW-303	3.2-7.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-403
Sample Depth, ft	2.8-7.8
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021514-03

BTEX, Method 8260	ug/L	TDL
Benzene	250	5
Toluene	14	5
Ethylbenzene	170	5
m/p-Xylene	49	10
o-Xylene	3	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	105	86-115

Sample Identification	MW-403
Sample Depth, ft	2.8-7.8
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-19-02
Analysis Date	09-22-02
Analyst	<outsource>
Control Number	021514-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	540	5
2-Methylnaphthalene	120	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	121	43-116

KR059B031338

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-403	2.8-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-4
Sample Depth, ft	2.2-6.8
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021514-04

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	3	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	87	76-114
Toluene-d8	105	88-110
4-Bromofluorobenzene	100	86-115

Sample Identification	MW-4
Sample Depth, ft	2.2-6.8
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-19-02
Analysis Date	09-22-02
Analyst	<outsource>
Control Number	021514-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	112	43-116

KR059B031339

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13-02

Data File	Kalamazoo
MW-4	2.2-6.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	P-4
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021514-05

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
urrogate Recovery	%Recovery	Criteria
,2-Dichloroethane-d4	88	76-114
Toluene-d8	106	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	P-4
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-19-02
Analysis Date	09-22-02
Analyst	<outsource>
Control Number	021514-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	109	43-116

KR059B031340

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
P-4	2.9-7.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-3
Sample Depth, ft	2.9-7.8
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021514-06

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	104	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	MW-3
Sample Depth, ft	2.9-7.8
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-19-02
Analysis Date	09-22-02
Analyst	<outsource>
Control Number	021514-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	104	43-116

KR059B031341

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-3	2.9-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-302
Sample Depth, ft	3.5-8.7
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021514-07

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	93	76-114
Toluene-d8	106	88-110
4-Bromofluorobenzene	105	86-115

Sample Identification	MW-302
Sample Depth, ft	3.5-8.7
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-19-02
Analysis Date	09-22-02
Analyst	<outsource>
Control Number	021514-07

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	110	43-116

KR059B031342

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30

Data File	Kalamazoo
MW-302	3.5-8.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-403D
Sample Depth, ft	60.1-65.1
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021514-08

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	92	76-114
Toluene-d8	107	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-403D
Sample Depth, ft	60.1-65.1
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-19-02
Analysis Date	09-22-02
Analyst	<outsource>
Control Number	021514-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	112	43-116

KR059B031343

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date 11/30/02

Data File	Kalamazoo
MW-403D	60.1-65.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-302I
Sample Depth, ft	19.8-24.8
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021514-09

BTEX, Method 8260	ug/L	TDL
Benzene	77	1
Toluene	2	1
Ethylbenzene	43	1
m/p-Xylene	5	2
o-Xylene	5	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	104	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	MW-302I
Sample Depth, ft	19.8-24.8
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-19-02
Analysis Date	09-22-02
Analyst	<outsource>
Control Number	021514-09

PAHs, Method 8270	ug/L	TDL
Naphthalene	5	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	110	43-116

KR059B031344

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Du Date 11/13/02

Data File	Kalamazoo
MW-302I	19.8-24.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-201R
Sample Depth, ft	1.7-6.7
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021526-01

BTEX, Method 8260	ug/L	TDL
Benzene	110	1
Toluene	4	1
Ethylbenzene	61	1
m/p-Xylene	55	2
o-Xylene	35	1

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	104	88-110
4-Bromofluorobenzene	101	86-115

Sample Identification	MW-201R
Sample Depth, ft	1.7-6.7
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-23-02
Analysis Date	09-30-02
Analyst	<outsource>
Control Number	021526-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	8	5
Acenaphthylene	nd	5
Acenaphthene	34	5
Fluorene	12	5
Phenanthrene	8	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	68	43-116

KR059B031345

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-201R	1.7-6.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021526-02

BTEX, Method 8260	ug/L	TDL
Benzene	2	1
Toluene	1	1
Ethylbenzene	6	1
m/p-Xylene	4	2
o-Xylene	6	1

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-23-02
Analysis Date	09-30-02
Analyst	<outsource>
Control Number	021526-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	13	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	70	43-116

KR059B031346

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30/02

Data File	Kalamazoo
P-3	2.9-7.3

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00759

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-2
Sample Depth, ft	4.0-7.7
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021526-03

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	104	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-2
Sample Depth, ft	4.0-7.7
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-23-02
Analysis Date	09-30-02
Analyst	<outsource>
Control Number	021526-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	72	43-116

KR059B031347

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-2	4.0-7.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-302D	Sample Identification	MW-302D
Sample Depth, ft	55.3-60.3	Sample Depth, ft	55.3-60.3
Sample Type	water	Sample Type	water
Sample Date	09-18-02	Sample Date	09-18-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	09-23-02
Preservation Type	HCl	Analysis Date	09-30-02
Analysis Date	09-25-02	Analyst	<outsource>
Analyst	jdm		
Control Number	021526-04	Control Number	021526-04

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	101	88-110
4-Bromofluorobenzene	102	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	53	43-116

KR059B031348

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW-302D	55.3-60.3

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	P-3D
Sample Depth, ft	34.6-39.6
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021526-05

BTEX, Method 8260	ug/L	TDL
Benzene	32	1
Toluene	1	1
Ethylbenzene	nd	1
m/p-Xylene	2	2
o-Xylene	2	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	99	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	P-3D
Sample Depth, ft	34.6-39.6
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-23-02
Analysis Date	09-30-02
Analyst	<outsource>
Control Number	021526-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	22	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	80	43-116

KR059B031349

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30

Data File	Kalamazoo
P-3D	34.6-39.6

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00753

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-404I
Sample Depth, ft	34.7-39.7
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021526-06

BTEX, Method 8260	ug/L	TDL
Benzene	4,600	100
Toluene	8	1
Ethylbenzene	50	1
m/p-Xylene	21	2
o-Xylene	36	1

Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	93	76-114
Toluene-d8	104	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	MW-404I
Sample Depth, ft	34.7-39.7
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-23-02
Analysis Date	09-30-02
Analyst	<outsource>
Control Number	021526-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	170	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	73	43-116

KR059B031350

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-404I	34.7-39.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	Duplicate #1
Sample Depth, ft	-
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021526-07

BTEX, Method 8260	ug/L	TDL
Benzene	110	1
Toluene	5	1
Ethylbenzene	73	1
m/p-Xylene	65	2
o-Xylene	38	1
urrogate Recovery	%Recovery	Criteria
,2-Dichloroethane-d4	102	76-114
Toluene-d8	100	88-110
4-Bromofluorobenzene	101	86-115

Sample Identification	Duplicate #1
Sample Depth, ft	-
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-23-02
Analysis Date	09-30-02
Analyst	<outsource>
Control Number	021526-07

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	10	5
Acenaphthylene	nd	5
Acenaphthene	40	5
Fluorene	14	5
Phenanthrene	9	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	80	43-116

KR059B031351

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30

Data File	Kalamazoo
Duplicate #1	-

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00755

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-104
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021526-08

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	103	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-104
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-23-02
Analysis Date	09-30-02
Analyst	<outsource>
Control Number	021526-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	86	43-116

KR059B031352

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30

Data File	Kalamazoo
MW-104	4.4-9.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-102
Sample Depth, ft	10.3-14.9
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021526-09

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
urrogate Recovery	%Recovery	Criteria
,2-Dichloroethane-d4	98	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	101	86-115

Sample Identification	MW-102
Sample Depth, ft	10.3-14.9
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-23-02
Analysis Date	09-30-02
Analyst	<outsource>
Control Number	021526-09

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	61	43-116

KR059B031353

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30

Data File	Kalamazoo
MW-102	10.3-14.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-105
Sample Depth, ft	10.8-15.3
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021526-10

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	101	86-115

Sample Identification	MW-105
Sample Depth, ft	10.8-15.3
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-23-02
Analysis Date	09-30-02
Analyst	<outsource>
Control Number	021526-10

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	60	43-116

KR059B031354

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-105	10.8-15.3

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08758

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-404D
Sample Depth, ft	74.8-79.8
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021526-11

BTEX, Method 8260	ug/L	TDL
Benzene	620	10
Toluene	5	1
Ethylbenzene	760	10
m/p-Xylene	76	2
o-Xylene	130	10
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-404D
Sample Depth, ft	74.8-79.8
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-23-02
Analysis Date	09-30-02
Analyst	<outsource>
Control Number	021526-11

PAHs, Method 8270	ug/L	TDL
Naphthalene	2,100	11
2-Methylnaphthalene	nd	11
Acenaphthylene	nd	11
Acenaphthene	64	11
Fluorene	nd	11
Phenanthrene	nd	11
Anthracene	nd	11
Fluoranthene	nd	11
Pyrene	nd	11
Benzo(a)anthracene	nd	11
Chrysene	nd	11
Benzo(b)fluoranthene	nd	11
Benzo(k)fluoranthene	nd	11
Benzo(a)pyrene	nd	11
Indeno(1,2,3-cd)pyrene	nd	11
Dibenzo(a,h)anthracene	nd	11
Benzo(g,h,i)perylene	nd	11
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	84	43-116

KR059B031355

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

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Data File	Kalamazoo
MW-404D	74.8-79.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-104D
Sample Depth, ft	29.9-34.9
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021526-12

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-104D
Sample Depth, ft	29.9-34.9
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-23-02
Analysis Date	09-30-02
Analyst	<outsource>
Control Number	021526-12

PAHs, Method 8270	ug/L	TDL
Naphthalene	9	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	82	43-116

KR059B031356

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-104D	29.9-34.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021526-13

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	102	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date	no sample
Analyst	no sample
Control Number	021526-13

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	1
Chrysene	-	5
Benzo(b)fluoranthene	-	2
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	2
Indeno(1,2,3-cd)pyrene	-	2
Dibenzo(a,h)anthracene	-	2
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	-	43-116

KR059B031357

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30

Data File	Kalamazoo
MW-404	2.9-7.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-103	Sample Identification	MW-103
Sample Depth, ft	10.7-15.3	Sample Depth, ft	10.7-15.3
Sample Type	water	Sample Type	water
Sample Date	09-20-02	Sample Date	09-20-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	09-23-02
Preservation Type	HCl	Analysis Date	09-30-02
Analysis Date	09-25-02	Analyst	<outsource>
Analyst	jdm		
Control Number	021526-14	Control Number	021526-14

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	100	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	102	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	73	43-116

KR059B031358

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-103	10.7-15.3

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-105D
Sample Depth, ft	38.4-43.4
Sample Type	water
Sample Date	09-20-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021526-15

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	101	86-115

Sample Identification	MW-105D
Sample Depth, ft	38.4-43.4
Sample Type	water
Sample Date	09-20-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-23-02
Analysis Date	09-30-02
Analyst	<outsource>
Control Number	021526-15

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	71	43-116

KR059B031359

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Su Date 11/13/02

Data File	Kalamazoo
MW-105D	38.4-43.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	P-2
Sample Depth, ft	7.6-12.1
Sample Type	water
Sample Date	09-20-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-25-02
Analyst	jdm
Control Number	021526-16

BTEX, Method 8260	ug/L	TDL
Benzene	110	1
Toluene	19	1
Ethylbenzene	97	1
m/p-Xylene	90	2
o-Xylene	74	1
urrogate Recovery	%Recovery	Criteria
,2-Dichloroethane-d4	101	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	P-2
Sample Depth, ft	7.6-12.1
Sample Type	water
Sample Date	09-20-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-23-02
Analysis Date	09-30-02
Analyst	<outsource>
Control Number	021526-16

PAHs, Method 8270	ug/L	TDL
Naphthalene	280	5
2-Methylnaphthalene	11	5
Acenaphthylene	nd	5
Acenaphthene	47	5
Fluorene	25	5
Phenanthrene	44	5
Anthracene	nd	5
Fluoranthene	8	5
Pyrene	9	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	77	43-116

KR059B031360

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
P-2	7.6-12.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	P-2D	Sample Identification	P-2D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	09-20-02	Sample Date	09-20-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	09-23-02
Preservation Type	HCl	Analysis Date	09-30-02
Analysis Date	09-25-02	Analyst	<outsource>
Analyst	jdm		
Control Number	021526-17	Control Number	021526-17

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
urrogate Recovery	%Recovery	Criteria
,2-Dichloroethane-d4	102	76-114
Toluene-d8	101	88-110
4-Bromofluorobenzene	101	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	77	43-116

KR059B031361

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
P-2D	35-40

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00775

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-28-02
Analyst	jdm
Control Number	021550-01

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	1	1
Ethylbenzene	560	100
m/p-Xylene	3,700	200
o-Xylene	1,300	100
urrogate Recovery	%Recovery	Criteria
,2-Dichloroethane-d4	103	76-114
Toluene-d8	100	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-27-02
Analysis Date	09-28-02
Analyst	<outsource>
Control Number	021550-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	8,100	5
2-Methylnaphthalene	500	5
Acenaphthylene	300	5
Acenaphthene	26	5
Fluorene	44	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	91	43-116

KR059B031362

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30

Data File	Kalamazoo
MW-101D	34.5-39.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date	no sample
Analyst	no sample
Control Number	021550-02

BTEX, Method 8260	ug/L	TDL
Benzene	-	1
Toluene	-	1
Ethylbenzene	-	1
m/p-Xylene	-	2
o-Xylene	-	1
urrogate Recovery	%Recovery	Criteria
,2-Dichloroethane-d4	-	76-114
Toluene-d8	-	88-110
4-Bromofluorobenzene	-	86-115

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-27-02
Analysis Date	09-28-02
Analyst	<outsource>
Control Number	021550-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	91	43-116

KR059B031363

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-404	2.9-7.9

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00777

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date	no sample
Analyst	no sample
Control Number	021550-03

BTEX, Method 8260	ug/L	TDL
Benzene	-	1
Toluene	-	1
Ethylbenzene	-	1
m/p-Xylene	-	2
o-Xylene	-	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	-	76-114
Toluene-d8	-	88-110
4-Bromofluorobenzene	-	86-115

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date	no sample
Analyst	no sample
Control Number	021550-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	1
Chrysene	-	5
Benzo(b)fluoranthene	-	2
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	2
Indeno(1,2,3-cd)pyrene	-	2
Dibenzo(a,h)anthracene	-	2
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	-	43-116

KR059B031364

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-404	2.9-7.9

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00778

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-101
Sample Depth, ft	12.2-16.9
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-28-02
Analyst	jdm
Control Number	021550-04

BTEX, Method 8260	ug/L	TDL
Benzene	59	1
Toluene	16,000	100
Ethylbenzene	2,900	100
m/p-Xylene	8,700	200
o-Xylene	4,400	100
urrogate Recovery	%Recovery	Criteria
,2-Dichloroethane-d4	101	76-114
Toluene-d8	91	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-101
Sample Depth, ft	12.2-16.9
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-27-02
Analysis Date	09-28-02
Analyst	<outsource>
Control Number	021550-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	3,100	5
2-Methylnaphthalene	56	5
Acenaphthylene	31	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	101	43-116

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NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11-13-02

Data File	Kalamazoo
MW-101	12.2-16.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-1
Sample Depth, ft	7.9-11.6
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-28-02
Analyst	jdm
Control Number	021550-05

BTEX, Method 8260	ug/L	TDL
Benzene	4	1
Toluene	420	100
Ethylbenzene	3,500	100
m/p-Xylene	900	200
o-Xylene	1,000	100
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	100	88-110
4-Bromofluorobenzene	101	86-115

Sample Identification	MW-1
Sample Depth, ft	7.9-11.6
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-27-02
Analysis Date	09-28-02
Analyst	<outsource>
Control Number	021550-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	1,000	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	118	43-116

KR059B031366

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11-13-02

Data File	Kalamazoo
MW-1	7.9-11.6

ORG

00738

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-28-02
Analyst	jdm
Control Number	021550-06

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	2	1
Ethylbenzene	5	1
m/p-Xylene	4	2
o-Xylene	2	1
urrogate Recovery	%Recovery	Criteria
,2-Dichloroethane-d4	96	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-27-02
Analysis Date	09-28-02
Analyst	<outsource>
Control Number	021550-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	23	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	112	43-116

KR059B031367

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date 11/30

Data File	Kalamazoo
MW-202D	55.4-60.4

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88751

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-401I
Sample Depth, ft	37.5-42.5
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-28-02
Analyst	jdm
Control Number	021550-07

BTEX, Method 8260	ug/L	TDL
Benzene	300	10
Toluene	9	1
Ethylbenzene	40	1
m/p-Xylene	38	2
o-Xylene	18	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	101	86-115

Sample Identification	MW-401I
Sample Depth, ft	37.5-42.5
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-27-02
Analysis Date	09-28-02
Analyst	<outsource>
Control Number	021550-07

PAHs, Method 8270	ug/L	TDL
Naphthalene	1,200	5
2-Methylnaphthalene	46	5
Acenaphthylene	7	5
Acenaphthene	23	5
Fluorene	9	5
Phenanthrene	23	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
2-Fluorobiphenyl	96	43-116

KR059B031368

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-401I	37.5-42.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	Duplicate #2
Sample Depth, ft	-
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-28-02
Analyst	jdm
Control Number	021550-08

BTEX, Method 8260	ug/L	TDL
Benzene	64	1
Toluene	20,000	1,000
Ethylbenzene	3,600	100
m/p-Xylene	12,000	200
o-Xylene	5,900	100
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	92	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	Duplicate #2
Sample Depth, ft	-
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-27-02
Analysis Date	09-28-02
Analyst	<outsource>
Control Number	021550-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	2,900	5
2-Methylnaphthalene	60	5
Acenaphthylene	34	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	94	43-116

KR059B031369

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
Duplicate #2	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-402
Sample Depth, ft	3.6-8.6
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-28-02
Analyst	jdm
Control Number	021550-09

BTEX, Method 8260	ug/L	TDL
Benzene	3	1
Toluene	8	1
Ethylbenzene	2	1
m/p-Xylene	7	2
o-Xylene	3	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-402
Sample Depth, ft	3.6-8.6
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-27-02
Analysis Date	09-28-02
Analyst	<outsource>
Control Number	021550-09

PAHs, Method 8270	ug/L	TDL
Naphthalene	15	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	5	5
Fluorene	6	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	92	43-116

KR059B031370

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-402	3.6-8.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-401
Sample Depth, ft	7.5-17.5
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-28-02
Analyst	jdm
Control Number	021550-10

BTEX, Method 8260	ug/L	TDL
Benzene	19,000	1,000
Toluene	89,000	1,000
Ethylbenzene	5,000	1,000
m/p-Xylene	15,000	2,000
o-Xylene	7,000	1,000
rrogate Recovery	%Recovery	Criteria
2-Dichloroethane-d4	109	76-114
Toluene-d8	89	88-110
4-Bromofluorobenzene	109	86-115

Sample Identification	MW-401
Sample Depth, ft	7.5-17.5
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-27-02
Analysis Date	09-28-02
Analyst	<outsource>
Control Number	021550-10

PAHs, Method 8270	ug/L	TDL
Naphthalene	4,200	5
2-Methylnaphthalene	100	5
Acenaphthylene	59	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	103	43-116

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NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-401	7.5-17.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-402D
Sample Depth, ft	65-70
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-28-02
Analyst	jdm
Control Number	021550-11

BTEX, Method 8260	ug/L	TDL
Benzene	5	1
Toluene	26	1
Ethylbenzene	3	1
m/p-Xylene	8	2
o-Xylene	3	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	92	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	105	86-115

Sample Identification	MW-402D
Sample Depth, ft	65-70
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-27-02
Analysis Date	09-28-02
Analyst	<outsource>
Control Number	021550-11

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	85	43-116

KR059B031372

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30

Data File	Kalamazoo
MW-402D	65-70

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-301
Sample Depth, ft	4-10.1
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-28-02
Analyst	jdm
Control Number	021550-12

BTEX, Method 8260	ug/L	TDL
Benzene	9,900	100
Toluene	13	1
Ethylbenzene	1,500	100
m/p-Xylene	160	2
o-Xylene	67	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	93	76-114
Toluene-d8	100	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	MW-301
Sample Depth, ft	4-10.1
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-27-02
Analysis Date	09-28-02
Analyst	<outsource>
Control Number	021550-12

PAHs, Method 8270	ug/L	TDL
Naphthalene	8,200	5
2-Methylnaphthalene	590	5
Acenaphthylene	nd	5
Acenaphthene	200	5
Fluorene	52	5
Phenanthrene	41	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	88	43-116

KR059B031373

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-301	4-10.1

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00787

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-401D
Sample Depth, ft	67.3-72.3
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-28-02
Analyst	jdm
Control Number	021550-13

BTEX, Method 8260	ug/L	TDL
Benzene	12	1
Toluene	57	1
Ethylbenzene	75	1
m/p-Xylene	120	2
o-Xylene	62	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	101	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-401D
Sample Depth, ft	67.3-72.3
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	09-27-02
Analysis Date	09-28-02
Analyst	<outsource>
Control Number	021550-13

PAHs, Method 8270	ug/L	TDL
Naphthalene	2,300	5
2-Methylnaphthalene	500	5
Acenaphthylene	200	5
Acenaphthene	74	5
Fluorene	81	5
Phenanthrene	81	5
Anthracene	14	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	94	43-116

KR059B031374

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date 11/13/02

Data File	Kalamazoo
MW-401D	67.3-72.3

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	09-28-02
Analyst	jdm
Control Number	021550-14

BTEX, Method 8260	ug/L	TDL
Benzene	1	1
Toluene	2	1
Ethylbenzene	1	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	100	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date	no sample
Analyst	no sample
Control Number	021550-14

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	1
Chrysene	-	5
Benzo(b)fluoranthene	-	2
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	2
Indeno(1,2,3-cd)pyrene	-	2
Dibenzo(a,h)anthracene	-	2
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	-	43-116

KR059B031375

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11-13-02

Data File	Kalamazoo
Trip Blank	-

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-304D
Sample Depth, ft	64.5-69.5
Sample Type	water
Sample Date	09-26-02
Received Date	09-27-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	10-06-02
Analyst	jdm
Control Number	021562-01

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	2	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	1	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	100	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-304D
Sample Depth, ft	64.5-69.5
Sample Type	water
Sample Date	09-26-02
Received Date	09-27-02
Report Date	11-13-02
Percent Solids, %w/w	-
Extraction Date	10-02-02
Analysis Date	10-28-02
Analyst	<outsource>
Control Number	021562-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
2-Fluorobiphenyl	49	43-116

KR059B031376

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-304D	64.5-69.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-304	Sample Identification	MW-304
Sample Depth, ft	4-10.1	Sample Depth, ft	4-10.1
Sample Type	water	Sample Type	water
Sample Date	09-16-02	Sample Date	09-16-02
Received Date	09-18-02	Received Date	09-18-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021514-01	Control Number	021514-01

METALS	ug/L	TDL
Arsenic - 6020	51	5
Barium - 6020	190	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	4	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	32,000	20

KR059B031377

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ad Date 11-13-02

Data File	Kalamazoo
MW-304	4-10.1

INORG-1

00731

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-303	Sample Identification	MW-303
Sample Depth, ft	3.2-7.6	Sample Depth, ft	3.2-7.6
Sample Type	water	Sample Type	water
Sample Date	09-16-02	Sample Date	09-16-02
Received Date	09-18-02	Received Date	09-18-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021514-02	Control Number	021514-02

METALS	ug/L	TDL
Arsenic - 6020	6	5
Barium - 6020	420	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	21,000	20

KR059B031378

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11-13-02

Data File	Kalamazoo
MW-303	3.2-7.6

00792

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-403	Sample Identification	MW-403
Sample Depth, ft	2.8-7.8	Sample Depth, ft	2.8-7.8
Sample Type	water	Sample Type	water
Sample Date	09-17-02	Sample Date	09-17-02
Received Date	09-18-02	Received Date	09-18-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021514-03	Control Number	021514-03

METALS	ug/L	TDL
Arsenic - 6020	180	5
Barium - 6020	150	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	4	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	6,500	20

KR059B031379

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11-13-02

Data File	Kalamazoo
MW-403	2.8-7.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-4	Sample Identification	MW-4
Sample Depth, ft	2.2-6.8	Sample Depth, ft	2.2-6.8
Sample Type	water	Sample Type	water
Sample Date	09-17-02	Sample Date	09-17-02
Received Date	09-18-02	Received Date	09-18-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021514-04	Control Number	021514-04

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	14	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	970	20

KR059B031380

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11-13-02

Data File	Kalamazoo
MW-4	2.2-6.8

B0794

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	P-4	Sample Identification	P-4
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	09-17-02	Sample Date	09-17-02
Received Date	09-18-02	Received Date	09-18-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021514-05	Control Number	021514-05

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	39	20

KR059B031381

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
P-4	2.9-7.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-3	Sample Identification	MW-3
Sample Depth, ft	2.9-7.8	Sample Depth, ft	2.9-7.8
Sample Type	water	Sample Type	water
Sample Date	09-17-02	Sample Date	09-17-02
Received Date	09-18-02	Received Date	09-18-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021514-06	Control Number	021514-06

METALS	ug/L	TDL
Arsenic - 6020	6	5
Barium - 6020	150	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	17	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	170	20

KR059B031382

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date _____

Data File	Kalamazoo
MW-3	2.9-7.8

INORG-1

00736

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-302	Sample Identification	MW-302
Sample Depth, ft	3.5-8.7	Sample Depth, ft	3.5-8.7
Sample Type	water	Sample Type	water
Sample Date	09-17-02	Sample Date	09-17-02
Received Date	09-18-02	Received Date	09-18-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021514-07	Control Number	021514-07

METALS	ug/L	TDL
Arsenic - 6020	16	5
Barium - 6020	100	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	9,500	20

KR059B031383

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11-13-02

Data File	Kalamazoo
MW-302	3.5-8.7

00737

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-403D	Sample Identification	MW-403D
Sample Depth, ft	60.1-65.1	Sample Depth, ft	60.1-65.1
Sample Type	water	Sample Type	water
Sample Date	09-17-02	Sample Date	09-17-02
Received Date	09-18-02	Received Date	09-18-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021514-08	Control Number	021514-08

METALS	ug/L	TDL	METALS	ug/L	TDL
Arsenic - 6020	12	5	Iron (dissolved) - 6020	8,200	20
Barium - 6020	250	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031384

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-403D	60.1-65.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-302I	Sample Identification	MW-302I
Sample Depth, ft	19.8-24.8	Sample Depth, ft	19.8-24.8
Sample Type	water	Sample Type	water
Sample Date	09-17-02	Sample Date	09-17-02
Received Date	09-18-02	Received Date	09-18-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021514-09	Control Number	021514-09

METALS	ug/L	TDL
Arsenic - 6020	20	5
Barium - 6020	330	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	9,700	20

KR059B031385

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11-13-02

Data File	Kalamazoo
MW-302I	19.8-24.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-201R	Sample Identification	MW-201R
Sample Depth, ft	1.7-6.7	Sample Depth, ft	1.7-6.7
Sample Type	water	Sample Type	water
Sample Date	09-18-02	Sample Date	09-18-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021526-01	Control Number	021526-01

METALS	ug/L	TDL
Arsenic - 6020	6	5
Barium - 6020	210	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	7,000	20

KR059B031386

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 11-13-02

Data File	Kalamazoo
MW-201R	1.7-6.7

00500

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	P-3	Sample Identification	P-3
Sample Depth, ft	2.9-7.3	Sample Depth, ft	2.9-7.3
Sample Type	water	Sample Type	water
Sample Date	09-18-02	Sample Date	09-18-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021526-02	Control Number	021526-02

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	180	100
Cadmium - 6020	0.6	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	170	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	370	20

KR059B031387

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 11-13-02

Data File	Kalamazoo
P-3	2.9-7.3

INORG-1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-2	Sample Identification	MW-2
Sample Depth, ft	4.0-7.7	Sample Depth, ft	4.0-7.7
Sample Type	water	Sample Type	water
Sample Date	09-18-02	Sample Date	09-18-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021526-03	Control Number	021526-03

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	45	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	7,300	20

KR059B031388

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11-13-02

Data File	Kalamazoo
MW-2	4.0-7.7

00802

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-302D	Sample Identification	MW-302D
Sample Depth, ft	55.3-60.3	Sample Depth, ft	55.3-60.3
Sample Type	water	Sample Type	water
Sample Date	09-18-02	Sample Date	09-18-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021526-04	Control Number	021526-04

METALS	ug/L	TDL
Arsenic - 6020	30	5
Barium - 6020	210	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	3,200	20

KR059B031389

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By Au Date 11/13/02

Data File	Kalamazoo
MW-302D	55.3-60.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	P-3D	Sample Identification	P-3D
Sample Depth, ft	34.6-39.6	Sample Depth, ft	34.6-39.6
Sample Type	water	Sample Type	water
Sample Date	09-18-02	Sample Date	09-18-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021526-05	Control Number	021526-05

METALS	ug/L	TDL
Arsenic - 6020	36	5
Barium - 6020	210	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	5,800	20

KR059B031390

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ad Date 11-13-02

Data File	Kalamazoo
P-3D	34.6-39.6

DB804

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-404I	Sample Identification	MW-404I
Sample Depth, ft	34.7-39.7	Sample Depth, ft	34.7-39.7
Sample Type	water	Sample Type	water
Sample Date	09-18-02	Sample Date	09-18-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021526-06	Control Number	021526-06

METALS	ug/L	TDL
Arsenic - 6020	25	5
Barium - 6020	450	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	8,200	20

KR059B031391

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-404I	34.7-39.7

00805

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	Duplicate #1
Sample Depth, ft	-
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date / Type	no sample
Preparation Date (Hg)	no sample
Analysis Date / Analyst (Hg)	no sample
Analysis Date / Analyst (others)	no sample
Control Number	021526-07

METALS	ug/L	TDL
Arsenic - 6020	-	5
Barium - 6020	-	100
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5
Copper - 6020	-	25
Lead - 6020	-	3
Mercury - 7470	-	0.2
Selenium - 6020	-	5
Silver - 6020	-	0.5
Zinc - 6020	-	10
Metal Results Are Reported As	-	Dissolved

Sample Identification	Duplicate #1
Sample Depth, ft	-
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date / Type	no sample
Analysis Date / Analyst	no sample
Control Number	021526-07

METALS	ug/L	TDL
Iron (dissolved) - 6020	-	20

KR059B031392

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 11-13-02

Data File	Kalamazoo
Duplicate #1	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-104
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02
Analysis Date / Analyst (Hg)	09-30-02 / clh
Analysis Date / Analyst (others)	10-08-02 / eb
Control Number	021526-08

METALS	ug/L	TDL
Arsenic - 6020	6	5
Barium - 6020	270	100
Cadmium - 6020	0.8	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	210	10
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW-104
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3
Analysis Date / Analyst	10-08-02 / eb
Control Number	021526-08

METALS	ug/L	TDL
Iron (dissolved) - 6020	3,100	20

KR059B031393

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 11/13/02

Data File	Kalamazoo
MW-104	4.4-9.4

INORG-1

00807

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-102	Sample Identification	MW-102
Sample Depth, ft	10.3-14.9	Sample Depth, ft	10.3-14.9
Sample Type	water	Sample Type	water
Sample Date	09-19-02	Sample Date	09-19-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021526-09	Control Number	021526-09

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	7	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	nd	20

KR059B031394

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By SM Date 11-13-02

Data File	Kalamazoo
MW-102	10.3-14.9

0808

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, -1526 CHEM-02-1550, -1562

Sample Identification	MW-105	Sample Identification	MW-105
Sample Depth, ft	10.8-15.3	Sample Depth, ft	10.8-15.3
Sample Type	water	Sample Type	water
Sample Date	09-19-02	Sample Date	09-19-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021526-10	Control Number	021526-10

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	10	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	nd	20

KR059B031395

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 11/13/02

Data File	Kalamazoo
MW-105	10.8-15.3

00803

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-404D	Sample Identification	MW-404D
Sample Depth, ft	74.8-79.8	Sample Depth, ft	74.8-79.8
Sample Type	water	Sample Type	water
Sample Date	09-19-02	Sample Date	09-19-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021526-11	Control Number	021526-11

METALS	ug/L	TDL
Arsenic - 6020	9	5
Barium - 6020	290	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	4,600	20

KR059B031396

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30

Data File	Kalamazoo
MW-404D	74.8-79.8

00910

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-104D	Sample Identification	MW-104D
Sample Depth, ft	29.9-34.9	Sample Depth, ft	29.9-34.9
Sample Type	water	Sample Type	water
Sample Date	09-19-02	Sample Date	09-19-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021526-12	Control Number	021526-12

METALS	ug/L	TDL
Arsenic - 6020	25	5
Barium - 6020	270	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	6,300	20

KR059B031397

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By JM Date 11-13-02

Data File	Kalamazoo
MW-104D	29.9-34.9

INORG-1

00511

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-404	Sample Identification	MW-404
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	09-19-02	Sample Date	09-19-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	no sample	Preservation Date / Type	no sample
Preparation Date (Hg)	no sample	Analysis Date / Analyst	no sample
Analysis Date / Analyst (Hg)	no sample		
Analysis Date / Analyst (others)	no sample		
Control Number	021526-13	Control Number	021526-13

METALS	ug/L	TDL	METALS	ug/L	TDL
Arsenic - 6020	-	5	Iron (dissolved) - 6020	-	20
Barium - 6020	-	100			
Cadmium - 6020	-	0.5			
Chromium (total) - 6020	-	5			
Copper - 6020	-	25			
Lead - 6020	-	3			
Mercury - 7470	-	0.2			
Selenium - 6020	-	5			
Silver - 6020	-	0.5			
Zinc - 6020	-	10			
Metal Results Are Reported As	-	Dissolved			

KR059B031398

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 11-13-02

Data File	Kalamazoo
MW-404	2.9-7.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-103	Sample Identification	MW-103
Sample Depth, ft	10.7-15.3	Sample Depth, ft	10.7-15.3
Sample Type	water	Sample Type	water
Sample Date	09-20-02	Sample Date	09-20-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021526-14	Control Number	021526-14

METALS	ug/L	TDL
Arsenic - 6020	7	5
Barium - 6020	240	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	250	20

KR059B031399

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *AU* Date *11-13-02*

Data File	Kalamazoo
MW-103	10.7-15.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-105D	Sample Identification	MW-105D
Sample Depth, ft	38.4-43.4	Sample Depth, ft	38.4-43.4
Sample Type	water	Sample Type	water
Sample Date	09-20-02	Sample Date	09-20-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021526-15	Control Number	021526-15

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	190	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	4	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	830	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	99	20

KR059B031400

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ad Date 11/13/02

Data File	Kalamazoo
MW-105D	38.4-43.4

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	P-2	Sample Identification	P-2
Sample Depth, ft	7.6-12.1	Sample Depth, ft	7.6-12.1
Sample Type	water	Sample Type	water
Sample Date	09-20-02	Sample Date	09-20-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021526-16	Control Number	021526-16

METALS	ug/L	TDL
Arsenic - 6020	12	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	630	20

KR059B031401

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 11-13-02

Data File	Kalamazoo
P-2	7.6-12.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	P-2D	Sample Identification	P-2D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	09-20-02	Sample Date	09-20-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	09-25-02	Analysis Date / Analyst	10-08-02 / eb
Analysis Date / Analyst (Hg)	09-30-02 / clh		
Analysis Date / Analyst (others)	10-08-02 / eb		
Control Number	021526-17	Control Number	021526-17

METALS	ug/L	TDL
Arsenic - 6020	7	5
Barium - 6020	110	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	3,400	20

KR059B031402

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11-13-02

Data File	Kalamazoo
P-2D	35-40

00816

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-101D	Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5	Sample Depth, ft	34.5-39.5
Sample Type	water	Sample Type	water
Sample Date	09-23-02	Sample Date	09-23-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	10-03-02	Analysis Date / Analyst	10-15-02 / eb
Analysis Date / Analyst (Hg)	10-04-02 / clh		
Analysis Date / Analyst (others)	10-15-02 / eb		
Control Number	021550-01	Control Number	021550-01

METALS	ug/L	TDL
Arsenic - 6020	25	5
Barium - 6020	370	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	2,300	20

KR059B031403

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11-13-02

Data File	Kalamazoo
MW-101D	34.5-39.5

INORG-1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-404	Sample Identification	MW-404
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	09-23-02	Sample Date	09-23-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	no sample	Preservation Date / Type	no sample
Preparation Date (Hg)	no sample	Analysis Date / Analyst	no sample
Analysis Date / Analyst (Hg)	no sample		
Analysis Date / Analyst (others)	no sample		
Control Number	021550-02	Control Number	021550-02

METALS	ug/L	TDL
Arsenic - 6020	-	5
Barium - 6020	-	100
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5
Copper - 6020	-	25
Lead - 6020	-	3
Mercury - 7470	-	0.2
Selenium - 6020	-	5
Silver - 6020	-	0.5
Zinc - 6020	-	10
Metal Results Are Reported As	-	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	-	20

KR059B031404

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AL Date 11/13/02

Data File	Kalamazoo
MW-404	2.9-7.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-404	Sample Identification	MW-404
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	09-23-02	Sample Date	09-23-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	10-03-02	Analysis Date / Analyst	10-15-02 / eb
Analysis Date / Analyst (Hg)	10-04-02 / clh		
Analysis Date / Analyst (others)	10-15-02 / eb		
Control Number	021550-03	Control Number	021550-03

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	260	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	11	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	24	20

KR059B031405

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 11-13-02

Data File	Kalamazoo
MW-404	2.9-7.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-101	Sample Identification	MW-101
Sample Depth, ft	12.2-16.9	Sample Depth, ft	12.2-16.9
Sample Type	water	Sample Type	water
Sample Date	09-23-02	Sample Date	09-23-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	*Percent Solids, %w/w*	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	10-03-02	Analysis Date / Analyst	10-15-02 / eb
Analysis Date / Analyst (Hg)	10-04-02 / clh		
Analysis Date / Analyst (others)	10-15-02 / eb		
Control Number	021550-04	Control Number	021550-04

METALS	ug/L	TDL
Arsenic - 6020	6	5
Barium - 6020	160	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	2,200	20

KR059B031406

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	*Kalamazoo*
MW-101	12.2-16.9

00825

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-1
Sample Depth, ft	7.9-11.6
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	10-03-02
Analysis Date / Analyst (Hg)	10-04-02 / clh
Analysis Date / Analyst (others)	10-15-02 / eb
Control Number	021550-05

METALS	ug/L	TDL
Arsenic - 6020	18	5
Barium - 6020	320	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW-1
Sample Depth, ft	7.9-11.6
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3
Analysis Date / Analyst	10-15-02 / eb
Control Number	021550-05

METALS	ug/L	TDL
Iron (dissolved) - 6020	13,000	20

KR059B031407

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 11-13-02

Data File	Kalamazoo
MW-1	7.9-11.6

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-202D	Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4	Sample Depth, ft	55.4-60.4
Sample Type	water	Sample Type	water
Sample Date	09-23-02	Sample Date	09-23-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	10-03-02	Analysis Date / Analyst	10-15-02 / eb
Analysis Date / Analyst (Hg)	10-04-02 / clh		
Analysis Date / Analyst (others)	10-15-02 / eb		
Control Number	021550-06	Control Number	021550-06

METALS	ug/L	TDL	METALS	ug/L	TDL
Arsenic - 6020	nd	5	Iron (dissolved) - 6020	36	20
Barium - 6020	180	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031408

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By JM Date 11/13/02

Data File	Kalamazoo
MW-202D	55.4-60.4

00822

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-401I	Sample Identification	MW-401I
Sample Depth, ft	37.5-42.5	Sample Depth, ft	37.5-42.5
Sample Type	water	Sample Type	water
Sample Date	09-23-02	Sample Date	09-23-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	10-03-02	Analysis Date / Analyst	10-15-02 / eb
Analysis Date / Analyst (Hg)	10-04-02 / clh		
Analysis Date / Analyst (others)	10-15-02 / eb		
Control Number	021550-07	Control Number	021550-07

METALS	ug/L	TDL	METALS	ug/L	TDL
Arsenic - 6020	43	5	Iron (dissolved) - 6020	9,100	20
Barium - 6020	230	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031409

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 11/13/02

Data File	Kalamazoo
MW-401I	37.5-42.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	Duplicate #2	Sample Identification	Duplicate #2
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	09-23-02	Sample Date	09-23-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	no sample	Preservation Date / Type	no sample
Preparation Date (Hg)	no sample	Analysis Date / Analyst	no sample
Analysis Date / Analyst (Hg)	no sample		
Analysis Date / Analyst (others)	no sample		
Control Number	021550-08	Control Number	021550-08

METALS	ug/L	TDL
Arsenic - 6020	-	5
Barium - 6020	-	100
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5
Copper - 6020	-	25
Lead - 6020	-	3
Mercury - 7470	-	0.2
Selenium - 6020	-	5
Silver - 6020	-	0.5
Zinc - 6020	-	10
Metal Results Are Reported As	-	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	-	20

KR059B031410

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
Duplicate #2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-402	Sample Identification	MW-402
Sample Depth, ft	3.6-8.6	Sample Depth, ft	3.6-8.6
Sample Type	water	Sample Type	water
Sample Date	09-24-02	Sample Date	09-24-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	10-03-02	Analysis Date / Analyst	10-15-02 / eb
Analysis Date / Analyst (Hg)	10-04-02 / clh		
Analysis Date / Analyst (others)	10-15-02 / eb		
Control Number	021550-09	Control Number	021550-09

METALS	ug/L	TDL
Arsenic - 6020	8	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	57,000	20

KR059B031411

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-402	3.6-8.6

00925

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-401
Sample Depth, ft	7.5-17.5
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	10-03-02
Analysis Date / Analyst (Hg)	10-04-02 / clh
Analysis Date / Analyst (others)	10-15-02 / eb
Control Number	021550-10

METALS	ug/L	TDL
Arsenic - 6020	28	5
Barium - 6020	150	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW-401
Sample Depth, ft	7.5-17.5
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3
Analysis Date / Analyst	10-15-02 / eb
Control Number	021550-10

METALS	ug/L	TDL
Iron (dissolved) - 6020	8,900	20

KR059B031412

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AU Date 11/13/02

Data File	Kalamazoo
MW-401	7.5-17.5

00825

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-402D	Sample Identification	MW-402D
Sample Depth, ft	65-70	Sample Depth, ft	65-70
Sample Type	water	Sample Type	water
Sample Date	09-24-02	Sample Date	09-24-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	10-03-02	Analysis Date / Analyst	10-15-02 / eb
Analysis Date / Analyst (Hg)	10-04-02 / clh		
Analysis Date / Analyst (others)	10-15-02 / eb		
Control Number	021550-11	Control Number	021550-11

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	150	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	52	20

KR059B031413

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 11-13-02

Data File	Kalamazoo
MW-402D	65-70

INORG-1

00627

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-301
Sample Depth, ft	4-10.1
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	10-03-02
Analysis Date / Analyst (Hg)	10-04-02 / clh
Analysis Date / Analyst (others)	10-15-02 / eb
Control Number	021550-12

METALS	ug/L	TDL
Arsenic - 6020	71	5
Barium - 6020	190	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

Sample Identification	MW-301
Sample Depth, ft	4-10.1
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3
Analysis Date / Analyst	10-15-02 / eb
Control Number	021550-12

METALS	ug/L	TDL
Iron (dissolved) - 6020	18,000	20

KR059B031414

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-301	4-10.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department -

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-401D	Sample Identification	MW-401D
Sample Depth, ft	67.3-72.3	Sample Depth, ft	67.3-72.3
Sample Type	water	Sample Type	water
Sample Date	09-24-02	Sample Date	09-24-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	10-03-02	Analysis Date / Analyst	10-15-02 / eb
Analysis Date / Analyst (Hg)	10-04-02 / clh		
Analysis Date / Analyst (others)	10-15-02 / eb		
Control Number	021550-13	Control Number	021550-13

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	210	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	1,500	20

KR059B031415

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 11-13-02

Data File	Kalamazoo
MW-401D	67.3-72.3

00929

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	Trip Blank	Sample Identification	Trip Blank
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	09-24-02	Sample Date	09-24-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	no sample	Preservation Date / Type	no sample
Preparation Date (Hg)	no sample	Analysis Date / Analyst	no sample
Analysis Date / Analyst (Hg)	no sample		
Analysis Date / Analyst (others)	no sample		
Control Number	021550-14	Control Number	021550-14

METALS	ug/L	TDL	METALS	ug/L	TDL
Arsenic - 6020	-	5	Iron (dissolved) - 6020	-	20
Barium - 6020	-	100			
Cadmium - 6020	-	0.5			
Chromium (total) - 6020	-	5			
Copper - 6020	-	25			
Lead - 6020	-	3			
Mercury - 7470	-	0.2			
Selenium - 6020	-	5			
Silver - 6020	-	0.5			
Zinc - 6020	-	10			
Metal Results Are Reported As	-	Dissolved			

KR059B031416

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By AM Date 11/13/02

Data File	Kalamazoo
Trip Blank	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-304D	Sample Identification	MW-304D
Sample Depth, ft	64.5-69.5	Sample Depth, ft	64.5-69.5
Sample Type	water	Sample Type	water
Sample Date	09-26-02	Sample Date	09-26-02
Received Date	09-27-02	Received Date	09-27-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date / Type	at collection / HNO3	Preservation Date / Type	at collection / HNO3
Preparation Date (Hg)	10-03-02	Analysis Date / Analyst	10-15-02 / eb
Analysis Date / Analyst (Hg)	10-04-02 / clh		
Analysis Date / Analyst (others)	10-15-02 / eb		
Control Number	021562-01	Control Number	021562-01

METALS	ug/L	TDL
Arsenic - 6020	24	5
Barium - 6020	300	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

METALS	ug/L	TDL
Iron (dissolved) - 6020	7,400	20

KR059B031417

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AU Date 11-13-02

Data File	Kalamazoo
MW-304D	64.5-69.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-304	Sample Identification	MW-304
Sample Depth, ft	4-10.1	Sample Depth, ft	4-10.1
Sample Type	water	Sample Type	water
Sample Date	09-16-02	Sample Date	09-16-02
Received Date	09-18-02	Received Date	09-18-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	09-20-02 / <outsource>	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	09-20-02 / 09-20-02
		Analyst	bek
Control Number	021514-01	Control Number	021514-01

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	nd	1,000
Alkalinity, as CaCO3 - 310.1	570,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031418

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Bll* Date 11/13/02

Data File	Kalamazoo
MW-304	4-10.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-303	Sample Identification	MW-303
Sample Depth, ft	3.2-7.6	Sample Depth, ft	3.2-7.6
Sample Type	water	Sample Type	water
Sample Date	09-16-02	Sample Date	09-16-02
Received Date	09-18-02	Received Date	09-18-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	09-20-02 / <outsource>	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	09-20-02 / 09-20-02
		Analyst	bek
Control Number	021514-02	Control Number	021514-02

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	nd	1,000
Alkalinity, as CaCO3 - 310.1	430,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031419

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ale Date 11-13-02

Data File	Kalamazoo
MW-303	3.2-7.6

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-403	Sample Identification	MW-403
Sample Depth, ft	2.8-7.8	Sample Depth, ft	2.8-7.8
Sample Type	water	Sample Type	water
Sample Date	09-17-02	Sample Date	09-17-02
Received Date	09-18-02	Received Date	09-18-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	09-20-02 / <outsource>	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	09-20-02 / 09-20-02
		Analyst	bek
Control Number	021514-03	Control Number	021514-03

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	35,000	1,000
Alkalinity, as CaCO3 - 310.1	280,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031420

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11-13-02

Data File	Kalamazoo
MW-403	2.8-7.8

00834

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-4	Sample Identification	MW-4
Sample Depth, ft	2.2-6.8	Sample Depth, ft	2.2-6.8
Sample Type	water	Sample Type	water
Sample Date	09-17-02	Sample Date	09-17-02
Received Date	09-18-02	Received Date	09-18-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	09-20-02 / <outsource>	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	09-20-02 / 09-20-02
		Analyst	bek
Control Number	021514-04	Control Number	021514-04

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	44,000	1,000
Alkalinity, as CaCO3 - 310.1	330,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031421

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-4	2.2-6.8

00235

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	P-4
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	09-20-02 / <outsource>
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021514-05

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	14,000	1,000
Alkalinity, as CaCO3 - 310.1	360,000	-

Sample Identification	P-4
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021514-05

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031422

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Ad* Date 11/13/02

Data File	Kalamazoo
P-4	2.9-7.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-3
Sample Depth, ft	2.9-7.8
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	09-20-02 / <outsource>
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021514-06

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	19,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

Sample Identification	MW-3
Sample Depth, ft	2.9-7.8
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021514-06

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031423

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11-13-02

Data File	Kalamazoo
MW-3	2.9-7.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-302	Sample Identification	MW-302
Sample Depth, ft	3.5-8.7	Sample Depth, ft	3.5-8.7
Sample Type	water	Sample Type	water
Sample Date	09-17-02	Sample Date	09-17-02
Received Date	09-18-02	Received Date	09-18-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	09-20-02 / <outsource>	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	09-20-02 / 09-20-02
		Analyst	bek
Control Number	021514-07	Control Number	021514-07

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2; 300.0; SM4500	6,900	1,000	Cyanide, Free - D4282	nd	10
Alkalinity, as CaCO3 - 310.1	310,000	-			

KR059B031424

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ad Date 11/13/02

Data File	Kalamazoo
MW-302	3.5-8.7

90838

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-403D
Sample Depth, ft	60.1-65.1
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	09-20-02 / <outsource>
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021514-08

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	64,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

Sample Identification	MW-403D
Sample Depth, ft	60.1-65.1
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021514-08

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031425

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-403D	60.1-65.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-302I
Sample Depth, ft	19.8-24.8
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	09-20-02 / <outsource>
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021514-09

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	nd	1,000
Alkalinity, as CaCO3 - 310.1	270,000	-

Sample Identification	MW-302I
Sample Depth, ft	19.8-24.8
Sample Type	water
Sample Date	09-17-02
Received Date	09-18-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021514-09

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031426

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 11/13/02

Data File	Kalamazoo
MW-302I	19.8-24.8

00840

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-201R
Sample Depth, ft	1.7-6.7
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	09-25-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021526-01

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	2,000	1,000
Alkalinity, as CaCO3 - 310.1	480,000	-

Sample Identification	MW-201R
Sample Depth, ft	1.7-6.7
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021526-01

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031427

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-201R	1.7-6.7

00841

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	09-25-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021526-02

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021526-02

INORGANICS	ug/L	TDL
Nitrate - 353.2	490	100
Sulfate - 375.2; 300.0; SM4500	620,000	1,000
Alkalinity, as CaCO3 - 310.1	200,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031428

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30

Data File	Kalamazoo
P-3	2.9-7.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-2	Sample Identification	MW-2
Sample Depth, ft	4.0-7.7	Sample Depth, ft	4.0-7.7
Sample Type	water	Sample Type	water
Sample Date	09-18-02	Sample Date	09-18-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	09-25-02 / krw	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	09-20-02 / 09-20-02
		Analyst	bek
Control Number	021526-03	Control Number	021526-03

INORGANICS	ug/L	TDL
Nitrate - 353.2	310	100
Sulfate - 375.2; 300.0; SM4500	750,000	1,000
Alkalinity, as CaCO3 - 310.1	140,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031429

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30

Data File	Kalamazoo
MW-2	4.0-7.7

00843

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-302D
Sample Depth, ft	55.3-60.3
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	09-25-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021526-04

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	62,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

Sample Identification	MW-302D
Sample Depth, ft	55.3-60.3
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021526-04

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031430

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ad Date 11/13/02

Data File	Kalamazoo
MW-302D	55.3-60.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	P-3D	Sample Identification	P-3D
Sample Depth, ft	34.6-39.6	Sample Depth, ft	34.6-39.6
Sample Type	water	Sample Type	water
Sample Date	09-18-02	Sample Date	09-18-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	09-25-02 / krw	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	09-20-02 / 09-20-02
		Analyst	bek
Control Number	021526-05	Control Number	021526-05

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	1,000	1,000
Alkalinity, as CaCO3 - 310.1	340,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031431

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
P-3D	34.6-39.6

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-404I
Sample Depth, ft	34.7-39.7
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	09-25-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021526-06

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	1,000	1,000
Alkalinity, as CaCO3 - 310.1	320,000	-

Sample Identification	MW-404I
Sample Depth, ft	34.7-39.7
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021526-06

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031432

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Sd Date 11/13/02

Data File	Kalamazoo
MW-404I	34.7-39.7

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	Duplicate #1
Sample Depth, ft	-
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	no sample
Analysis Date / Analyst, Sulfate	no sample
Analysis Date / Analyst, Alkalinity	no sample
Control Number	021526-07

Sample Identification	Duplicate #1
Sample Depth, ft	-
Sample Type	water
Sample Date	09-18-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date, Available / Free	no sample
Analyst	no sample
Control Number	021526-07

INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100
Sulfate - 375.2; 300.0; SM4500	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B031433

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 11/13/02

Data File	Kalamazoo
Duplicate #1	-

00047

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-104
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	09-25-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021526-08

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	25,000	1,000
Alkalinity, as CaCO3 - 310.1	550,000	-

Sample Identification	MW-104
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021526-08

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031434

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30

Data File	Kalamazoo
MW-104	4.4-9.4

00548

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-102	Sample Identification	MW-102
Sample Depth, ft	10.3-14.9	Sample Depth, ft	10.3-14.9
Sample Type	water	Sample Type	water
Sample Date	09-19-02	Sample Date	09-19-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	09-25-02 / krw	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	09-20-02 / 09-20-02
		Analyst	bek
Control Number	021526-09	Control Number	021526-09

INORGANICS	ug/L	TDL
Nitrate - 353.2	670	100
Sulfate - 375.2; 300.0; SM4500	38,000	1,000
Alkalinity, as CaCO3 - 310.1	290,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031435

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-102	10.3-14.9

00849

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-105
Sample Depth, ft	10.8-15.3
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	09-25-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021526-10

INORGANICS	ug/L	TDL
Nitrate - 353.2	830	100
Sulfate - 375.2; 300.0; SM4500	64,000	1,000
Alkalinity, as CaCO3 - 310.1	370,000	-

Sample Identification	MW-105
Sample Depth, ft	10.8-15.3
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021526-10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031436

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30/02

Data File	Kalamazoo
MW-105	10.8-15.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-404D	Sample Identification	MW-404D
Sample Depth, ft	74.8-79.8	Sample Depth, ft	74.8-79.8
Sample Type	water	Sample Type	water
Sample Date	09-19-02	Sample Date	09-19-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	09-25-02 / krw	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	09-20-02 / 09-20-02
		Analyst	bek
Control Number	021526-11	Control Number	021526-11

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	nd	1,000
Alkalinity, as CaCO3 - 310.1	350,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031437

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-404D	74.8-79.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-104D
Sample Depth, ft	29.9-34.9
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	09-25-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021526-12

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	76,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

Sample Identification	MW-104D
Sample Depth, ft	29.9-34.9
Sample Type	water
Sample Date	09-19-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021526-12

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031438

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-104D	29.9-34.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-404	Sample Identification	MW-404
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	09-19-02	Sample Date	09-19-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	no sample	Preservation Date	no sample
Analysis Date / Analyst, Sulfate	no sample	Preservation Type	no sample
Analysis Date / Analyst, Alkalinity	no sample	Analysis Date, Available / Free	no sample
		Analyst	no sample
Control Number	021526-13	Control Number	021526-13

INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100
Sulfate - 375.2; 300.0; SM4500	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B031439

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Jd* Date *11/13/02*

Data File	Kalamazoo
MW-404	2.9-7.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-103
Sample Depth, ft	10.7-15.3
Sample Type	water
Sample Date	09-20-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	09-25-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021526-14

Sample Identification	MW-103
Sample Depth, ft	10.7-15.3
Sample Type	water
Sample Date	09-20-02
Received Date	09-20-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021526-14

INORGANICS	**ug/L**	**TDL**
Nitrate - 353.2	640	100
Sulfate - 375.2; 300.0; SM4500	35,000	1,000
Alkalinity, as CaCO3 - 310.1	450,000	-

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031440

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Del Date 11/13/02

Data File	Kalamazoo
MW-103	10.7-15.3

00054

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-105D	Sample Identification	MW-105D
Sample Depth, ft	38.4-43.4	Sample Depth, ft	38.4-43.4
Sample Type	water	Sample Type	water
Sample Date	09-20-02	Sample Date	09-20-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	09-25-02 / krw	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	09-20-02 / 09-20-02
		Analyst	bek
Control Number	021526-15	Control Number	021526-15

INORGANICS	ug/L	TDL
Nitrate - 353.2	170	100
Sulfate - 375.2; 300.0; SM4500	69,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031441

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-105D	38.4-43.4

00055

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	P-2	Sample Identification	P-2
Sample Depth, ft	7.6-12.1	Sample Depth, ft	7.6-12.1
Sample Type	water	Sample Type	water
Sample Date	09-20-02	Sample Date	09-20-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	09-25-02 / krw	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	09-20-02 / 09-20-02
		Analyst	bek
Control Number	021526-16	Control Number	021526-16

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	46,000	1,000
Alkalinity, as CaCO3 - 310.1	450,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031442

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
P-2	7.6-12.1

00956

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	P-2D	Sample Identification	P-2D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	09-20-02	Sample Date	09-20-02
Received Date	09-20-02	Received Date	09-20-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	09-25-02 / krw	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	09-20-02 / 09-20-02
		Analyst	bek
Control Number	021526-17	Control Number	021526-17

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100	Cyanide, Available - OIA1677	nd	20
Sulfate - 375.2; 300.0; SM4500	93,000	1,000	Cyanide, Free - D4282	nd	10
Alkalinity, as CaCO3 - 310.1	300,000	-			

KR059B031443

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
P-2D	35-40

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	10-08-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021550-01

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	20,000	1,000
Alkalinity, as CaCO3 - 310.1	360,000	-

Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021550-01

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031444

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30

Data File	Kalamazoo
MW-101D	34.5-39.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-404	Sample Identification	MW-404
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	09-23-02	Sample Date	09-23-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	no sample	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	no sample	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	no sample	Analysis Date, Available / Free	09-20-02 / 09-20-02
		Analyst	bek
Control Number	021550-02	Control Number	021550-02

INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100
Sulfate - 375.2; 300.0; SM4500	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031445

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-404	2.9-7.9

00853

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-404	Sample Identification	MW-404
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	09-23-02	Sample Date	09-23-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	no sample
Analysis Date / Analyst, Sulfate	10-08-02 / krw	Preservation Type	no sample
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	no sample
		Analyst	no sample
Control Number	021550-03	Control Number	021550-03

INORGANICS	ug/L	TDL
Nitrate - 353.2	630	100
Sulfate - 375.2; 300.0; SM4500	80,000	1,000
Alkalinity, as CaCO3 - 310.1	500,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B031446

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/30

Data File	Kalamazoo
MW-404	2.9-7.9

60650

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-101
Sample Depth, ft	12.2-16.9
Sample Type	*water*
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	10-08-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021550-04

INORGANICS	ug/L	TDL
Nitrate - 353.2	460	100
Sulfate - 375.2; 300.0; SM4500	28,000	1,000
Alkalinity, as CaCO3 - 310.1	390,000	-

Sample Identification	MW-101
Sample Depth, ft	12.2-16.9
Sample Type	*water*
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021550-04

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031447

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	*Kalamazoo*
MW-101	12.2-16.9

00861

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-1
Sample Depth, ft	7.9-11.6
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	10-08-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021550-05

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	30,000	1,000
Alkalinity, as CaCO3 - 310.1	420,000	-

Sample Identification	MW-1
Sample Depth, ft	7.9-11.6
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021550-05

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031448

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Su Date 11/13/02

Data File	Kalamazoo
MW-1	7.9-11.6

00852

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	10-08-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021550-06

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	66,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	09-23-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021550-06

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031449

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Sll Date 11/13/02

Data File	Kalamazoo
MW-202D	55.4-60.4

00353

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-401I	Sample Identification	MW-401I
Sample Depth, ft	37.5-42.5	Sample Depth, ft	37.5-42.5
Sample Type	water	Sample Type	water
Sample Date	09-23-02	Sample Date	09-23-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	10-08-02 / krw	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	09-20-02 / 09-20-02
		Analyst	bek
Control Number	021550-07	Control Number	021550-07

INORGANICS	ug/L	TDL
Nitrate - 353.2	250	100
Sulfate - 375.2; 300.0; SM4500	2,600	1,000
Alkalinity, as CaCO3 - 310.1	330,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031450

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-401I	37.5-42.5

00864

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	Duplicate #2	Sample Identification	Duplicate #2
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	09-23-02	Sample Date	09-23-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	no sample	Preservation Date	no sample
Analysis Date / Analyst, Sulfate	no sample	Preservation Type	no sample
Analysis Date / Analyst, Alkalinity	no sample	Analysis Date, Available / Free	no sample
		Analyst	no sample
Control Number	021550-08	Control Number	021550-08

INORGANICS	ug/L	TDL	INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100	Cyanide, Available - OIA1677	-	20
Sulfate - 375.2; 300.0; SM4500	-	1,000	Cyanide, Free - D4282	-	10
Alkalinity, as CaCO3 - 310.1	-	-			

KR059B031451

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Sil Date 11/13/02

Data File	Kalamazoo
Duplicate #2	-

00855

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-402
Sample Depth, ft	3.6-8.6
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	10-08-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021550-09

Sample Identification	MW-402
Sample Depth, ft	3.6-8.6
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021550-09

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	490,000	1,000
Alkalinity, as CaCO3 - 310.1	500,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031452

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-402	3.6-8.6

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-401
Sample Depth, ft	7.5-17.5
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	10-08-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021550-10

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	91,000	1,000
Alkalinity, as CaCO3 - 310.1	370,000	-

Sample Identification	MW-401
Sample Depth, ft	7.5-17.5
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021550-10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031453

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-401	7.5-17.5

00857

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-402D
Sample Depth, ft	65-70
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	10-08-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021550-11

INORGANICS	ug/L	TDL
Nitrate - 353.2	1,000	100
Sulfate - 375.2; 300.0; SM4500	56,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

Sample Identification	MW-402D
Sample Depth, ft	65-70
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021550-11

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031454

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-402D	65-70

00858

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-301	Sample Identification	MW-301
Sample Depth, ft	4-10.1	Sample Depth, ft	4-10.1
Sample Type	water	Sample Type	water
Sample Date	09-24-02	Sample Date	09-24-02
Received Date	09-25-02	Received Date	09-25-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	10-08-02 / krw	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	09-20-02 / 09-20-02
		Analyst	bek
Control Number	021550-12	Control Number	021550-12

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	1,400	1,000
Alkalinity, as CaCO3 - 310.1	380,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031455

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-301	4-10.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-401D
Sample Depth, ft	67.3-72.3
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek
Analysis Date / Analyst, Sulfate	10-08-02 / krw
Analysis Date / Analyst, Alkalinity	09-30-02 / bek
Control Number	021550-13

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	35,000	1,000
Alkalinity, as CaCO3 - 310.1	340,000	-

Sample Identification	MW-401D
Sample Depth, ft	67.3-72.3
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	09-20-02 / 09-20-02
Analyst	bek
Control Number	021550-13

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031456

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 11/13/02

Data File	Kalamazoo
MW-401D	67.3-72.3

00870

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	no sample
Analysis Date / Analyst, Sulfate	no sample
Analysis Date / Analyst, Alkalinity	no sample
Control Number	021550-14

INORGANICS	ug/L	TDL
Nitrate - 353.2	-	100
Sulfate - 375.2; 300.0; SM4500	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	09-24-02
Received Date	09-25-02
Report Date	11-13-02
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date, Available / Free	no sample
Analyst	no sample
Control Number	021550-14

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B031457

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
Trip Blank	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of September 16 - 26, 2002	Project Numbers CHEM-02-1514, - 1526 CHEM-02-1550, -1562

Sample Identification	MW-304D	Sample Identification	MW-304D
Sample Depth, ft	64.5-69.5	Sample Depth, ft	64.5-69.5
Sample Type	water	Sample Type	water
Sample Date	09-26-02	Sample Date	09-26-02
Received Date	09-27-02	Received Date	09-27-02
Report Date	11-13-02	Report Date	11-13-02
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date / Analyst, Nitrate	10-02-02 / bek	Preservation Date	at collection
Analysis Date / Analyst, Sulfate	10-15-02 / krw	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst, Alkalinity	09-30-02 / bek	Analysis Date, Available / Free	no sample / 09-20-02
		Analyst	bek
Control Number	021562-01	Control Number	021562-01

INORGANICS	ug/L	TDL
Nitrate - 353.2	nd	100
Sulfate - 375.2; 300.0; SM4500	78,000	1,000
Alkalinity, as CaCO3 - 310.1	290,000	-

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	nd	10

KR059B031458

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 11/13/02

Data File	Kalamazoo
MW-304D	64.5-69.5

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-05

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 9-18-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASE, SME – PLYMOUTH, PHONE: 734-454-9900

ANALYSIS REQUESTED

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX / PNAs	10 TI METALS	FREE + AVAILABLE CYANIDE	ALKALINITY	DISSOLVED CHLORIDE	NITRATE	SULFATE	REMARKS
02-1514-01	9/16	3:00	W	MW304	4-10.1	10	X	X	X	X	X	X	X	
↓ -02	9/16	4:00	W	MW303	3.2-7.6	10	X	X	X	X	X	X	X	

KR059B031459

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	9/16/02 5:45	SME REFRIGERATOR (SAMPLE Room)
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 9/18/02 1:30	RECEIVED BY: (SIGNATURE) Gobe Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ METHODS + MDLs
- CALL PAT B. w/ QUESTIONS

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 9-18-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARPATE SME - PLYMOUTH

PHONE:

ANALYSIS REQUESTED

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	SIZE / PNAs	ID TI METALS	FREE + AVAILABLE CYANIDE	ALKALINITY	DISSOLVED IRON	NITRATE	SULFATE	REMARKS
02-1514-03	9-17	8:40	W	MW403	2.8 - 7.8	10								
-04		9:45		MW4	2.2 - 6.8									
-05		10:45		P4	2.9 - 7.9									
-06		11:45		MW3	2.9 - 7.8									
-07		12:45		MW302	3.5 - 8.7									
-08		1:45		MW403D	60.1 - 65.1									
-09		4:20		MW302I	19.8 - 24.8									

KR059B031460

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[illegible]	9/17 5:30	SME REFRIGERATOR (SAMPLE ROOM)
SME	9/18/02	[illegible]

COMMENTS

- MDEQ METHODS + MDLs
- CALL PAT B. W/ QUESTIONS

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo former MGP

PROJECT NUMBER: —

SAMPLING TEAM: —

DATE SHIPPED: 9/19/02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: GCatlell

PHONE: 517-788-2334

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	ANALYSIS REQUESTED: SO4	ANALYSIS REQUESTED: PAHs	REMARKS
02-1514-1	9/16/02	1500	Aq	MW304	—	2ea.	✓	✓	
-2	↓	1600		303					
-3	9/17/02	0840		403					
-4		0945		4					
-5		1045		P4					
-6		1145		MW3					
-7		1245		302					
8		1345		403D					
9		1620		302I					

KR059B031461

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	9/19/02	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

8270 only for PAH

MDEQ OP Memo 6 Rev. 6 TDLs

Routine turnaround. No fax.

4°C

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 9-20-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARRETTE SPE-PLU

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX/PNAs	10 TI METALS	FREE + AVAILABLE CYANIDE	ALKALINITY	DISSOLVED IRON	NITRATE	SULFATE	REMARKS
02-1526-01	9-18-02	9:05	W	MW201R	1.7-6.7	10								
-02		10:15		P3	2.9-7.3									
-03		11:15		MW2	4.0-7.7									
-04		1:00		MW302D	55.3-60.3									
-05		3:15		P3D	34.6-39.6									
-06		4:25		MW404I	34.7-39.7									
-07		—		DUPLICATE #1	—	3	X							

KR059B031462

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	9-18-02 7:00 PM	SITE SAMPLE Room – Refrigerator
RELINQUISHED BY: (SIGNATURE) SMC	DATE / TIME 9/20/02 2:00	RECEIVED BY: (SIGNATURE) Crobe Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ METHODS + MDLs
- CALL PAT B. w/ QUESTIONS

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 9-20-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASS, SME - PLYMOUTH, PHONE: 734-454-1900

ANALYSIS REQUESTED

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX / PNAs	Ion metals	Free + available cyanide	Alkalinity	Dissolved iron	Nitrate	Sulfate	REMARKS
02-1526-08	9-19	10:10	W	MW104	4.4-9.4	10								
-09		11:00		MW102	10.3-14.9	10								
-10		12:15		MW105	10.8-15.3	10								
-11		2:15		MW404D	24.8-29.8	10								
-12		4:05		MW104D	29.9-34.9	10								
-13		8:45		MW404	2.9-7.9	2	X	← BTEX only						

KR059B031463

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	9-19-02 5:30	SME Refrigerator / Sample Room
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 9/20/02 2:00	RECEIVED BY: (SIGNATURE) [signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ METHODS + MDLs
- CALL PAT B. w/ QUESTIONS

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 9-20-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARRISE SME - PLY

PHONE: —

ANALYSIS REQUESTED

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX / PNAs	10 M METALS	FREE + AVAILABLE CYANIDE	ALKALINITY	DISSOLVED IRON	NITRATE	SULFATE	REMARKS
02-1526-14	9-20-02	10:00	W	MW103	10.7-15.3	10								
-15		11:30		MW105D	38.4-43.4	10								
-16		12:30		PZ	7.6-12.1	10								
-17		1:30		PZD	35-40	10								

KR059B031464

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	9-20-02 2:15	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

- MDEQ METHODS + MDLs
- CALL PAT B. w/ QUESTIONS

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: 02-1526

SAMPLING TEAM:

DATE SHIPPED:

SITE SKETCH ATTACHED? CIRCLE ONE: YES ~~NO~~

PAGE 1 OF 2

SEND REPORT TO: Gal Cattell, Consumers

PHONE: (517) 788-2334

ANALYSIS REQUESTED: PAH-8270

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	PAH-8270	REMARKS
02-1526-01	9/18/02	9:05	Aq Grab	MW 201 R	1.7-6.7	1 reg GC vial	X	
-02		10:15		P3	2.9-7.3			
-03		11:15		MW2	4.0-7.7			
-04		1:00		MW 302D	55.3-60.3			
-05		3:15		P3D	34.6-39.6			
-06		4:25		MW 404 I	34.7-39.7			
-07		—		Duplicate #1	—			
-08	9/19/02	10:10		MW 104	4.4-9.4			
-09		11:00		MW 102	10.3-14.9			
-10		12:15		MW 105	10.8-15.3			
-11		2:15		MW 404D	74.8-79.8			KR059B031465
-12		4:05		MW 104D	29.9-34.9			

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Grace Smith	9/23/02 1245	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS: Use MDEQ TDL's per op Memo 6, rev 6

Routine TAT. NO Fax

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SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: 02-1526

SAMPLING TEAM:

DATE SHIPPED:

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 2

SEND REPORT TO: P1

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	ANALYSIS REQUESTED: PAH-8270	REMARKS
02-1526-14	9/2/02	10:00	Air Effluent	MW 103	10.7-15.3	1 40G Vial	X	
-15		11:30		MW 105D	38.4-43.4			
-16		12:30		P2	7.6-12.1			
-17		1:30		P2D	35-40			
-	-	-		Method Blank	-			

KR059B031466

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Gabe Smith	9/3/02 1245	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

P1

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CHAIN OF CUSTODY

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Consumers Energy

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: ~~9/25/02~~ 9/25/02

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARRAGE SME - PLYMOUTH

PHONE: —

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX/PNAs	10 M METALS	FREE + AVAILABLE CYANIDE	ALKALINITY	DISSOLVED IRON	NITRATE	SULFATE	REMARKS
02-1550-01	9-2002	4:00	W	MW101D	34.5-39.5	10	X	X	X	X	X	X	X	
↓ -02	" "	3:10	" "	MW404	2.9-7.9	3	X		X					PNA's + CYANIDE JARS (NO BRX REQ'D)

KR059B031467

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	9-20-02 5:30	SME SAMPLE REFRIGERATOR / SAMPLE Van
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 9/25/02 2:00	RECEIVED BY: (SIGNATURE) [signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

- ADEQ METHODS + MDLs
- CALL PAT B. w/ QUESTIONS

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Consumers Energy

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 9-25-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRIGE SME - PLY

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX / PNAs	10 RI METALS	FILTER + AVAILABLE CYANIDE	ALKALINITY	DISSOLVED IRON	NITRATE	SULFATE	REMARKS
02-1550-03	9-23	8:55	W	MW404	2.9-7.9	5		X		X	X	X	X	
-04		10:45		MW101	12.2-16.9	10								
-05		11:45		MW1	7.9-11.6	10								
-06		2:55		MW202D	55.4-60.4	10								
-07		3:40		MW401 I	37.5-42.5	10								
-08		—		DUPLICATE #2	—	3	X	X						← no Metals Bottle Rec'd - GC

KR059B031468

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	9/23/02 5:00	SME SAMPLE REFRIGERATOR
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 9/25/02 2:00	RECEIVED BY: (SIGNATURE) [signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ methods + PQLs
- CALL PAT B. w/ QUESTIONS -

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 9-25-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASE SME - PLYMOUTH

PHONE: —

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX / PNAs	10 MI METALS	FREE + AVAILABLE CYANIDE	ALKALINITY	DISSOLVED MN	NITRATE	SULFATE	REMARKS
02-1550-09	9/24/02	9:30	W	MW402	3.6-8.6	10								
-10		11:05		MW401	7.5-17.5	10								
-11		2:20		MW402D	65-70	10								
-12		4:00		MW301	4-10.1	10								
-13		5:00		MW401D	67.3-72.3	10								
-14				TRIP BLANK										

KR059B031469

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Davin Ojala	9/24/02 6:15	SME SAMPLE Room / REFRIGERATOR
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 9/25/02 2:00	RECEIVED BY: (SIGNATURE) Gob Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ METHODS + MDLs
- CALL PAT B. w/ QUESTIONS

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SAMPLING SITE: Kalamazoo MGP

PROJECT NUMBER: 02-1550

SAMPLING TEAM:

DATE SHIPPED: 9/26/02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: GL Carell Consumers

PHONE: (517) 788-2334

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	ANALYSIS REQUESTED: PAH-8270	REMARKS
02-1550-01	9/20/02	4:00	W	MW-101D	34.5-39.5	1 ea	X	
-02	↓	3:10		MW-404	2.9-7.9			
-04	9/23/02	10:45		MW-101	12.2-16.9			
-05		11:45		MW-1	7.9-11.6			
-06		2:55		MW-202D	55.4-60.4			
-07		3:40		MW-401 I	37.5-42.5			
-08	↓	—		Duplicate #2	—			
-09	9/24/02	9:30		MW-402	3.6-8.6			
-10		11:05		MW-401	7.5-17.5			
-11		2:20		MW-402D	65-70			
-12		4:00		MW-301	4-10.1			KR059B031470
-13	↓	5:00	↓	MW-401D	67.3-72.3	↓	↓	

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[illegible]	9/25/02 1345	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

MDEQ Memo 6 rev 6.
NO Fax
Method 8270 only
Routine TAT

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Consumers Energy

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 9-27-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRESE SME-PLYMOUTH

PHONE: —

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX / PAHS	FREE CYANIDE	10 TCL METALS	DISSOLVED IRON	ALKALINITY	NITRATE	SULFATE	REMARKS
02-15621	9/26/02	2:20	W	MW304A	64.5-69.5	9	X	X	X	X	X	X	X	
														* THE THREE BLUE-LID 40-ML VOAS WERE RINSED TO REMOVE HCL PRIOR TO COLLECTING GW SAMPLE FOR ALKALINITY *

KR059B031471

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	9/26/02 4:00	SME SAMPLE REFRIGERATOR –
SMC	9/27/02 8:55AM	[signature]

COMMENTS
- MDEQ METHODS + MDLs
- CALL PAT B. W/ QUESTIONS

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo Former MGP

PROJECT NUMBER: —

SAMPLING TEAM: —

DATE SHIPPED: —

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: GLCattell

PHONE: (517) 788-2334

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	PAH (8270)							REMARKS
02-1562-1	9/26/02	1420	Ag. Extract in MeCl2	MW304D		1ea. 6 ml vial	✓							
—			↓	Method blank	—	↓	✓							
														KR059B031472

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	10/28/02	[signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- Use MDEQ QA/QC memo. 6 Rev. 6 TDLs
- 5 day TAT
- Report as 8270 only

4°C

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EXHIBIT MGP-12

Consumers Energy

A CMS Energy Company

Environmental & Lab Services
1945 West Parnall Road
Jackson, MI 49201-8643

Fax: 517 788 2329
www.consumersenergy.com

WORKING COPY

May 5, 2003

Carol Weaver
Environmental Response Division
Michigan Department of Environmental Quality
Kalamazoo District
7953 Adobe Road
Kalamazoo, MI 49009-5026

50111.3

GROUNDWATER MONITORING REPORT
CONSUMERS ENERGY FORMER
KALAMAZOO MANUFACTURED GAS PLANT SITE

Enclosed for your review is a copy of a May 2, 2003, "Groundwater Monitoring Report for December 2002" as prepared by our consultant, Soil and Materials Engineers (SME).

The enclosed summarizes the analytical results from groundwater samples collected between December 11 and 20, 2002.

Should you have any questions concerning the enclosed report, please contact me on 517-788-0350.

Robert G Neumann PE
Senior Engineer/Kalamazoo MGP Site Manager

cc JMuller, Pfizer w/3 copies
CRutland, City of Kalamazoo
JBosch, The Bosch Group, Kalamazoo
TEGriffiths, Consumers, Royal Oak w/o enclosure
GLKelterborn, Consumers, P-24-605A w/o enclosure
JHerdus, Consumers, Kalamazoo w/o enclosure
AMAurino, Consumers, Owosso w/o enclosure
PBarrese, SME, Plymouth w/o enclosure

soil and materials engineers, inc.

43980 Plymouth Oaks Blvd. Plymouth, MI 48170-2584 (734) 454-9900 FAX (734) 454-0629

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Thomas H. Skotzke
R. Scott Steiner, CT
Michael J. Thelen, PE

May 2, 2003

Mr. Robert G. Neumann, P.E.
Environmental & Laboratory Services Department
Consumers Energy Company
1945 W. Parnall Road, Room P-22-520
Jackson, Michigan 49201

WORKING COPY

RE: Groundwater Monitoring Report for December 2002
Kalamazoo MGP
Consumers Energy Company
Kalamazoo, Michigan
SME Project No. KE31823

Dear Mr. Neumann:

This letter presents the results for groundwater monitoring that SME conducted at the above referenced site on December 11, 12, 13 and 16 through 20, 2002. Groundwater monitoring is being conducted in accordance with the scope of services that were presented in the "Work Plan to Implement Continued Remedial Investigation Activities," dated June 28, 2002.

SCOPE OF SERVICES

The scope of services conducted for the groundwater monitoring event is presented below.

1. Gauged groundwater elevations at MW-1, MW-2, MW-3, MW-4, P-1, P-2, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW201R, MW202D, MW301, MW302, MW302I, MW302D, MW303, MW304, MW304D, MW401, MW401I, MW401D, MW402, MW402D, MW403, MW403D, MW404, MW404I and MW404D. Figure No. 1 of Attachment A depicts the locations of the wells.

2. Collected groundwater samples from MW-1, MW-2, MW-3, MW-4, P-2, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW201R, MW202D, MW301, MW302, MW302I, MW302D, MW303, MW304, MW304D, MW401, MW401I, MW401D, MW402, MW402D, MW403, MW403D, MW404, MW404I, MW404D on December 11, 12, 13 and 16 through 20, 2002.

   Each groundwater sample was submitted for laboratory analysis of benzene, toluene, ethylbenzene and xylene(s) (BTEX); polynuclear aromatic hydrocarbons (PAHs); Michigan 10 Metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc); and cyanide (available and free). The groundwater samples were also submitted for laboratory analysis of alkalinity (as $CaCO_3$), nitrate, dissolved iron and sulfate as part of the evaluation of natural attenuation at the site.

Detroit
Bay City
Grand Rapids
Kalamazoo
Lansing
Toledo

Consultants in the geosciences, materials, and the environment

Groundwater samples were evaluated in the field for pH, specific conductivity and dissolved oxygen (DO).

There was insufficient water present in P-1 to collect a groundwater sample.

3. Prepared this summary letter report which includes the following:

- a monitoring well location diagram;
- a groundwater elevation diagram for December 11, 2002;
- tabulated groundwater elevation data;
- tabulated analytical test results;
- comparison charts for natural attenuation parameters; and,
- a copy of the laboratory analytical report.

PROCEDURES

Groundwater sampling procedures were consistent with those presented in the "Work Plan to Implement Continued Remedial Investigation Activities," dated June 28, 2002. Purge water collected from monitoring wells was returned to the corresponding well after sampling activities had been completed. Analytical methods and detection limits for BTEX, PAHs, the Michigan 10 Metals and cyanide (available and free) were also consistent with those presented in the "Work Plan to Implement Continued Remedial Investigation Activities," dated June 28, 2002. Groundwater samples were submitted to Consumers Energy Company's (Consumers Energy's) Chemistry & Material Services Department (C&MSD) in Jackson, Michigan for analysis.

RESULTS

The results for the December 2002 groundwater monitoring event are discussed below. The discussion of the results is supported by the attached figures, tables and charts listed below.

- Figure No. 2 of Attachment A shows the groundwater elevation contours for groundwater levels gauged in site monitoring wells on December 11, 2002.

- Table 1 of Attachment B lists groundwater elevations gauged on December 11, 2002, as well as groundwater elevations gauged during previous groundwater monitoring events.

- Table 2 of Attachment B presents the analytical results for the December 2002 groundwater monitoring event, as well as analytical results from previous groundwater sampling events.

- Chart Nos. 1 through 5 of Attachment C present bar graph comparisons of natural attenuation parameters for impacted wells compared to non-impacted wells.

- Copies of analytical test results for the December 2002 groundwater monitoring event are presented in Attachment D.

Groundwater Elevations

For December 2002, groundwater was encountered at depths below ground surface ranging from approximately 4 feet at MW-4 and P-4 to approximately 15 feet at MW202D. With the exception of MW4, MW303 and MW403, groundwater elevations for December 2002 were lower by 0.02 to 1.08 feet compared with groundwater elevations gauged in September 2002. Groundwater elevations at MW4, MW303 and MW403 were higher by 0.03 to 0.37 feet compared with the groundwater elevations gauged in September 2002.

For the northern portion of the site, where former MGP production components, storage structures and/or transfer lines had been located, groundwater flow appears to be to the east with a calculated horizontal hydraulic gradient of 0.004 feet per foot. This horizontal hydraulic gradient was calculated between the 756.4 and 758.4 contour lines on the north side of the site. For the southern portion of the site, groundwater flow also appears to be generally to the east with a calculated horizontal hydraulic gradient of 0.010 feet per foot. This horizontal hydraulic gradient was calculated between the 756.4 and 758.6 contour lines on the south side of the site. The interpreted groundwater flow direction and corresponding horizontal gradients are generally consistent with previous groundwater gauging events. Groundwater elevations gauged at P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D, MW304D, MW401I, MW401D, MW402D, MW403D, MW404I and MW404D were not used to interpret groundwater flow conditions at the water table because the well screens are set below the water table surface. Also, the groundwater elevation gauged at MW402 was not used to interpret groundwater flow because the gauged elevation appeared to be anomalous compared to groundwater elevations previously gauged at MW402.

Vertical hydraulic gradients were calculated for the following well pairs, P-2/P-2D, P-3/P-3D, MW101/MW202D, MW104/MW104D, MW105/MW105D, MW302/MW302D, MW304/MW304D, MW401/MW401D, MW402/MW402D, MW403/MW403D, and MW404/MW404D. The following table summarizes the calculated vertical gradients.

Well Pair Location	Gradient (feet per foot) and Direction
P-2/P-2D	0.023 – Downward
P-3/P-3D	0.014 – Downward
MW101/MW202D	0.023 – Downward
MW104/MW104D	0.005 – Upward
MW105/MW105D	0.026 – Downward
MW302/MW302D	0.007 – Upward
MW304/MW304D	0.005 – Upward
MW401/MW401D	0.005 – Downward

Well Pair Location	Gradient (feet per foot) and Direction
MW402/MW402D	No Apparent Gradient
MW403/MW403D	No Apparent Gradient
MW404/MW404D	0.005 – Upward

The calculated vertical hydraulic gradients are generally consistent with those calculated for September 2002 groundwater elevation data. The calculated vertical gradients for well pairs located on the west side of Pitcher Street, P-2/P-2D, P-3/P-3D, MW101/MW202D, MW105/MW105D and MW401/MW401D, are downward, however, calculated vertical gradients for well pairs located on the east side of Pitcher Street, MW104/MW104D, MW302/MW302D, MW304/MW304D and MW404/MW404D are upward. The designation of "No Apparent Gradient" at MW402/MW402D and MW403/MW403D means the calculated hydraulic gradient was less than 0.001 feet per foot.

Analytical Results – MGP Parameters

BTEX and PAHs concentrations for all groundwater samples were less than the Part 201 Generic Commercial II Cleanup Criteria for Volatilization to Indoor Air Inhalation, The Part 201 Cleanup Criteria for Groundwater Contact, as well as the Part 201 Screening Levels for Flammability/Explosivity, Acute Inhalation and Water Solubility.

Comparisons of analytical results to Part 201 Commercial II Cleanup Criteria for Drinking Water and GSI are discussed below. As previously stated, the analytical results are summarized in Table 2 of Attachment B.

BTEX

Benzene, toluene, ethylbenzene and/or xylene(s) concentrations at MW-1, P-3, P-3D, MW101, MW101D, MW301, MW304, MW401, MW401I, MW401D, MW403 and MW404D exceeded the Part 201Generic Commercial II Cleanup Criteria for Drinking Water and/or the Part 201 Cleanup Criteria for GSI.

Benzene concentrations at P-2, P-3D, MW201R, MW302I, MW402 and MW404I exceeded the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water and/or the Part 201 Cleanup Criterion for GSI. Toluene, ethylbenzene and xylene(s) concentrations at these wells were either less than the target detection levels (TDLs) or the Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

BTEX concentrations for groundwater samples collected from other wells were either less than the TDLs or the Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

PAHs

Acenaphthylene, acenaphthene, anthracene, fluorene, fluoranthene, naphthalene and/or phenanthrene concentrations at P-2, P-3, MW101D, MW201R, MW301, MW401D and MW404D exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and/or the Part 201 Cleanup Criteria for GSI. The concentrations of other PAHs at these wells

either were less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

Naphthalene concentrations at MW-1, MW202D, MW304, MW401, MW401I, MW402, MW402D, MW403 and MW404I exceeded the Part 201 Cleanup Criterion for GSI. The concentrations of other PAHs at these wells either were less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

PAH concentrations for groundwater samples collected from other wells were either less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

Michigan 10 Metals

Arsenic concentrations at MW301 and MW403 exceeded the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water. The concentrations of other metals at these wells either were less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

Selenium or zinc concentrations at P-3, MW102, MW105 and MW105D exceeded the Part Cleanup Criteria for GSI. The concentrations of other metals at these wells either were less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

Metals concentrations for groundwater samples collected from other wells were either less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

Cyanide

Free and available cyanide concentrations were less than the TDLs for groundwater samples collected from site wells.

Analytical Results – Natural Attenuation Parameters

The evaluation of natural attenuation parameters considered the analytical results from MW-4, P-4, MW102, MW103 and MW105 to be representative of non-impacted wells; while the analytical results from MW-1, P-2, P-3, MW101, MW301 and MW304 to be representative of wells impacted by MGP parameters. The rationale for these selections are presented in the "Report of Fourth Phase of Remedial Investigation and Groundwater Monitoring," dated January 13, 2003.

For the evaluation of natural attenuation data, concentrations reported as less than the TDL were set as equal to the TDL as a conservative assumption.

Dissolved Oxygen

DO concentrations for non-impacted wells for the December 2002 groundwater monitoring event ranged from 0.79 parts per million (ppm) at P-4 to 3.26 ppm at MW102, with a mean value of 1.39 ppm.

DO concentrations for impacted wells for the December 2002 groundwater monitoring event ranged from 0.65 ppm at P-2 to 3.4 ppm at MW101, with a mean value of 1.23 ppm. The elevated DO concentration at MW101 appears to be an outlier with respect to the recorded DO

concentrations for the other impacted wells. If MW101 is not included with the impacted well data set then the discounted mean value is 0.84 ppm.

An indicator of natural attenuation is when DO concentrations for impacted wells are lower than DO concentrations for non-impacted wells. This trend is generally observed for the December 2002 groundwater monitoring event.

Alkalinity

Alkalinity concentrations for non-impacted wells for the December 2002 groundwater monitoring event ranged from 290,000 ppb at MW-4 and MW102 to 460,000 ppb at MW103, with a mean value of 344,000 ppb.

Alkalinity concentrations for impacted wells for the December 2002 groundwater monitoring event ranged from 280,000 ppb at MW101 to 490,000 ppb at P-2, with a mean value of 416,667 ppb.

An indicator of natural attenuation is when alkalinity concentrations for impacted wells are higher than alkalinity concentrations for non-impacted wells. This trend is generally observed for the December 2002 groundwater monitoring event.

Nitrate

Nitrate concentrations for non-impacted wells for the December 2002 groundwater monitoring event ranged from less than the TDL (<100 ppb) at P-4 and MW-4 to 1,200 ppb at MW102, with a mean value of 570 ppb.

Nitrate concentrations for impacted wells for the December 2002 groundwater monitoring event ranged from less than the TDL (<100 ppb) at MW-1, P-2, P-3, MW301 and MW304 to 1,200 ppb at MW101, with a mean value of 283 ppb.

An indicator of natural attenuation is when nitrate concentrations for impacted wells are lower than nitrate concentrations for non-impacted wells. This trend is generally observed for the December 2002 groundwater monitoring event.

Dissolved Iron

Dissolved iron concentrations for non-impacted wells for the December 2002 groundwater monitoring event ranged from less than the TDL (<20ppb) at MW102 and MW105 to 2,000 ppb at MW-4, with a mean value of 483 ppb.

Dissolved iron concentrations for impacted wells for the December 2002 groundwater monitoring event ranged 24 ppb at MW101 to 40,000 ppb at MW304, with a mean value of 11,976 ppb.

An indicator of natural attenuation is when dissolved iron concentrations for impacted wells are higher than dissolved iron concentrations for non-impacted wells. This trend was observed for the December 2002 groundwater monitoring event.

Sulfate

Sulfate concentrations for non-impacted wells for the December 2002 groundwater monitoring event ranged from 13,000 ppb at P-4 to 59,000 ppb at MW105, with a mean value of 39,400 ppb.

Sulfate concentrations for impacted wells for the December 2002 groundwater monitoring event ranged from less than the TDL (<1,000 ppb) at MW301 and MW304 to 75,000 ppb at P-2, with a mean value of 27,600 ppb.

An indicator of natural attenuation is when sulfate concentrations for impacted wells are less than sulfate concentrations for non-impacted wells. This trend was generally observed for the December 2002 groundwater monitoring event.

GENERAL

The next round of groundwater monitoring was conducted on March 12, 13, 14, 17, 18 and 19, 2003. If you have any questions or comments concerning this report, please call.

Sincerely,

SOIL AND MATERIALS ENGINEERS, INC.

Mary Jane Kaplan

for: Nicholas B. Larabel
Project Geologist

Pat C. Barrese

Patrick G. Barrese, CPG
Senior Project Consultant

Attachments:

Attachment A: Figure No. 1 - Monitoring Well Location Diagram
Figure No. 2 - Groundwater Elevation Contours, December 11, 2002

Attachment B: Table 1 - Groundwater Elevation Summary
Table 2 - Analytical Summary - Groundwater

Attachment C: Chart No. 1 – Dissolved Oxygen: Non-Impacted Wells vs. Impacted Wells
Chart No. 2 - Alkalinity: Non-Impacted Wells vs. Impacted Wells
Chart No. 3 - Nitrate: Non-Impacted Wells vs. Impacted Wells
Chart No. 4 – Dissolved Iron: Non-Impacted Wells vs. Impacted Wells
Chart No. 5 - Sulfate: Non-Impacted Wells vs. Impacted Wells

Attachment D: Analytical Report

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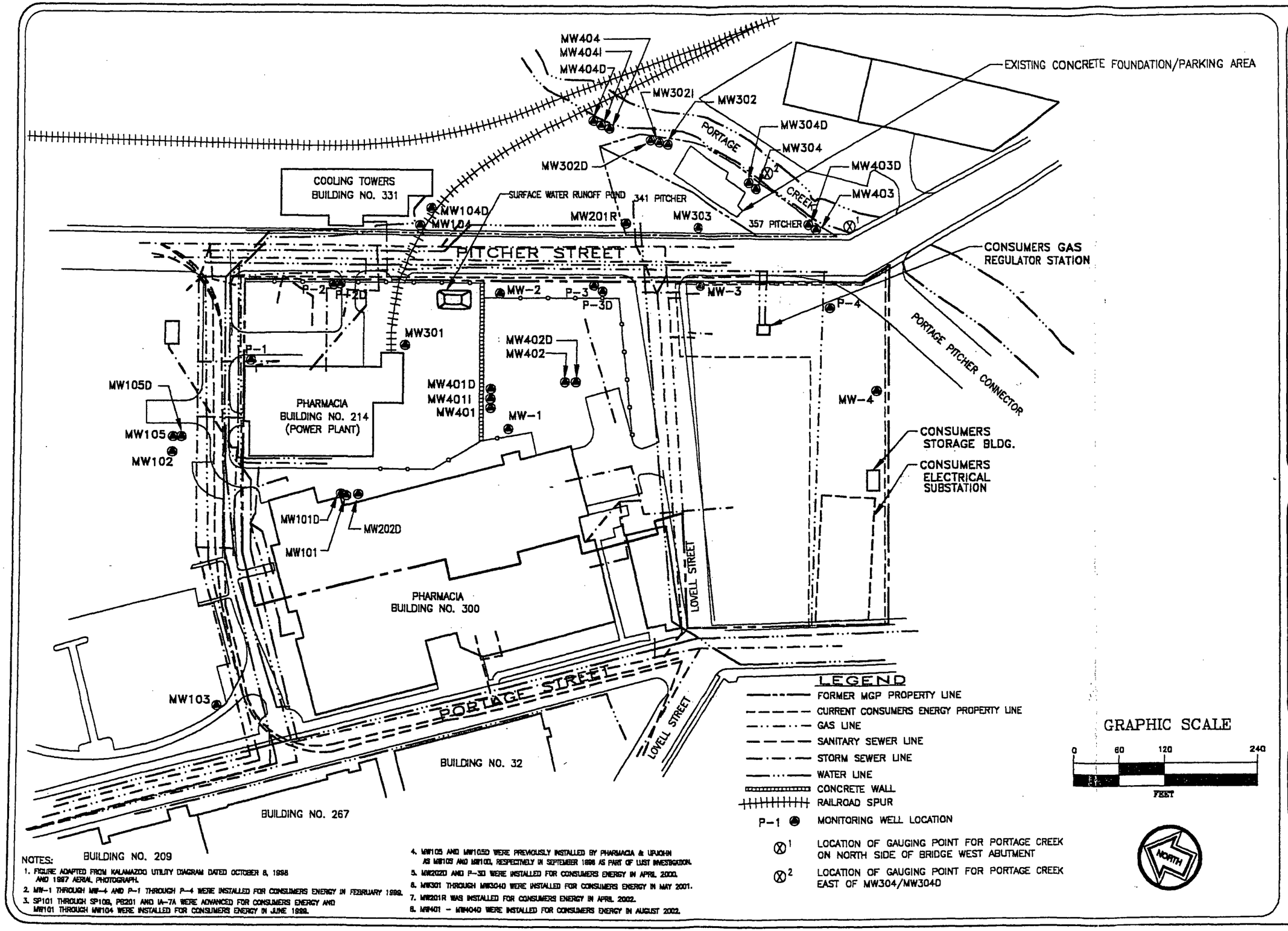
ATTACHMENT A

FIGURES

Figure No. 1 - Monitoring Well Location Diagram
Figure No. 2 - Groundwater Elevation Contours, December 11, 2002

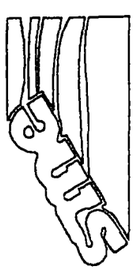


NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. SP101 THROUGH SP108, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1998.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW109 AND MW110D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.

MONITORING WELL LOCATION DIAGRAM
KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 10-14-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823



FILE NAME H:CECO\31823-11A.DWG

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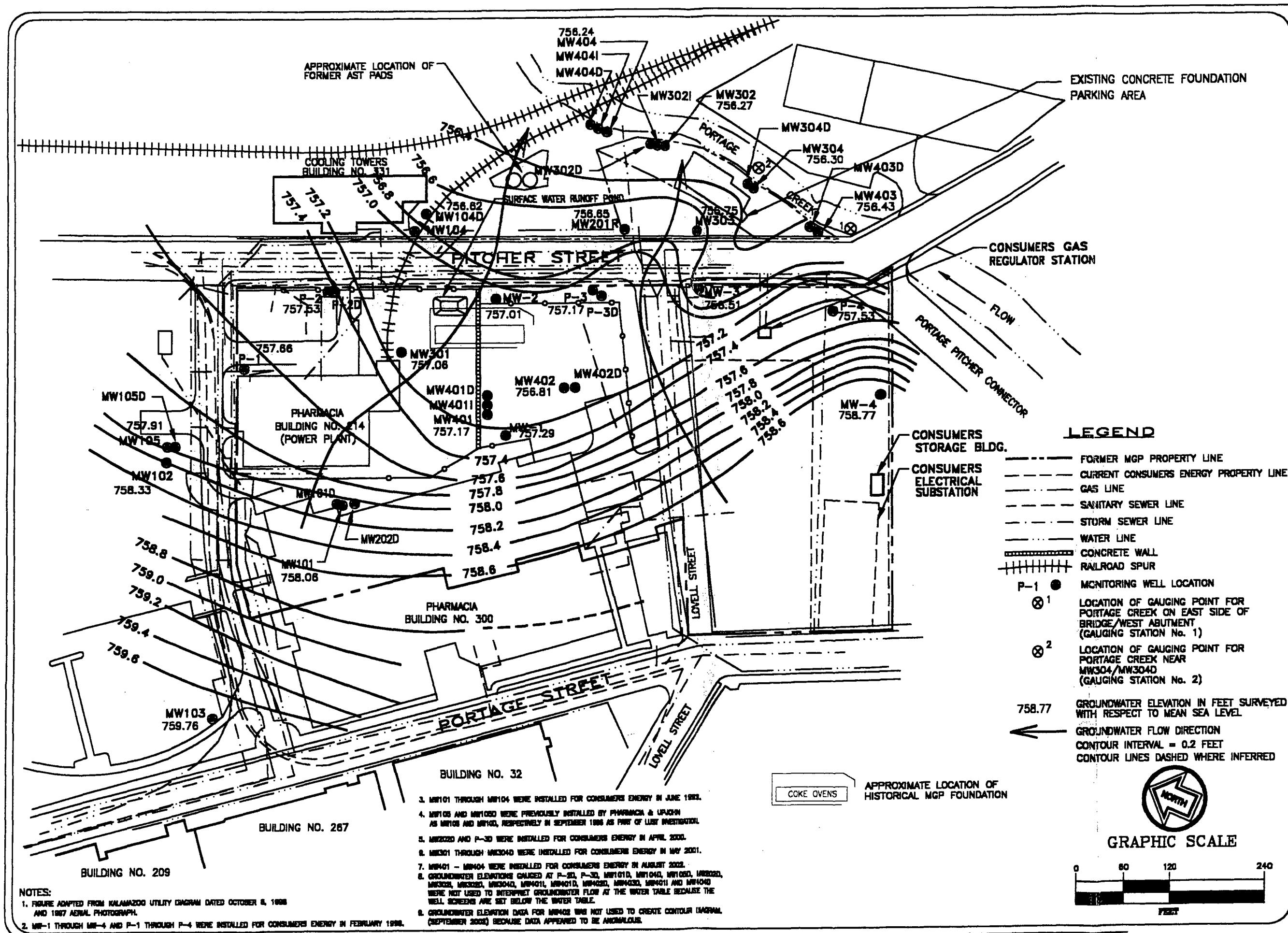
Figure No. 1

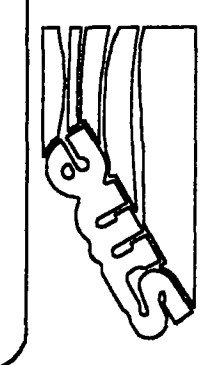


NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1998.
3. MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1993.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW100, RESPECTIVELY IN SEPTEMBER 1986 AS PART OF LUST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW401 – MW404 WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
8. GROUNDWATER ELEVATIONS GAUGED AT P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D, MW304D, MW401I, MW401D, MW402D, MW403D, MW404D AND MW404D WERE NOT USED TO INTERPRET GROUNDWATER FLOW AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.
9. GROUNDWATER ELEVATION DATA FOR MW402 WAS NOT USED TO CREATE CONTOUR DIAGRAM (SEPTEMBER 2002) BECAUSE DATA APPEARED TO BE ANOMALOUS.

GROUNDWATER ELEVATION CONTOUR DIAGRAM
DECEMBER 11, 2002
FORMER KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 03-31-03
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823B-8



FILE NAME H:CECO\31823-14.DWG

KR059B031485

Figure No. 2

00897

KR059B031486

ATTACHMENT B

TABLES

Table 1 - Groundwater Elevation Summary
Table 2 - Analytical Summary - Groundwater

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well	Top of Casing Elevation (ft. MSL)	Ground Surface Elevation (ft. MSL)	Screened Interval (ft. MSL)	Depth to Water from TOC (ft.)	Groundwater Elevation (ft.)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	8.47	758.04	8.77	757.74	9.13	757.38
MW-2	763.00	762.56	759.6 - 754.6	4.89	757.67	5.27	757.29	5.66	756.90
MW-3	761.43	760.86	758.2 - 753.2	3.63	757.23	3.82	757.04	4.32	756.54
MW-4	761.70	760.99	759.2 - 754.2	2.68	758.31	3.02	757.97	3.45	757.54
P-1	768.91	768.38	762.4 - 757.4	NI	NI	10.44	757.94	10.50	757.88
P-2	766.95	766.35	759.4 - 754.4	8.17	758.18	8.38	757.97	8.87	757.48
P-2D	766.84	766.61	731.7 - 726.7	NI	NI	NI	NI	9.61	757.00
P-3	761.87	761.35	758.6 - 753.6	3.82	757.53	4.16	757.19	4.61	756.74
P-4	761.95	761.51	758.7 - 753.7	3.39	758.12	3.95	757.56	4.46	757.05
MW101	771.74	771.41	759.6 - 754.6	NI	NI	NI	NI	13.28	758.13
MW101D	771.59	770.91	736.5 - 731.5	NI	NI	NI	NI	13.19	757.72
MW102	770.02	769.88	760.1 - 755.1	NI	NI	NI	NI	11.32	758.56
MW103	771.99	771.52	761.3 - 756.3	NI	NI	NI	NI	11.42	760.10
MW104	763.07	762.74	758.4 - 753.4	NI	NI	NI	NI	6.04	756.70
MW104D	762.92	762.66	732.8 - 727.8	NI	NI	NI	NI	5.81	756.85
MW105	770.61	770.31	760.1 - 755.1	NG	NG	NG	NG	11.77 (5)	758.54
MW105D	770.61	770.20	731.9 - 726.9	NG	NG	NG	NG	12.85 (5)	757.35

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) NG = Groundwater elevation not gauged.
(5) Groundwater elevations for MW105 and MW105D were gauged on June 23, 1999.

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Top of Casing Elevation (ft)	[illegible]	[illegible]	[illegible] Water Level from TOC (ft)	[illegible] Groundwater Elevation (ft)	[illegible] Water Level from TOC (ft)	[illegible] Groundwater Elevation (ft)	[illegible] Water Level from TOC (ft)	[illegible] Groundwater Elevation (ft)
MW-1	767.05	766.51	760.0 - 755.0	9.58	756.93	7.92	758.59	9.17	757.34
MW-2	763.00	762.56	759.6 - 754.6	6.04	756.52	4.24	758.32	5.44	757.12
MW-3	761.43	760.86	758.2 - 753.2	4.62	756.24	3.23	757.63	4.35	756.51
MW-4	761.70	760.99	759.2 - 754.2	3.78 (4)	757.21	2.52	758.47	3.38	757.61
P-1	768.91	768.38	762.4 - 757.4	DRY	DRY	9.27	759.11	10.57	757.81
P-2	766.95	766.35	759.4 - 754.4	8.94	757.41	7.54	758.81	8.35	758.00
P-2D	766.84	766.61	731.7 - 726.7	10.00	756.61	8.29	758.32	9.59	757.02
P-3	761.87	761.35	758.6 - 753.6	4.82	756.53	3.33	758.02	3.95	757.40
P-3D	762.58	762.16	727.6 - 722.6	NI	NI	3.49	758.67	—	—
P-3D (5)	761.81	761.39	727.6 - 722.6	—	—	—	—	4.52	756.87
P-4	761.95	761.51	758.7 - 753.7	4.42 (4)	757.09	3.30	758.21	4.45	757.06
MW101	771.74	771.41	759.6 - 754.6	13.80	757.61	12.24	759.17	13.16	758.25
MW101D	771.59	770.91	736.5 - 731.5	13.63	757.28	12.01	758.90	13.35	757.56
MW102	770.02	769.88	760.1 - 755.1	11.93	757.95	10.10	759.78	11.44	758.44
MW103	771.99	771.52	761.3 - 756.3	12.12	759.40	10.46	761.06	11.63	759.89
MW104	763.07	762.74	758.4 - 753.4	6.34	756.40	4.65	758.09	6.01	756.73
MW104D	762.92	762.66	732.8 - 727.8	6.18	756.48	4.46	758.20	5.80	756.86
MW105	770.61	770.31	760.1 - 755.1	12.42	757.89	10.62	759.69	11.92	758.39
MW105D	770.61	770.20	731.9 - 726.9	13.28	756.92	11.58	758.62	12.89	757.31
MW201	761.78	761.31	759.8 - 754.8	NI	NI	3.12	758.19	4.28	757.03
MW202D	771.89	771.53	716.1 - 711.1	NI	NI	13.07	758.46	14.35	757.18

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) Groundwater elevations for MW-4 and P-4 were gauged on February 22, 2000.
(5) Top of casing elevations for P3 and P3D were resurveyed as a result of landscaping surface modifications+A140.

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MW-1	767.05	766.51	760.0 - 755.0	7.92	758.59	8.45	758.06	7.52	758.99
MW-2	763.00	762.56	759.6 - 754.6	4.00	758.56	4.69	757.87	3.69	758.87
MW-3	761.43	760.86	758.2 - 753.2	2.99	757.87	3.72	757.14	2.65	758.21
MW-4 (3)	763.08	762.42	759.2 - 754.2	3.64	758.78	4.50	757.92	3.25	759.17
P-1	768.91	768.38	762.4 - 757.4	9.38	759.00	9.82	758.56	8.94	759.44
P-2	766.95	766.35	759.4 - 754.4	7.61	758.74	8.09	758.26	7.38	758.97
P-2D	766.84	766.61	731.7 - 726.7	8.16	758.45	8.72	757.89	7.77	758.84
P-3	761.87	761.35	758.6 - 753.6	2.88	758.47	3.47	757.88	2.55	758.80
P-3D	761.81	761.39	727.6 - 722.6	3.06	758.33	3.66	757.73	2.70	758.69
P-4	761.95	761.51	758.7 - 753.7	2.93	758.58	3.94	757.57	– (5)	– (5)
MW101	771.74	771.41	759.6 - 754.6	12.26	759.15	12.60	758.81	11.75	759.66
MW101D	771.59	770.91	736.5 - 731.5	11.94	758.97	12.35	758.56	11.48	759.43
MW102	770.02	769.88	760.1 - 755.1	10.36	759.52	10.68	759.20	9.53	760.35
MW103	771.99	771.52	761.3 - 756.3	10.76	760.76	11.10	760.42	10.04	761.48
MW104	763.07	762.74	758.4 - 753.4	4.64	758.10	5.27	757.47	4.38	758.36
MW104D	762.92	762.66	732.8 - 727.8	4.34	758.32	4.94	757.72	3.96	758.70
MW105	770.61	770.31	760.1 - 755.1	10.84	759.47	11.17	759.14	10.04	760.27
MW105D	770.61	770.20	731.9 - 726.9	11.51	758.69	12.04	758.16	11.09	759.11
MW201 (4)	761.78	761.31	759.8 - 754.8	3.05	758.26	3.67	757.64	NG	NG
MW202D	771.89	771.53	716.1 - 711.1	12.96	758.57	13.50	758.03	12.55	758.98
MW301	762.93	762.54	757.4 - 752.4	4.02	758.52	4.63	757.91	3.69	758.85
MW302	761.48	761.07	757.4 - 752.4	3.48	757.59	4.14	756.93	3.17	757.90
MW302I	761.51	760.97	741.2 - 736.2	3.41	757.56	4.07	756.90	3.10	757.87
MW302D	761.49	761.19	705.9 - 700.9	2.95	758.24	3.56	757.63	2.59	758.60
MW303	761.25	760.78	758.2 - 753.2	3.18	757.60	3.79	756.99	2.83	757.95
MW304	761.96	761.54	756.4 - 751.4	4.00	757.54	4.67	756.87	3.68	757.86
MW304D	761.96	761.63	697.1 - 692.1	3.42	758.21	4.04	757.59	3.08	758.55
Gauging Station No. 1	—	759.41	—	3.00	756.41	3.05	756.36	1.65	757.76

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) Top of casing and ground level elevations for MW-4 were resurveyed as a result of landscaping surface modifications.
(4) NG = Groundwater elevation not gauged.
(5) The groundwater elevation gauged at P4 appeared to anomalous compared to historical elevation data.

KR059B031490

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KR31823

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MW-1	767.05	766.51	760.0 - 755.0	8.38	758.13	9.13	757.38	9.22	757.29
MW-2	763.00	762.56	759.6 - 754.6	4.72	757.84	5.39	757.17	5.55	757.01
MW-3	761.43	760.86	758.2 - 753.2	3.66	757.20	4.26	756.60	4.35	756.51
MW-4 (3)	763.08	762.42	759.2 - 754.2	3.73	758.69	3.90	758.52	3.65	758.77
P-1	768.91	768.38	762.4 - 757.4	9.84	758.54	10.57	757.81	10.72	757.66
P-2	766.95	766.35	759.4 - 754.4	8.19	758.16	8.69	757.66	8.82	757.53
P-2D	766.84	766.61	731.7 - 726.7	8.81	757.80	9.65	756.96	9.72	756.89
P-3	761.87	761.35	758.6 - 753.6	3.38	757.97	3.58	757.77	4.18	757.17
P-3D	761.81	761.39	727.6 - 722.6	3.75	757.64	4.60	756.79	4.65	756.74
P-4	761.95	761.51	758.7 - 753.7	3.30	758.21	3.58	757.93	3.98	757.53
MW101	771.74	771.41	759.6 - 754.6	12.56	758.85	13.28	758.13	13.35	758.06
MW101D	771.59	770.91	736.5 - 731.5	12.35	758.56	13.11	757.80	13.21	757.70
MW102	770.02	769.88	760.1 - 755.1	10.64	759.24	11.37	758.51	11.55	758.33
MW103	771.99	771.52	761.3 - 756.3	10.94	760.58	11.45	760.07	11.76	759.76
MW104	763.07	762.74	758.4 - 753.4	5.00	757.74	6.02	756.72	6.12	756.62
MW104D	762.92	762.66	732.8 - 727.8	5.33	757.33	5.85	756.81	5.91	756.75
MW105	770.61	770.31	760.1 - 755.1	11.12	759.19	11.87	758.44	12.40	757.91
MW105D	770.61	770.20	731.9 - 726.9	12.10	758.10	12.92	757.28	13.02	757.18
MW201R	761.40	760.83	759.8 - 754.8	3.51	757.32	4.10	756.73	4.18	756.65
MW202D	771.89	771.53	716.1 - 711.1	13.58	757.95	13.38	758.15	14.46	757.07
MW301	762.93	762.54	757.4 - 752.4	4.65	757.89	5.36	757.18	5.48	757.06
MW302	761.48	761.07	757.4 - 752.4	4.20	756.87	4.75	756.32	4.80	756.27
MW302I	761.51	760.97	741.2 - 736.2	4.12	756.85	4.65	756.32	4.70	756.27
MW302D	761.49	761.19	705.9 - 700.9	3.68	757.51	4.53	756.66	4.57	756.62
MW303	761.25	760.78	758.2 - 753.2	3.79	756.99	4.40	756.38	4.03	756.75
MW304	761.96	761.54	756.4 - 751.4	4.68	756.86	5.19	756.35	5.24	756.30
MW304D	761.96	761.63	697.1 - 692.1	4.14	757.49	5.00	756.63	5.04	756.59
MW401	763.77	766.30	758.8 - 748.8	NI	NI	9.03	757.27	9.13	757.17
MW401I	763.78	766.27	728.7 - 723.7	NI	NI	9.32	756.95	9.40	756.87
MW401D	763.81	766.28	697.9 - 692.7	NI	NI	9.33	756.95	9.41	756.87
MW402	763.38	762.91	759.3 - 754.3	NI	NI	5.97	756.94	6.10	756.81
MW402D	763.38	762.99	698.0 - 693.0	NI	NI	6.09	756.90	6.15	756.84
MW403	761.92	761.61	758.8 - 753.8	NI	NI	5.21	756.40	5.18	756.43
MW403D	762.03	761.72	701.6 - 696.6	NI	NI	5.12	756.60	5.28	756.44
MW404	763.12	762.67	759.7 - 754.7	NI	NI	6.41	756.26	6.43	756.24
MW404I	763.21	762.92	728.2 - 723.2	NI	NI	6.33	756.59	6.36	756.56
MW404D	763.09	762.82	688.0 - 683.0	NI	NI	6.20	756.62	6.25	756.57
Gauging Station No. 1	—	759.41	—	—	—	3.20	756.21	NG	NG
Gauging Station No. 2	—	756.69	—	—	—	0.49	756.20	2.70	753.99

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) Top of casing and ground level elevations for MW-4 were resurveyed as a result of landscaping surface modifications.
(4) NG = Groundwater elevation not gauged.
(5) NI = Monitoring well not installed at time of gauging event.

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

	[illegible]	[illegible]	MW-1 7-12 01/08/99	MW-1 7-12 06/22/99	MW-1 7-12 02/15/00	MW-1 7-12 05/22/00	MW-1 7-12 11/07/00	MW-1 7-12 05/31/01	MW-1 7-12 12/12/01	MW-1 7-12 03/15/02	MW-1 7-12 06/13/02	MW-1 7-12 09/23/02	MW-1 7-12 12/19/02
[illegible]													
[illegible]													
Benzene	[illegible]	200	[illegible]	[illegible]	[illegible]	[illegible]	ND	ND	ND	ND	NR	4	17
Toluene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	NR	[illegible]	[illegible]
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]
Xylenes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]
[illegible]													
Naphthalene	1,500	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	21	7	ND	ND	ND	17	20	5	NR	ND	15
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]													
Arsenic	50	150	ND	8	13	ND	6	7	11	13	14	18	16
Barium	2,000	1,200	ND	190	130	160	220	290	110	200	260	320	250
Chromium	100	11**	ND	ND	ND	ND	7	ND	6	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]													
pH (ph Units)	NL	NL	NE	NE	7.26	7.1	--	7.11	7.31	7.28	7.12	7.18	7.44
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,920	1,960	3,590	1,482	1,208	2,210	1,873	NE	2,860
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.65	0.35	0.38	0.4	0.3	0.48	0.32	0.53	0.8
Iron	[illegible]	NA	NE	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Nitrate	10,000	NA	NE	NE	ND	160	ND	270	ND	310	ND	ND	ND
Sulfate	250,000	NA	NE	NE	33,000	110,000	61,000	73,000	33,000	36,000	22,000	30,000	19,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	470,000	420,000	400,000	470,000	390,000	370,000	420,000	470,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SMB Project No. KE31823

			MW-2 3-8 02/08/99	MW-2 3-8 06/22/99	MW-2 3-8 02/15/00	MW-2 3-8 05/22/00	MW-2 3-8 11/06/00	MW-2 3-8 05/31/01	MW-2 3-8 12/11/01	MW-2 3-8 03/13/02	MW-2 3-8 06/12/02	MW-2 3-8 09/18/02	MW-2 3-8 12/16/02
[illegible]													
Benzene	5	200	1	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	4	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Xylenes	280	35	7	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]													
Naphthalene	1,500	13	6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]													
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	98	[illegible]	ND	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	100	30	60	46	63	57	56	45	53
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]													
pH (pH units)	NL	NL	NE	NE	5.5	6.59	6.50	6.43	6.19	6.51	6.45	6.46	6.3
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	3,050	860	2,110	1,267	939	1,890	1,882	1,805	2,180
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.84	0.51	0.40	0.52	0.37	0.48	0.46	0.38	1.13
Iron	[illegible]	NA	NE	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	19,000
Nitrate	10,000	NA	NE	NE	140	1,100	600	850	100	490	ND	310	ND
Sulfate	[illegible]	NA	NE	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Alkalinity (as CaCO3)	NL	NL	NE	NE	26,000	130,000	91,000	110,000	82,000	130,000	160,000	140,000	86,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW-3 3-8 02/08/99	MW-3 3-8 06/22/99	MW-3 3-8 02/15/00	MW-3 3-8 05/24/00	MW-3 3-8 11/06/00	MW-3 3-8 05/30/01	MW-3 3-8 12/11/01	MW-3 3-8 03/12/02	MW-3 3-8 06/11/02	MW-3 3-8 09/17/02	MW-3 3-8 12/12/02
[illegible]													
[illegible]													
Benzene	[illegible]	[illegible]	3	ND	ND	ND	ND	[illegible]	ND	ND	NR	ND	ND
Toluene	790	140	1	ND	ND	ND	ND	13	ND	ND	NR	ND	ND
Ethylbenzene	[illegible]	[illegible]	1	ND	ND	ND	ND	[illegible]	ND	ND	NR	ND	ND
Xylenes	[illegible]	[illegible]	3	ND	ND	ND	ND	[illegible]	ND	ND	NR	ND	ND
[illegible]													
Naphthalene	1,500	[illegible]	ND	ND	ND	ND	ND	[illegible]	ND	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]													
Arsenic	50	150	13	8	8	ND	7	ND	ND	ND	ND	6	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	150	110
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	13	ND	ND	17	12
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]													
pH (pH units)	NL	NL	NE	NE	7.27	7.7	7.22	7.71	7.43	7.86	7.61	7.34	7.6
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,290	1,380	860	473	362	167	436	911	NE
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.53	0.7	0.48	0.85	0.63	0.72	0.66	0.51	1.11
Iron	300	NA	NE	NE	110	ND	[illegible]	64	160	22	ND	170	150
Nitrate	10,000	NA	NE	NE	ND	ND	ND	1,300	ND	590	110	ND	ND
Sulfate	250,000	NA	NE	NE	33,000	26,000	25,000	17,000	8,900	5,700	10,000	19,000	18,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	260,000	230,000	290,000	190,000	210,000	110,000	180,000	300,000	290,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SMB Project No. KE31823

			MW-4 3-8 02/08/99	MW-4 3-8 06/22/99	MW-4 3-8 02/22/00	MW-4 3-8 05/24/00	MW-4 3-8 11/06/00	MW-4 3-8 05/30/01	MW-4 3-8 12/11/01	MW-4 3-8 03/13/02	MW-4 3-8 06/11/02	MW-4 3-8 09/17/02	MW-4 3-8 12/11/02
[illegible]													
[illegible]													
Benzene	5	[illegible]	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Xylenes	280	[illegible]	2	ND	ND	ND	ND	ND	ND	ND	NR	3	ND
[illegible]													
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]													
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	ND	6	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	15	ND	40	17	14	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]													
pH (pH units)	NL	NL	NE	NE	NE	7.09	7.02	7.04	7.02	7.16	7.15	7.1	7.52
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	850	1,370	800	612	720	889	1,030	865
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.39	0.67	0.45	0.43	0.49	0.95	0.64	0.89
Iron	[illegible]	NA	NE	NE	[illegible]	[illegible]	[illegible]	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Nitrate	10,000	NA	NE	NE	ND	230	ND	2,000	ND	1,200	290	ND	100
Sulfate	250,000	NA	NE	NE	6,900	22,000	27,000	40,000	20,000	29,000	36,000	44,000	35,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	360,000	410,000	420,000	360,000	380,000	260,000	310,000	330,000	290,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	P-1 7-12 See (13)	P-1 7-12 6/22/99	P-1 7-12 5/22/00	P-1 7-12 See (14)	P-1 7-12 12/13/01	P-1 7-12 3/15/02
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Benzene	5	200	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Naphthalene	1,500	13	ND	NE	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	NE	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	NE	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	NE	ND	ND	ND	ND
Fluorene	2,000	12	ND	NE	ND	ND	ND	ND
Phenanthrene	150	5	ND	NE	ND	ND	ND	ND
Anthracene	43	ID	ND	NE	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	NE	ND	ND	ND	ND
Pyrene	140	ID	ND	NE	ND	ND	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arsenic	50	150	ND	NE	ND	ND	NE	NE
Barium	2,000	1,200	ND	NE	100	140	NE	NE
Chromium (Total)	100	11 **	ND	NE	8	6	NE	NE
Selenium	50	[illegible]	[illegible]	NE	ND	ND	NE	NE
Zinc	5,000	270	ND	NE	ND	ND	NE	NE
Cyanide (available)	200	20	NE	NE	ND	ND	NE	NE
Cyanide (amenable)	200	20	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	NE	ND	ND	NE	NE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pH (pH units)	NL	NL	NE	NE	NE	NE	NE	NE
Specific Conductivity (mmhos/cm)	NL	NL	NE	NE	NE	NE	NE	NE
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	NE	NE	NE
Iron	[illegible]	NA	NE	NE	[illegible]	ND	NE	NE
Nitrate	10,000	NA	NE	NE	7,200	5,400	NE	NE
Sulfate	250,000	NA	NE	NE	84,000	57,000	NE	NE
Alkalinity (as CaCO3)	NL	NL	NE	NE	320,000	300,000	NE	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SMB Project No. KE31823

	[illegible]	[illegible]	P-2 8-13 02/08/99	P-2 8-13 06/23/99	P-2 8-13 02/16/00	P-2 8-13 05/23/00	P-2 8-13 11/08/00	P-2 8-13 06/04/01	P-2 8-13 12/12/01	P-2 8-13 03/14/02	P-2 8-13 06/14/02	P-2 8-13 09/20/02	P-2 8-13 12/17/02
[illegible]													
[illegible]													
Benzene	[illegible]	[illegible]	[illegible]	[illegible]	410	[illegible]	[illegible]	[illegible]	[illegible]	ND	NR	110	10
Toluene	790	[illegible]	[illegible]	[illegible]	86	40	54	83	[illegible]	ND	NR	19	1
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	NR	97	9
Xylenes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	NR	[illegible]	36
[illegible]													
Naphthalene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	[illegible]	[illegible]	[illegible]	ND	NR	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	59	15	21	ND	16	27	35	ND	NR	11	ND
Acenaphthylene	150	ID	ND	8	5	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	[illegible]	[illegible]	[illegible]	[illegible]	13	[illegible]	[illegible]	[illegible]	ND	NR	[illegible]	[illegible]
Fluorene	2,000	[illegible]	[illegible]	[illegible]	[illegible]	6	[illegible]	[illegible]	[illegible]	ND	NR	25	15
Phenanthrene	150	[illegible]	[illegible]	[illegible]	5	ND	[illegible]	[illegible]	[illegible]	ND	NR	[illegible]	[illegible]
Anthracene	43	ID	ND	8	5	ND	8	11	6	ND	NR	ND	ND
Fluoranthene	210	[illegible]	ND	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	NR	[illegible]	ND
Pyrene	140	ID	ND	5	ND	10	15	10	5	ND	NR	9	ND
[illegible]													
Arsenic	50	150	8	8	9	8	13	11	5	ND	10	12	7
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	5	4.6	ND	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND	ND
Chromium (Total)	100	[illegible]	ND	ND	ND	5	[illegible]	ND	ND	ND	ND	ND	5
Lead	[illegible]	29	ND	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	[illegible]	ND	[illegible]	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]													
pH (pH units)	NL	NL	NE	NE	7.09	7.61	–	6.98	7.15	7.25	6.55	7.13	7.43
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	920	1,570	1,660	628	747	1,460	1,402	1,499	1,465
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.82	0.43	0.91	0.85	0.43	0.4	0.43	0.33	0.65
Iron	[illegible]	NA	NE	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	630	530
Nitrate	10,000	NA	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	NE	32,000	47,000	14,000	12,000	3,200	79,000	16,000	46,000	75,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	530,000	360,000	550,000	340,000	450,000	240,000	390,000	450,000	490,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KB31823

			P-2D 35-40 06/23/99	P-2D 35-40 02/16/00	P-2D 35-40 05/23/00	P-2D 35-40 11/08/00	P-2D 35-40 06/04/01	P-2D 35-40 12/12/01	P-2D 35-40 03/14/02	P-2D 35-40 06/14/02	P-2D 35-40 09/20/02	P-2D 35-40 12/17/02
[illegible]												
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Naphthalene	1,500	13	ND	ND	ND	6	ND	ND	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	5	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	6	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Arsenic	50	150	ND	8	5	6	9	7	8	6	7	6
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	110	120	110	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	21	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]												
pH (pH units)	NL	NL	NE	7.34	7.02	--	7.01	7.36	7.33	7.13	7.34	7.52
Specific Conductivity (umhos/cm)	NL	NL	NE	990	1,170	2,100	858	928	1,610	1,645	1,802	1,621
Dissolved Oxygen (ppm)	NA	7	NE	3.04	2.64	1.62	2.01	0.56	0.38	0.32	0.39	0.72
Iron	[illegible]	NA	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Nitrate	10,000	NA	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	86,000	93,000	110,000	100,000	110,000	100,000	110,000	93,000	80,000
Alkalinity (as CaCO3)	NL	NL	NE	300,000	300,000	310,000	300,000	300,000	310,000	310,000	300,000	300,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			P-3 3-8 02/02/99	P-3 3-8 06/22/99	P-3 3-8 02/15/00	P-3 3-8 05/22/00	P-3 3-8 11/06/00	P-3 3-8 05/30/01	P-3 3-8 12/11/01	P-3 3-8 03/13/02	P-3 3-8 06/12/02	P-3 3-8 09/18/02	P-3 3-8 12/13/02
Benzene		200	3	[illegible]	[illegible]	ND	[illegible]	ND	ND	ND	NR	2	[illegible]
Toluene	790	140	5	21	5	ND	2	ND	ND	ND	NR	1	4
Ethylbenzene	[illegible]	[illegible]	13	[illegible]	[illegible]	ND	67	ND	ND	ND	NR	6	[illegible]
Xylenes	[illegible]	[illegible]	31	[illegible]	[illegible]	ND	65	ND	ND	ND	NR	10	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Naphthalene	1,500	[illegible]	[illegible]	[illegible]	[illegible]	ND	[illegible]	ND	ND	[illegible]	NR	13	ND
2-Methylnaphthalene	750	ID	ND	5	10	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	5	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	9	14	ND	ND	ND	ND	ND	NR	ND	16
Fluorene	2,000	[illegible]	ND	10	12	ND	ND	ND	ND	ND	NR	ND	[illegible]
Phenanthrene	150	[illegible]	ND	[illegible]	[illegible]	ND	ND	ND	ND	ND	NR	ND	[illegible]
Anthracene	43	ID	ND	5	6	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	5	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arsenic	50	150	ND	ND	6	ND	ND	ND	ND	ND	14	ND	7
Barium	2,000	1,200	ND	150	290	ND	190	200	130	150	150	180	360
Cadmium	5	[illegible]	ND	ND	ND	0.5	[illegible]	0.8	0.9	0.7	ND	0.6	ND
Chromium (total)	100	[illegible]	ND	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND	ND
Lead	4	29	ND	ND	ND	ND	4	ND	ND	ND	ND	ND	ND
Selenium	[illegible]	[illegible]	[illegible]	ND	ND	[illegible]	[illegible]	ND	[illegible]	ND	[illegible]	ND	[illegible]
Zinc	5,000	[illegible]	ND	ND	ND	190	260	[illegible]	180	[illegible]	14	170	49
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	[illegible]	ND	ND	[illegible]	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pH (pH units)	NL	NL	NE	NE	7.26	7.18	7.05	7.25	7.34	7.20	7.22	7.39	7.70
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	4,320	1,790	4,770	1,692	1,568	2,810	2,310	2,430	–
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.95	0.61	1.98	1.1	0.57	0.66	0.35	0.71	1.01
Iron	[illegible]	NA	NE	NE	[illegible]	210	[illegible]	300	300	[illegible]	[illegible]	[illegible]	[illegible]
Nitrate	10,000	NA	NE	NE	ND	3,200	600	500	270	310	ND	490	ND
Sulfate	250,000	NA	NE	NE	35,000	76,000	80,000	130,000	[illegible]	69,000	[illegible]	[illegible]	[illegible]
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	400,000	440,000	310,000	270,000	310,000	280,000	200,000	360,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KR31823

			P-3D 35-40 05/22/00	P-3D 35-40 11/06/00	P-3D 35-40 05/31/01	P-3D 35-40 12/11/01	P-3D 35-40 03/13/02	P-3D 35-40 06/13/02	P-3D 35-40 09/18/02	P-3D 35-40 12/13/02
[illegible]										
[illegible]										
Benzene	[illegible]	200	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]
Toluene	790	140	2	2	2	ND	6	NR	1	2
Ethylbenzene	74	18	1	2	2	ND	ND	NR	ND	ND
Xylenes	280	35	10	9	7	ND	ND	NR	4	12
[illegible]										
Naphthalene	1,500	[illegible]	[illegible]	[illegible]	[illegible]	6	5	NR	[illegible]	7
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]										
Arsenic	50	150	27	30	35	31	33	35	36	35
Barium	2,000	1,200	190	200	200	200	200	210	210	210
Mercury	2	[illegible]	ND	ND	ND	[illegible]	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	30	ND	ND	10	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]										
pH (pH units)	NL	NL	8.26	7.36	7.34	7.39	7.33	7.56	7.51	7.69
Specific Conductivity (umhos/cm)	NL	NL	1,630	1,740	1,021	850	1,500	1,233	1,459	--
Dissolved Oxygen (ppm)	NA	7	1.5	0.40	0.73	0.42	0.39	0.32	0.31	1.15
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Nitrate	10,000	NA	ND	ND	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	ND	ND	ND	ND	ND	ND	1,000	ND
Alkalinity (as CaCO3)	NL	NL	320,000	320,000	330,000	350,000	350,000	360,000	340,000	360,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			P-4 3-8 02/08/99	P-4 3-8 06/22/99	P-4 3-8 2/22/00	P-4 3-8 05/24/00	P-4 3-8 11/06/00	P-4 3-8 05/30/01	P-4 3-8 12/11/01	P-4 3-8 03/12/02	P-4 3-8 06/11/02	P-4 3-8 09/17/02	P-4 3-8 12/11/02
[illegible]													
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Ethylbenzene	74	18	ND	ND	1	ND	ND	ND	ND	ND	NR	ND	ND
Xylenes	280	35	ND	ND	7	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]/PAH[illegible]													
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]/INORGANICS[illegible]													
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	ND	9	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	12	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS													
pH (pH units)	NL	NL	NE	NE	NE	7.59	7.11	7.09	6.93	7.46	7.16	7.12	7.32
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	1,770	1,990	1,619	1,065	755	1,468	1,175	957
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.15	0.28	0.45	0.53	0.89	0.31	0.47	0.79
Iron	[illegible]	NA	NE	NE	[illegible]	ND	[illegible]	24	ND	28	ND	39	75
Nitrate	10,000	NA	NE	NE	240	430	ND	490	280	120	ND	ND	ND
Sulfate	250,000	NA	NE	NE	21,000	37,000	22,000	58,000	16,000	15,000	22,000	14,000	13,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	340,000	390,000	440,000	350,000	350,000	320,000	400,000	360,000	330,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW101 12-17 06/23/99	MW101 12-17 02/16/00	MW101 12-17 05/23/00	MW101 12-17 11/07/00	MW101 12-17 05/31/01	MW101 12-17 12/13/01	MW101 12-17 03/15/02	MW101 12-17 06/14/02	MW101 12-17 09/23/02	MW101 12-17 12/19/02
Benzene		200						ND	ND	NR		ND
Toluene									ND	NR		53
Ethylbenzene									ND	NR		
Xylenes									ND	NR		
Naphthalene									ND	NR		ND
2-Methylnaphthalene	750	ID	55	31	35	150	110	39	ND	NR	56	ND
Acenaphthylene	150	ID	75	33	ND	88	30	20	ND	NR	31	ND
Acenaphthene	3,800		ND	6		ND		ND	ND	NR	ND	ND
Fluorene	2,000			11	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150				ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	7	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210		ND	ND	ND	ND		ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	17	ND	ND	NR	ND	ND
Arsenic	50	150	7	9	6	6	5	5	ND	ND	6	ND
Barium	2,000	1,200	760	230	230	190	230	190	ND	200	160	130
Cadmium	5	4	ND	ND	0.5	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	7	ND	ND	ND	ND	ND	ND
Selenium	50		ND	ND		ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH (pH units)	NL	NL	NE	7.34	7.44	–	7.28	7.32	7.59	7.4	7.35	7.8
Specific Conductivity (umhos/cm)	NL	NL	NE	1,420	3,040	2,350	2,890	1,483	2,230	2,750	1,876	3,450
Dissolved Oxygen (ppm)	NCA	7	NE	0.58	0.62	0.42	0.36	0.33	0.4	0.96	0.48	–
Iron		NA	NE						37	250		24
Nitrate	10,000	NA	NE	310	4,500	710	970	900	1,900	1,200	460	1,200
Sulfate	250,000	NA	NE	63,000	70,000	44,000	96,000	44,000	51,000	55,000	28,000	42,000
Alkalinity (as CaCO3)	NL	NL	NE	470,000	490,000	490,000	380,000	460,000	410,000	480,000	390,000	280,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SMB Project No. KE31823

			MW101D 35-40 06/23/99	MW101D 35-40 02/16/00	MW101D 35-40 05/23/00	MW101D 35-40 11/07/00	MW101D 35-40 06/01/01	MW101D 35-40 12/13/01	MW101D 35-40 03/14/02	MW101D 35-40 06/17/02	MW101D 35-40 09/23/02	MW101D 35-40 12/18/02
[illegible]												
Benzene	5	200	2	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	12	5	ND	15	ND	ND	ND	NR	1	ND
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]
Xylenes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]
[illegible]												
Naphthalene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	210	120	400	530	710	380	270	NR	500	380
Acenaphthylene	[illegible]	ID	[illegible]	150	[illegible]	[illegible]	[illegible]	120	[illegible]	NR	[illegible]	[illegible]
Acenaphthene	3,800	[illegible]	[illegible]	5	ND	ND	ND	ND	ND	NR	[illegible]	[illegible]
Fluorene	2,000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	ND	[illegible]	NR	[illegible]	[illegible]
Phenanthrene	150	[illegible]	ND	5	ND	ND	ND	ND	ND	NR	ND	[illegible]
Anthracene	43	ID	ND	5	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Arsenic	50	150	16	23	23	23	27	25	25	23	25	22
Barium	2,000	1,200	420	450	430	390	330	280	330	340	370	370
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	98	[illegible]	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]												
pH (pH units)	NL	NL	NE	7.34	8.04	–	7.42	7.40	7.63	7.50	7.60	7.58
Specific Conductivity (umhos/cm)	NL	NL	NE	1,970	2,510	3,090	1,217	1,256	1,780	1,522	2,100	2,140
Dissolved Oxygen (ppm)	NA	7	NE	2.59	1.27	0.65	0.68	0.31	0.33	0.41	0.31	0.63
Iron	[illegible]	NA	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Nitrate	10,000	NA	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	15,000	15,000	15,000	11,000	18,000	10,000	11,000	20,000	15,000
Alkalinity (as CaCO3)	NL	NL	NE	330,000	410,000	340,000	360,000	350,000	360,000	360,000	360,000	350,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SMB Project No. KE31823

			MW102 10-15 6/22/99	MW102 10-15 2/16/00	MW102 10-15 5/22/00	MW102 10-15 11/7/00	MW102 10-15 6/4/01	MW102 10-15 12/13/01	MW102 10-15 3/15/02	MW102 10-15 6/14/02	MW102 10-15 9/19/02	MW102 10-15 12/18/02
[illegible]												
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	9	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	5	ND	ND	ND	ND	ND	6
Selenium	50	[illegible]	ND	[illegible]	ND	[illegible]	ND	[illegible]	ND	[illegible]	[illegible]	[illegible]
Zinc	5,000	270	ND	250	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]												
pH (pH units)	NL	NL	NE	7.46	7.76	7.10	7.11	7.32	7.63	7.54	7.01	7.72
Specific Conductivity (umhos/cm)	NL	NL	NE	590	1,590	1,090	649	555	590	671	647	686
Dissolved Oxygen (ppm)	NA	[illegible]	NE	3.67	[illegible]	3.97	4.4	1.33	1.03	0.84	2.36	3.26
Iron	300	NA	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate	10,000	NA	NE	3,100	1,300	2,100	950	1,100	460	720	670	1,200
Sulfate	250,000	NA	NE	54,000	38,000	68,000	60,000	48,000	30,000	41,000	38,000	52,000
Alkalinity (as CaCO3)	NL	NL	NE	240,000	280,000	290,000	330,000	320,000	340,000	350,000	290,000	290,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SMB Project No. KE31823

			MW103 11-16 06/22/99	MW103 11-16 02/16/00	MW103 11-16 05/22/00	MW103 11-16 11/07/00	MW103 11-16 05/31/01	MW103 11-16 12/13/01	MW103 11-16 03/15/02	MW103 11-16 06/17/02	MW103 11-16 09/20/02	MW103 11-16 12/18/02
[illegible]												
[illegible]												
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Ethylbenzene	74	18	2	ND	ND	ND	ND	ND	ND	NR	ND	ND
Xylenes	280	35	2	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	NR	ND	6
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Arsenic	50	150	ND	5	11	14	ND	11	ND	ND	7	6
Barium	2,000	1,200	ND	ND	160	ND	480	ND	390	600	240	300
Chromium (total)	100	11**	ND	ND	ND	9	ND	7	ND	ND	ND	7
Selenium	50	[illegible]	ND	ND	[illegible]	ND	ND	ND	ND	ND	ND	ND
Silver	98	[illegible]	ND	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]												
pH (pH units)	NL	NL	NE	7.84	8.65	7.64	7.37	7.79	7.77	7.35	7.64	7.75
Specific Conductivity (umhos/cm)	NL	NL	NE	2,370	6,370	2,390	4,680	1,608	1,389	9,370	6,020	7,860
Dissolved Oxygen (ppm)	NA	7	NE	1.38	1.5	1.85	1.9	1.12	5.33	3.11	1.01	1.08
Iron	[illegible]	NA	NE	ND	[illegible]	ND	100	ND	210	84	250	300
Nitrate	10,000	NA	NE	410	2,500	1,400	3,300	720	2,100	2,400	640	600
Sulfate	250,000	NA	NE	19,000	58,000	27,000	150,000	15,000	110,000	130,000	35,000	38,000
Alkalinity (as CaCO3)	NL	NL	NE	430,000	410,000	490,000	230,000	480,000	330,000	290,000	450,000	460,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW104 5-10 06/23/99	MW104 5-10 02/15/00	MW104 5-10 05/24/00	MW104 5-10 11/06/00	MW104 5-10 05/31/01	MW104 5-10 12/11/01	MW104 5-10 03/13/02	MW104 5-10 06/13/02	MW104 5-10 09/19/02	MW104 5-10 12/16/02
[illegible]												
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Naphthalene	1,500	13	ND	ND	ND	10	ND	ND	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Arsenic	50	150	5	ND	ND	ND	ND	ND	ND	ND	6	ND
Barium	2,000	1,200	340	190	420	220	310	140	150	400	270	190
Cadmium	5	4	ND	ND	0.8	ND	ND	ND	ND	ND	0.8	ND
Chromium (total)	100	11**	ND	ND	ND	10.0	ND	ND	ND	ND	ND	7
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	[illegible]	ND	240	[illegible]	210	150	64	88	120	210	190
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]												
pH (pH units)	NL	NL	NE	7.37	6.88	7.42	7.20	7.29	7.37	7.26	7.33	7.54
Specific Conductivity (umhos/cm)	NL	NL	NE	3,570	4,600	4,180	2,580	1,373	1,790	4,240	4,060	3,320
Dissolved Oxygen (ppm)	NA	7	NE	0.49	0.54	0.39	0.39	0.43	0.93	0.39	0.48	0.89
Iron	[illegible]	NA	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4,400	[illegible]	3,800
Nitrate	10,000	NA	NE	340	220	ND	ND	ND	460	ND	ND	ND
Sulfate	250,000	NA	NE	18,000	43,000	16,000	45,000	29,000	48,000	36,000	25,000	16,000
Alkalinity (as CaCO3)	NL	NL	NE	490,000	440,000	590,000	380,000	450,000	320,000	390,000	550,000	560,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW104D 30-35 6/23/99	MW104D 30-35 2/15/00	MW104D 30-35 5/24/00	MW104D 30-35 11/6/00	MW104D 30-35 5/31/01	MW104D 30-35 12/12/01	MW104D 30-35 3/14/02	MW104D 30-35 6/13/02	MW104D 30-35 9/19/02	MW104D 30-35 12/17/02
[illegible]												
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	1	ND	ND	ND	ND	ND	ND	NR	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND	ND	ND	ND	NR	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Naphthalene	1,500	[illegible]	[illegible]	ND	ND	ND	ND	ND	ND	NR	9	5
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Arsenic	50	150	16	28	27	25	25	22	24	23	25	23
Barium	2,000	1,200	230	260	250	270	240	230	270	300	270	270
Chromium (total)	100	11**	ND	ND	ND	5	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	28	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]												
pH (pH units)	NL	NL	NE	7.34	7.44	7.52	7.34	7.34	7.35	7.3	7.48	7.63
Specific Conductivity (umhos/cm)	NL	NL	NE	1,540	1,090	1,660	742	721	1,100	1,168	1,383	1,370
Dissolved Oxygen (ppm)	NA	7	NE	3.5	2.42	1.18	1.52	0.46	0.52	0.30	0.25	0.88
Iron	[illegible]	NA	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Nitrate	10,000	NA	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	NE	77,000	71,000	76,000	71,000	70,000	71,000	76,000	76,000	75,000
Alkalinity (as CaCO3)	NL	NL	NE	280,000	320,000	320,000	310,000	320,000	310,000	310,000	300,000	310,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW105 11-16 06/24/99	MW105 11-16 02/16/00	MW105 11-16 05/22/00	MW105 11-16 11/07/00	MW105 11-16 06/01/01	MW105 11-16 12/14/01	MW105 11-16 03/14/02	MW105 11-16 06/14/02	MW105 11-16 09/19/02	MW105 11-16 12/18/02
[illegible]												
Benzene	[illegible]	[illegible]	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Ethylbenzene	[illegible]	[illegible]	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Xylenes	280	[illegible]	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Naphthalene	1,500	13	6	ND	ND	ND	ND	ND	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	7	ND	5	ND	ND	ND	ND
Selenium	50	[illegible]	ND	ND	ND	[illegible]	ND	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Silver	98	[illegible]	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND	ND
Zinc	5,000	[illegible]	ND	ND	160	ND	ND	10	[illegible]	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]												
pH (pH units)	NL	NL	NE	7.50	8.43	7.24	7.48	7.44	7.44	7.68	7.66	7.79
Specific Conductivity (umhos/cm)	NL	NL	NE	730	1,690	1,460	878	662	600	759	890	799
Dissolved Oxygen (ppm)	NA	7	NE	2.76	5.84	2.10	3.25	1.07	0.94	0.78	1.19	0.92
Iron	300	NA	NE	ND	150	ND	ND	ND	ND	ND	ND	ND
Nitrate	10,000	NA	NE	5,300	1,400	2,900	1,100	940	220	790	830	850
Sulfate	250,000	NA	NE	90,000	51,000	80,000	50,000	50,000	23,000	47,000	64,000	59,000
Alkalinity (as CaCO3)	NL	NL	NE	270,000	370,000	350,000	410,000	420,000	400,000	430,000	370,000	350,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW105D 39-44 06/24/99	MW105D 39-44 02/16/00	MW105D 39-44 05/22/00	MW105D 39-44 11/07/00	MW105D 39-44 06/01/01	MW105D 39-44 12/14/01	MW105D 39-44 03/14/02	MW105D 39-44 06/17/02	MW105D 39-44 09/20/02	MW105D 39-44 12/18/02
[illegible]												
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Xylenes	280	35	2	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	150	150	150	180	160	150	170	160	190	190
Lead	4	29	ND	ND	ND	ND	ND	ND	ND	ND	4	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	[illegible]	ND	ND	210	200	230	180	110	[illegible]	[illegible]	[illegible]
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]												
pH (pH units)	NL	NL	NE	7.37	8.15	7.15	7.45	7.34	7.4	7.52	7.32	7.48
Specific Conductivity (umhos/cm)	NL	NL	NE	1,030	1,920	1,830	878	871	1,330	1,138	1,652	1,620
Dissolved Oxygen (ppm)	NA	7	NE	2.21	2.46	1.72	2.25	0.36	0.37	0.94	0.39	0.83
Iron	[illegible]	NA	NE	ND	[illegible]	200	52	ND	110	ND	99	82
Nitrate	10,000	NA	NE	540	640	400	730	770	420	1,000	170	110
Sulfate	250,000	NA	NE	73,000	76,000	86,000	76,000	74,000	76,000	69,000	69,000	81,000
Alkalinity (as CaCO3)	NL	NL	NE	300,000	380,000	300,000	300,000	310,000	310,000	310,000	300,000	300,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW201 3-8 05/23/00	MW201 3-8 11/6/2000	MW201 3-8 05/29/01	MW201 3-8 12/10/01	MW201R 3-8 06/13/02	MW201R 3-8 09/18/02	MW201R 3-8 12/16/02
[illegible]									
Benzene	[illegible]	[illegible]	[illegible]	[illegible]	ND	[illegible]	NR	[illegible]	[illegible]
Toluene	790	[illegible]	5	ND	ND	ND	NR	4	ND
Ethylbenzene	[illegible]	[illegible]	[illegible]	16	ND	[illegible]	NR	[illegible]	13
Xylenes	[illegible]	[illegible]	[illegible]	11	ND	[illegible]	NR	[illegible]	25
[illegible]									
Naphthalene	1,500	[illegible]	[illegible]	[illegible]	ND	ND	NR	ND	[illegible]
2-Methylnaphthalene	750	ID	10	27	ND	ND	NR	8	22
Acenaphthylene	150	ID	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	[illegible]	11	[illegible]	ND	ND	NR	[illegible]	[illegible]
Fluorene	2,000	[illegible]	ND	8	ND	ND	NR	12	10
Phenanthrene	150	[illegible]	ND	ND	ND	ND	NR	[illegible]	ND
Anthracene	43	ID	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	NR	ND	ND
[illegible]									
Arsenic	50	150	ND	ND	8	8	ND	6	ND
Barium	2,000	1,200	200	190	120	140	180	210	180
Chromium (total)	100	11**	ND	8	ND	ND	ND	ND	5
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Silver	98	[illegible]	ND	[illegible]	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND
[illegible]									
pH (pH units)	NL	NL	6.59	7.07	7.17	7.10	6.95	7.05	7.16
Specific Conductivity (umhos/cm)	NL	NL	1,970	2,480	1,164	1,368	2,240	2,570	2,330
Dissolved Oxygen (ppm)	NA	7	0.35	0.34	0.41	0.38	0.36	0.41	1.03
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Nitrate	10,000	NA	ND	ND	100	ND	ND	ND	ND
Sulfate	250,000	NA	34,000	ND	21,000	3,000	3,700	2,000	3,900
Alkalinity (as CaCO3)	NL	NL	490,000	450,000	440,000	500,000	490,000	480,000	490,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW202D 55-60 05/23/00	MW202D 55-60 11/07/00	MW202D 55-60 06/01/01	MW202D 55-60 12/13/01	MW202D 55-60 03/15/02	MW202D 55-60 06/14/02	MW202D 55-60 09/23/02	MW202D 55-60 12/18/02
[illegible]										
[illegible]										
Benzene	5	200	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	NR	2	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	NR	5	ND
Xylenes	280	35	5	8	ND	ND	ND	NR	6	ND
[illegible]										
Naphthalene	1,500	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	ND	6	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]										
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	170	180	170	160	170	180	180	180
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]										
pH (pH units)	NL	NL	7.53	--	7.17	7.38	7.53	7.41	7.38	7.54
Specific Conductivity (umhos/cm)	NL	NL	1,720	1,770	877	843	1,190	1,132	1,362	1,303
Dissolved Oxygen (ppm)	NA	7	1.48	0.55	1.02	0.29	0.33	0.32	0.59	0.63
Iron	[illegible]	NA	[illegible]	170	39	ND	86	25	36	ND
Nitrate	10,000	NA	560	300	540	330	170	190	ND	180
Sulfate	250,000	NA	66,000	68,000	67,000	68,000	65,000	65,000	66,000	68,000
Alkalinity (as CaCO3)	NL	NL	310,000	330,000	300,000	300,000	310,000	310,000	310,000	300,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW301 5-10 06/01/01	MW301 5-10 12/12/01	MW301 5-10 03/14/02	MW301 5-10 06/14/02	MW301 5-10 09/24/02	MW301 5-10 12/19/02
[illegible]								
Benzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	1,300
Toluene	790	140	30	ND	ND	NR	13	16
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]
Xylenes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]
[illegible]								
Naphthalene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	290	250	190	NR	590	430
Acenaphthylene	150	ID	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]
Fluorene	2,000	[illegible]	ND	ND	[illegible]	NR	[illegible]	[illegible]
Phenanthrene	150	[illegible]	ND	ND	ND	NR	[illegible]	[illegible]
Anthracene	[illegible]	ID	ND	ND	ND	NR	ND	[illegible]
Fluoranthene	210	1.6	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	NR	ND	ND
[illegible]								
Arsenic	[illegible]	150	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Barium	2,000	1,200	160	160	170	180	190	190
Chromium (total)	100	11**	ND	5	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
[illegible]								
pH (pH units)	NL	NL	6.93	7.09	7.13	7.07	7.24	7.35
Specific Conductivity (umhos/cm)	NL	NL	968	852	1,410	1,516	1,839	2,003
Dissolved Oxygen (ppm)	NA	7	0.74	0.39	0.41	0.46	0.43	0.82
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Nitrate	10,000	NA	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	ND	ND	ND	ND	1,400	ND
Alkalinity (as CaCO3)	NL	NL	400,000	410,000	420,000	410,000	380,000	440,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SMB Project No. KB31823

			MW302 4-9 05/29/01	MW302 4-9 12/10/01	MW302 4-9 03/13/02	MW302 4-9 06/12/02	MW302 4-9 09/17/02	MW302 4-9 12/12/02
[illegible]								
[illegible]								
Benzene	5	200	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	NR	ND	ND
Ethylbenzene	74	18	ND	ND	ND	NR	ND	ND
Xylenes	280	35	ND	ND	ND	NR	ND	ND
[illegible]								
Naphthalene	1,500	13	ND	6	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	NR	ND	ND
[illegible]								
Arsenic	50	150	9	8	ND	7	16	12
Barium	2,000	1,200	ND	ND	ND	ND	100	100
Chromium (total)	100	11**	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
[illegible]								
pH (pH units)	NL	NL	7.33	7.11	7.28	7.16	7.2	7.38
Specific Conductivity (umhos/cm)	NL	NL	750	526	1,410	816	1,011	--
Dissolved Oxygen (ppm)	NA	7	0.55	0.45	1.2	0.67	0.98	1.03
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	9100
Nitrate	10,000	NA	ND	ND	210	ND	ND	ND
Sulfate	250,000	NA	20,000	5,400	18,000	19,000	6,900	9,000
Alkalinity (as CaCO3)	NL	NL	230,000	330,000	270,000	230,000	310,000	410,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

	[illegible]	[illegible]	MW302I 20-25 05/29/01	MW302I 20-25 12/10/01	MW302I 20-25 03/13/02	MW302I 20-25 06/12/02	MW302I 20-25 09/17/02	MW302I 20-25 12/12/02
[illegible]								
[illegible]								
Benzene	[illegible]	[illegible]	ND	[illegible]	[illegible]	NR	[illegible]	[illegible]
Toluene	790	140	ND	ND	ND	NR	2	ND
Ethylbenzene	74	[illegible]	ND	ND	[illegible]	NR	[illegible]	6
Xylenes	280	[illegible]	ND	ND	[illegible]	NR	10	6
[illegible]								
Naphthalene	1,500	13	ND	ND	ND	NR	5	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	NR	ND	ND
[illegible]								
Arsenic	50	150	15	20	20	19	20	19
Barium	2,000	1,200	890	1,200	650	460	330	360
Chromium (total)	100	11**	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
[illegible]								
pH (pH units)	NL	NL	7.33	7.11	7.23	7.2	7.3	7.43
Specific Conductivity (umhos/cm)	NL	NL	2,550	2,960	3,020	1,766	1,262	--
Dissolved Oxygen (ppm)	NA	7	0.52	0.45	0.50	0.29	0.36	0.76
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Nitrate	10,000	NA	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	32,000	25,000	14,000	ND	ND	ND
Alkalinity (as CaCO3)	NL	NL	330,000	420,000	330,000	300,000	270,000	290,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW302D 55-60 05/29/01	MW302D 55-60 12/11/01	MW302D 55-60 03/13/02	MW302D 55-60 06/12/02	MW302D 55-60 09/18/02	MW302D 55-60 12/16/02
[illegible]								
[illegible]								
Benzene	5	200	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	NR	ND	ND
Ethylbenzene	74	18	ND	ND	ND	NR	ND	ND
Xylenes	280	35	ND	ND	ND	NR	ND	ND
[illegible]								
Naphthalene	1,500	13	ND	ND	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	NR	ND	ND
[illegible]								
Arsenic	50	150	29	26	30	29	30	29
Barium	2,000	1,200	200	180	200	210	210	210
Chromium (total)	100	11**	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
[illegible]								
pH (pH units)	NL	NL	7.5	7.34	7.33	7.33	7.52	7.66
Specific Conductivity (umhos/cm)	NL	NL	953	816	1,410	1,272	1,376	1,401
Dissolved Oxygen (ppm)	NA	7	0.76	0.56	0.55	0.33	0.29	0.88
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Nitrate	10,000	NA	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	6,400	23,000	19,000	17,000	62,000	60,000
Alkalinity (as CaCO3)	NL	NL	330,000	330,000	330,000	340,000	300,000	300,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW303 3-8 05/29/01	MW303 3-8 12/10/01	MW303 3-8 03/12/02	MW303 3-8 06/11/02	MW303 3-8 09/16/02	MW303 3-8 12/12/02
[illegible]								
[illegible]								
Benzene	[illegible]	[illegible]	[illegible]	ND	ND	NR	ND	ND
Toluene	790	[illegible]	10	ND	ND	NR	ND	ND
Ethylbenzene	[illegible]	[illegible]	[illegible]	ND	ND	NR	ND	ND
Xylenes	[illegible]	[illegible]	[illegible]	ND	ND	NR	ND	ND
[illegible]								
Naphthalene	1,500	[illegible]	[illegible]	5	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	NR	ND	ND
[illegible]								
Arsenic	50	[illegible]	ND	ND	ND	[illegible]	6	ND
Barium	2,000	1,200	370	150	180	ND	420	350
Chromium (total)	100	11**	ND	8	ND	ND	ND	6
Selenium	50	5	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	20	ND	ND	ND	ND
Cyanide (free)	200	20	ND	10	ND	ND	ND	ND
[illegible]								
pH (pH units)	NL	NL	6.94	6.9	7.23	6.96	6.84	7.19
Specific Conductivity (umhos/cm)	NL	NL	1,702	1,236	1,013	2,440	3,060	--
Dissolved Oxygen (ppm)	NA	7	0.67	0.85	0.89	0.36	0.68	1.06
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Nitrate	10,000	NA	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	130,000	3,600	53,000	1,500	ND	4,000
Alkalinity (as CaCO3)	NL	NL	680,000	720,000	620,000	710,000	430,000	680,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW304 5-10 05/30/01	MW304 5-10 12/10/01	MW304 5-10 03/12/02	MW304 5-10 06/11/02	MW304 5-10 09/16/02	MW304 5-10 12/12/02
[illegible]								
[illegible]								
Benzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	140
Toluene	790	140	7	5	5	NR	[illegible]	12
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	130
Xylenes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	83
[illegible]								
Naphthalene	1,500	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	78
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	120	58
Acenaphthylene	150	ID	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	NR	ND	ND
[illegible]								
Arsenic	[illegible]	150	36	28	27	32	51	37
Barium	2,000	1,200	220	180	200	200	190	140
Chromium (total)	100	11**	ND	ND	ND	ND	ND	ND
Lead	4	29	4.0	4.0	4.0	4.0	4	4
Selenium	50	5	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
[illegible]								
pH (pH units)	NL	NL	7.06	6.95	6.91	7.04	6.66	6.94
Specific Conductivity (umhos/cm)	NL	NL	1,079	1,595	787	1,965	1,423	–
Dissolved Oxygen (ppm)	NA	7	0.44	0.8	0.83	0.41	0.51	0.93
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	20,000
Nitrate	10,000	NA	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	3,200	ND	ND	ND	ND	ND
Alkalinity (as CaCO3)	NL	NL	380,000	390,000	460,000	410,000	570,000	460,000

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW304D 65-70 05/30/01	MW304D 65-70 12/10/01	MW304D 65-70 03/12/02	MW304D 65-70 06/11/02	MW304D 65-70 09/26/02	MW304D 65-70 12/13/02
BTEX								
Benzene	5	200	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	NR	2	ND
Ethylbenzene	74	18	ND	ND	ND	NR	ND	ND
Xylenes	280	35	ND	ND	ND	NR	1	ND
SEMI-VOLATILES								
Naphthalene	1,500	13	ND	ND	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	NR	ND	ND
INORGANICS								
Arsenic	50	150	23	22	25	25	24	23
Barium	2,000	1,200	270	270	290	300	300	290
Chromium (total)	100	11**	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS								
pH (pH units)	NL	NL	7.4	7.37	7.37	7.76	7.39	7.76
Specific Conductivity (umhos/cm)	NL	NL	896	896	618	1,298	1,332	–
Dissolved Oxygen (ppm)	NA	7	0.58	0.7	0.83	0.68	0.73	1.11
Iron	300	NA	5,000	5,000	4,000	5,000	1,400	5,200
Nitrate	10,000	NA	ND	ND	ND	ND	ND	ND
Sulfate	250,000	NA	68,000	69,000	67,000	65,000	78,000	90,000
Alkalinity (as CaCO3)	NL	NL	290,000	300,000	300,000	310,000	290,000	290,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

	[illegible]	[illegible]	MW401 5 - 15 09/24/02	MW401 5 - 15 12/20/02
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Benzene	[illegible]	[illegible]	[illegible]	[illegible]
Toluene	[illegible]	[illegible]	[illegible]	[illegible]
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]
Xylenes	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Naphthalene	[illegible]	[illegible]	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	100	77
Acenaphthylene	150	ID	59	43
Acenaphthene	3,800	19	ND	ND
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arsenic	50	150	28	23
Barium	2,000	1,200	150	170
Chromium (total)	100	11**	ND	ND
Lead	4	29	ND	ND
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pH (pH units)	NL	NL	7.29	7.54
Specific Conductivity (umhos/cm)	NL	NL	2,460	2,490
Dissolved Oxygen (ppm)	NA	7	0.48	0.78
Iron	[illegible]	NA	[illegible]	[illegible]
Nitrate	10,000	NA	ND	ND
Sulfate	250,000	NA	91,000	69,000
Alkalinity (as CaCO3)	NL	NL	370,000	470,000

SEE NOTES ON PAGE 38

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

		[illegible]	MW401I 35 - 40 09/23/02	MW401I 35 - 40 12/20/02
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Benzene	[illegible]	[illegible]	[illegible]	[illegible]
Toluene	790	140	9	2
Ethylbenzene	74	[illegible]	[illegible]	[illegible]
Xylenes	280	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Naphthalene	1,500	[illegible]	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	46	25
Acenaphthylene	150	ID	7	ND
Acenaphthene	3,800	[illegible]	[illegible]	18
Fluorene	2,000	12	9	ND
Phenanthrene	150	[illegible]	[illegible]	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arsenic	50	150	43	43
Barium	2,000	1,200	230	210
Chromium (total)	100	11**	ND	ND
Lead	4	29	ND	ND
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pH (pH units)	NL	NL	7.28	7.58
Specific Conductivity (umhos/cm)	NL	NL	1,590	1,533
Dissolved Oxygen (ppm)	NA	7	0.47	0.92
Iron	[illegible]	NA	[illegible]	[illegible]
Nitrate	10,000	NA	250	ND
Sulfate	250,000	NA	2,600	ND
Alkalinity (as CaCO3)	NL	NL	330,000	330,000

SEE NOTES ON PAGE 38

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	MW401D 66 - 71 09/24/02	MW401D 66 - 71 12/19/02
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Benzene	[illegible]	200	[illegible]	ND
Toluene	790	140	57	15
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]
Xylenes	280	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Naphthalene	[illegible]	[illegible]	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	500	130
Acenaphthylene	[illegible]	ID	[illegible]	[illegible]
Acenaphthene	3,800	[illegible]	[illegible]	[illegible]
Fluorene	2,000	[illegible]	[illegible]	[illegible]
Phenanthrene	150	[illegible]	[illegible]	[illegible]
Anthracene	43	ID	14	15
Fluoranthene	210	[illegible]	ND	[illegible]
Pyrene	140	ID	ND	7
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arsenic	50	150	ND	ND
Barium	2,000	1,200	210	200
Chromium (total)	100	11**	ND	ND
Lead	4	29	ND	ND
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pH (pH units)	NL	NL	7.55	7.55
Specific Conductivity (umhos/cm)	NL	NL	1,576	1,499
Dissolved Oxygen (ppm)	NA	7	0.37	0.76
Iron	[illegible]	NA	[illegible]	[illegible]
Nitrate	10,000	NA	ND	ND
Sulfate	250,000	NA	35,000	34,000
Alkalinity (as CaCO3)	NL	NL	340,000	370,000

SEE NOTES ON PAGE 38

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW402 4 - 9 09/24/02	MW402 4 - 9 12/19/02
[illegible]				
Benzene	[illegible]	200	3	[illegible]
Toluene	790	140	8	ND
Ethylbenzene	74	18	2	4
Xylenes	280	35	10	2
[illegible]				
Naphthalene	1,500	[illegible]	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	ND	ND
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	19	5	6
Fluorene	2,000	12	6	5
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
[illegible]				
Arsenic	50	150	8	6
Barium	2,000	1,200	ND	ND
Chromium (total)	100	11**	ND	6
Lead	4	29	ND	ND
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
[illegible]				
pH (pH units)	NL	NL	6.78	6.97
Specific Conductivity (umhos/cm)	NL	NL	4,100	3,730
Dissolved Oxygen (ppm)	NA	7	0.5	0.91
Iron	[illegible]	NA	[illegible]	[illegible]
Nitrate	10,000	NA	ND	ND
Sulfate	[illegible]	NA	[illegible]	[illegible]
Alkalinity (as CaCO3)	NL	NL	500,000	540,000

SEE NOTES ON PAGE 38

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	MW402 D 65 - 70 09/24/02	MW402 D 65 - 70 12/20/02
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Benzene	5	200	5	4
Toluene	790	140	26	36
Ethylbenzene	74	18	3	6
Xylenes	280	35	11	17
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Naphthalene	1,500	[illegible]	ND	[illegible]
2-Methylnaphthalene	750	ID	ND	ND
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	19	ND	ND
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arsenic	50	150	ND	ND
Barium	2,000	1,200	150	150
Chromium (total)	100	11**	ND	ND
Lead	4	29	ND	ND
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pH (pH units)	NL	NL	7.72	7.76
Specific Conductivity (umhos/cm)	NL	NL	1,264	1,217
Dissolved Oxygen (ppm)	NA	7	0.46	0.81
Iron	300	NA	52	27
Nitrate	10,000	NA	1,000	1,100
Sulfate	250,000	NA	56,000	58,000
Alkalinity (as CaCO3)	NL	NL	310,000	330,000

SEE NOTES ON PAGE 38

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SMB Project No. KE31823

[illegible]	[illegible]	[illegible]	MW403 3 - 8 09/17/02	MW403 3 - 8 12/12/02
[illegible]				
[illegible]				
Benzene	[illegible]	[illegible]	[illegible]	[illegible]
Toluene	790	140	14	13
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]
Xylenes	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]				
Naphthalene	1,500	[illegible]	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	120	32
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	19	ND	ND
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
[illegible]				
Arsenic	[illegible]	[illegible]	[illegible]	[illegible]
Barium	2,000	1,200	150	120
Chromium (total)	100	11**	ND	ND
Lead	4	29	4	ND
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
[illegible]				
[illegible]				
pH (pH units)	NL	NL	7.23	7.33
Specific Conductivity (umhos/cm)	NL	NL	914	--
Dissolved Oxygen (ppm)	NA	7	0.55	1.03
Iron	[illegible]	NA	[illegible]	[illegible]
Nitrate	10,000	NA	ND	ND
Sulfate	250,000	NA	35,000	25,000
Alkalinity (as CaCO3)	NL	NL	280,000	290,000

SEE NOTES ON PAGE 38

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	MW403D 60 - 65 09/17/02	MW403D 60 - 65 12/12/02
[illegible]				
Benzene	5	200	ND	ND
Toluene	790	140	ND	ND
Ethylbenzene	74	18	ND	ND
Xylenes	280	35	ND	ND
[illegible]				
Naphthalene	1,500	13	ND	ND
2-Methylnaphthalene	750	ID	ND	ND
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	19	ND	ND
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
[illegible]				
Arsenic	50	150	12	12
Barium	2,000	1,200	250	240
Chromium (total)	100	11**	ND	ND
Lead	4	29	ND	ND
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
[illegible]				
pH (pH units)	NL	NL	7.37	7.44
Specific Conductivity (mmhos/cm)	NL	NL	1,324	–
Dissolved Oxygen (ppm)	NA	7	0.59	0.87
Iron	[illegible]	NA	[illegible]	[illegible]
Nitrate	10,000	NA	ND	ND
Sulfate	250,000	NA	64,000	76,000
Alkalinity (as CaCO3)	NL	NL	300,000	290,000

SEE NOTES ON PAGE 38

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW404 3 - 8 See (14)	MW404 3 - 8 See (14)
[illegible]				
[illegible]				
Benzene	5	200	ND	ND
Toluene	790	140	ND	ND
Ethylbenzene	74	18	ND	ND
Xylenes	280	35	ND	ND
[illegible]				
Naphthalene	1,500	13	ND	ND
2-Methylnaphthalene	750	ID	ND	ND
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	19	ND	ND
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
[illegible]				
Arsenic	50	150	ND	ND
Barium	2,000	1,200	260	310
Cadmium	5		ND	1.2
Chromium (total)	100	11**	ND	5
Lead	4	29	ND	ND
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	11	22
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
[illegible]				
pH (pH units)	NL	NL	--	7.23
Specific Conductivity (ambos/cm)	NL	NL	--	1,785
Dissolved Oxygen (ppm)	NA	7	--	0.77
Iron	300	NA	24	[illegible]
Nitrate	10,000	NA	630	300
Sulfate	250,000	NA	80,000	87,000
Alkalinity (as CaCO3)	NL	NL	500,000	570,000

SEE NOTES ON PAGE 38

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	MW404I 3 - 8 09/18/02	MW404I 3 - 8 12/17/02
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Benzene	[illegible]	[illegible]	[illegible]	[illegible]
Toluene	790	140	8	ND
Ethylbenzene	74	[illegible]	[illegible]	6
Xylenes	280	[illegible]	[illegible]	9
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Naphthalene	1,500	[illegible]	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	ND	ND
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800	[illegible]	ND	ND
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arsenic	50	150	25	25
Barium	2,000	1,200	450	430
Chromium (total)	100	11**	ND	ND
Lead	4	29	ND	ND
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pH (pH units)	NL	NL	7.47	7.67
Specific Conductivity (umhos/cm)	NL	NL	1,672	3,320
Dissolved Oxygen (ppm)	NA	7	0.88	0.8
Iron	[illegible]	NA	[illegible]	[illegible]
Nitrate	10,000	NA	ND	ND
Sulfate	250,000	NA	1,000	ND
Alkalinity (as CaCO3)	NL	NL	320,000	330,000

SEE NOTES ON PAGE 38

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW404D 75 - 80 09/19/02	MW404D 75 - 80 12/17/02
Benzene				
Toluene	790	140	5	ND
Ethylbenzene				
Xylenes	280			
Naphthalene				
2-Methylnaphthalene	750	ID	ND	ND
Acenaphthylene	150	ID	ND	ND
Acenaphthene	3,800			
Fluorene	2,000	12	ND	ND
Phenanthrene	150	5	ND	ND
Anthracene	43	ID	ND	ND
Fluoranthene	210	1.6	ND	ND
Pyrene	140	ID	ND	ND
Arsenic	50	150	9	8
Barium	2,000	1,200	290	280
Chromium (total)	100	11**	ND	5
Lead	4	29	ND	ND
Selenium	50	5	ND	ND
Silver	98	0.2	ND	ND
Zinc	5,000	270	ND	ND
Cyanide (available)	200	20	ND	ND
Cyanide (free)	200	20	ND	ND
pH (pH units)	NL	NL	7.43	7.48
Specific Conductivity (umhos/cm)	NL	NL	1,911	1,865
Dissolved Oxygen (ppm)	NA	7	0.28	0.77
Iron		NA		
Nitrate	10,000	NA	ND	ND
Sulfate	250,000	NA	ND	ND
Alkalinity (as CaCO3)	NL	NL	350,000	360,000

SEE NOTES ON PAGE 38

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb) unless otherwise noted.
(2) Analytical results were compared to Part 201 Generic Commercial II Cleanup Criteria and Screening Levels, Rules 744 and 750 dated November 2002.
(3) ND= Analytical result was less than target detection limit.
(4) ID = Inadequate data to develop criterion.
(5) NA= Criterion or value is not available.
(6) NL = Not listed under Part 201 Generic Commercial II Cleanup Criteria dated June 2000.
(7) NE = Chemical not evaluated by analytical laboratory.
(8) NS = Monitoring well not sampled.
(9) * = Constituents listed for PAHs and metals are limited to those constituents that indicated detectable concentrations for at least one sampling event.
(10) ** = Part 201 GSI Cleanup Criteria for Hexavalent Chromium used as a conservative comparison.
(11) -- = Field measurement not taken due to instrument error.
(12) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(13) The above data was compared to criteria for volatilization to indoor air, groundwater contact, water solubility, flammability/explosivity and acute inhalation and the data did not exceed these criteria.
(14) Groundwater samples were collected on different dates due to insufficient recharge.
(15) NR = Analytical results not reported. Lab reported BTEX analysis conducted after holding time and PAH results were invalid.

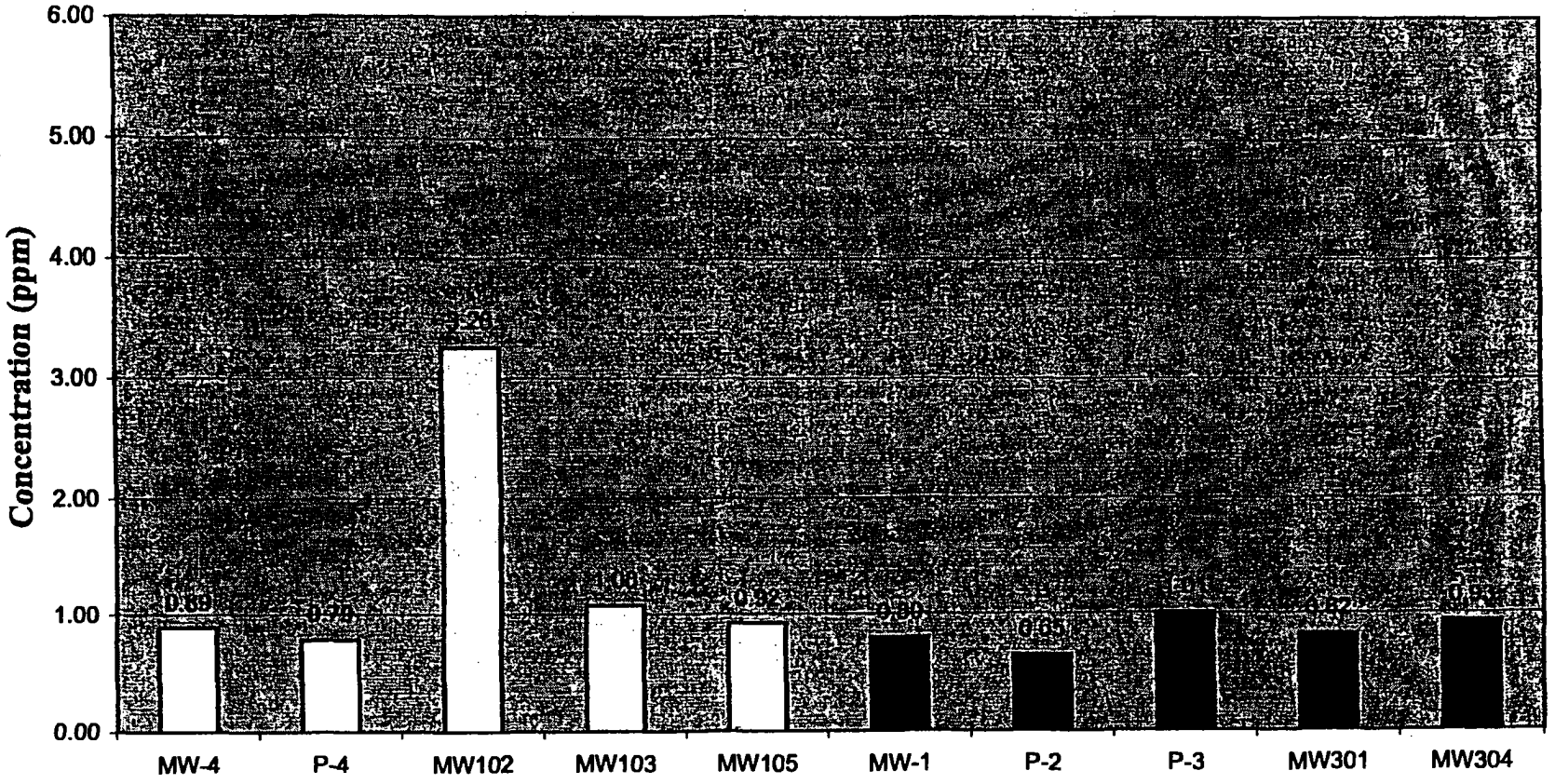
KR059B031530

ATTACHMENT C

CHARTS

Chart No. 1 – Dissolved Oxygen: Non-Impacted Wells vs. Impacted Wells
Chart No. 2 - Alkalinity: Non-Impacted Wells vs. Impacted Wells
Chart No. 3 - Nitrate: Non-Impacted Wells vs. Impacted Wells
Chart No. 4 – Dissolved Iron: Non-Impacted Wells vs. Impacted Wells
Chart No. 5 - Sulfate: Non-Impacted Wells vs. Impacted Wells

CHART NO. 1
DISSOLVED OXYGEN
December 2002
Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

Impacted Wells = MW-1, P-2, P-3, MW301 and MW304

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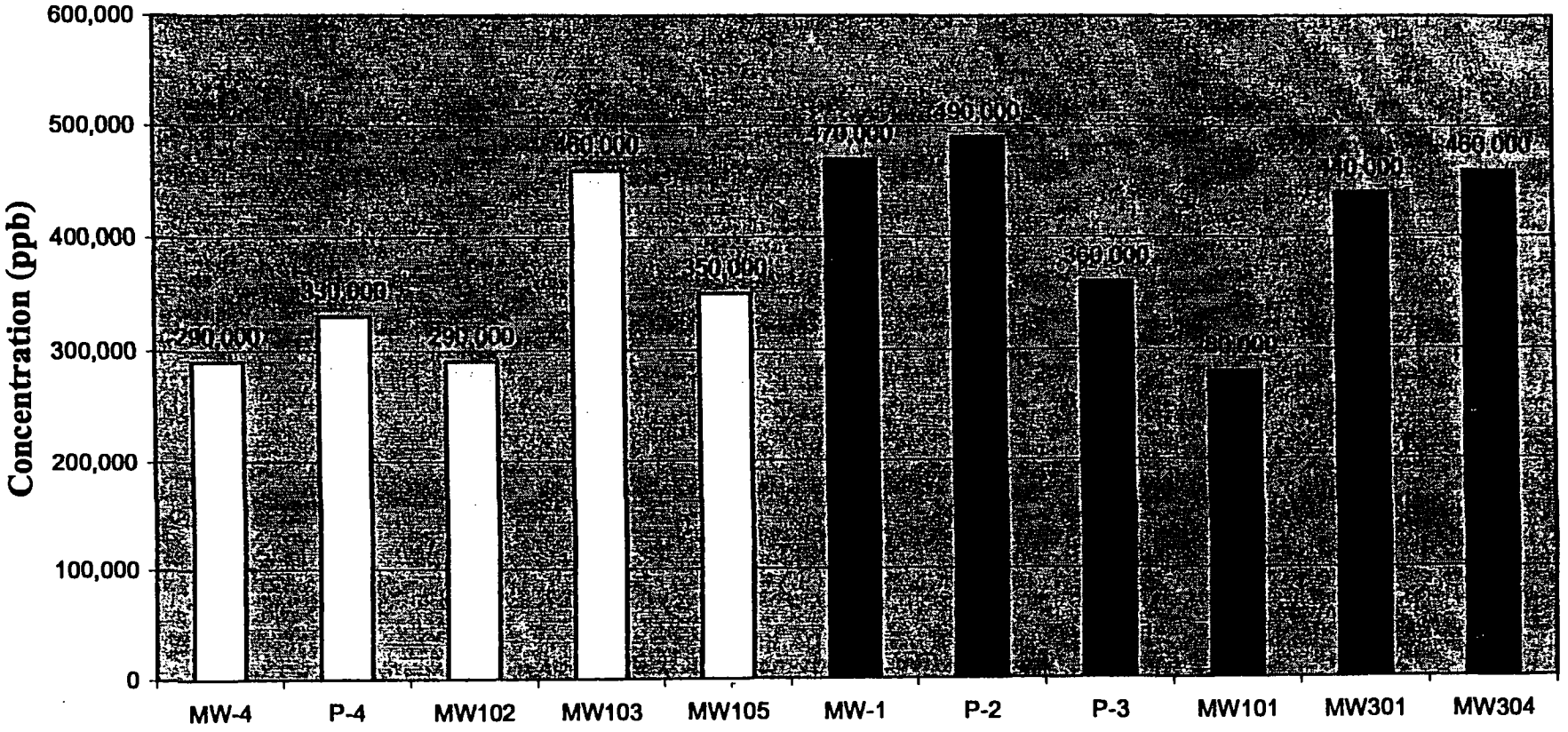
00542

CHART NO. 2
ALKALINITY
December 2002
Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

Impacted Wells = MW-1, P-2, P-3, MW101, MW301 and MW304

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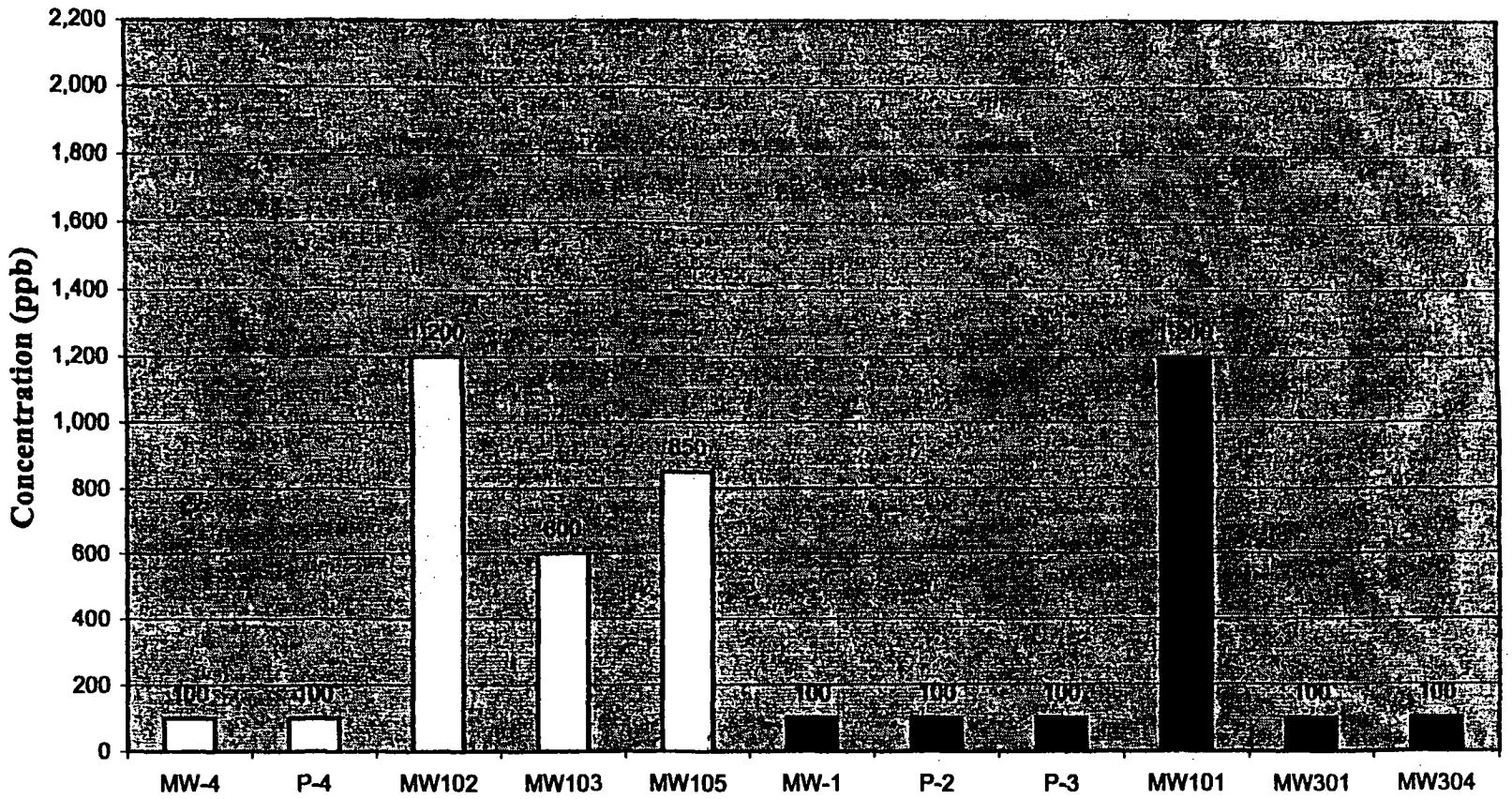
00943

CHART NO. 3
NITRATE
December 2002
Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID

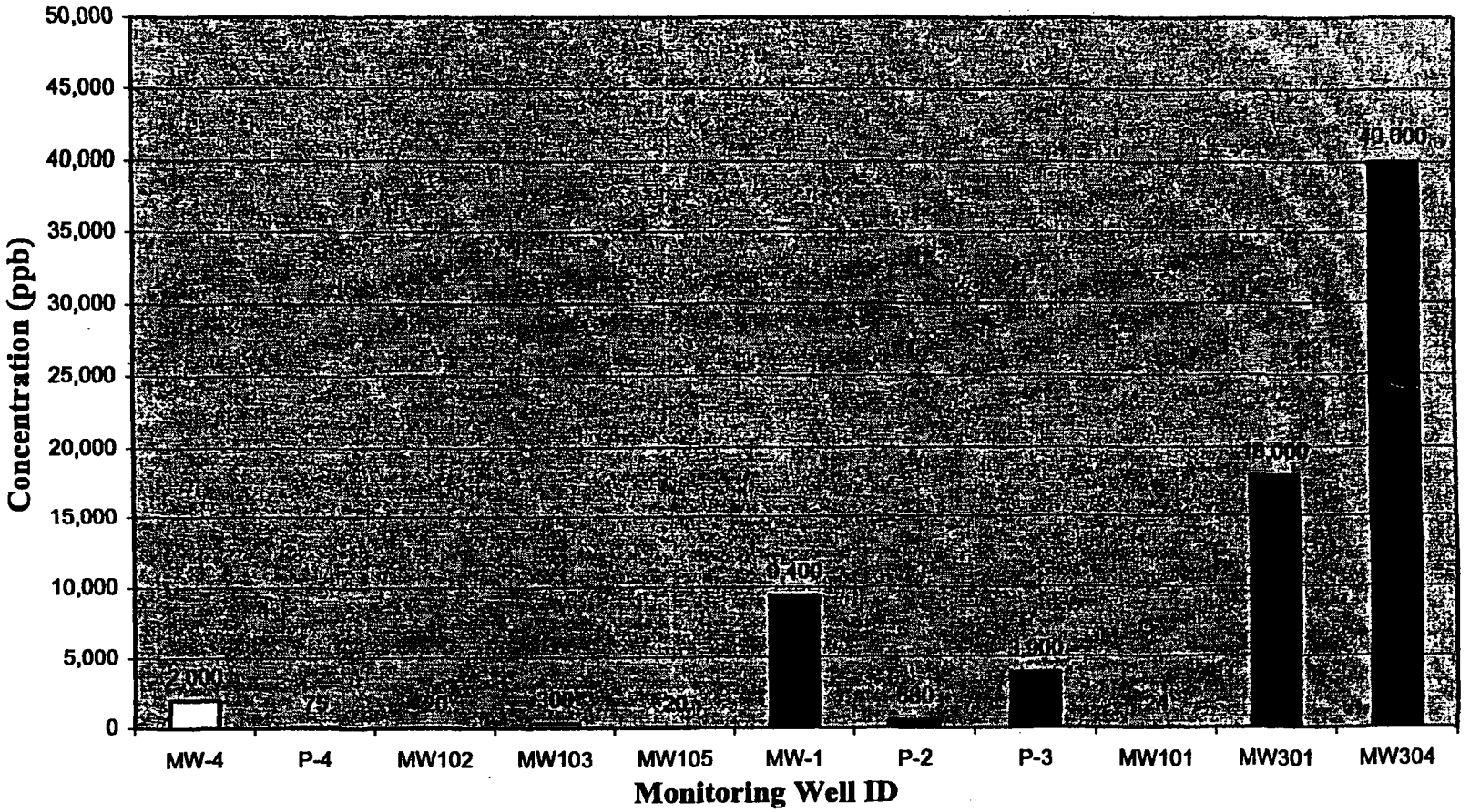
Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105

Impacted Wells = MW-1, P-2, P-3, MW101, MW301 and MW304

KR059B031534

89594

CHART NO. 4
DISSOLVED IRON
December 2002
Non-Impacted Wells vs. Impacted Wells

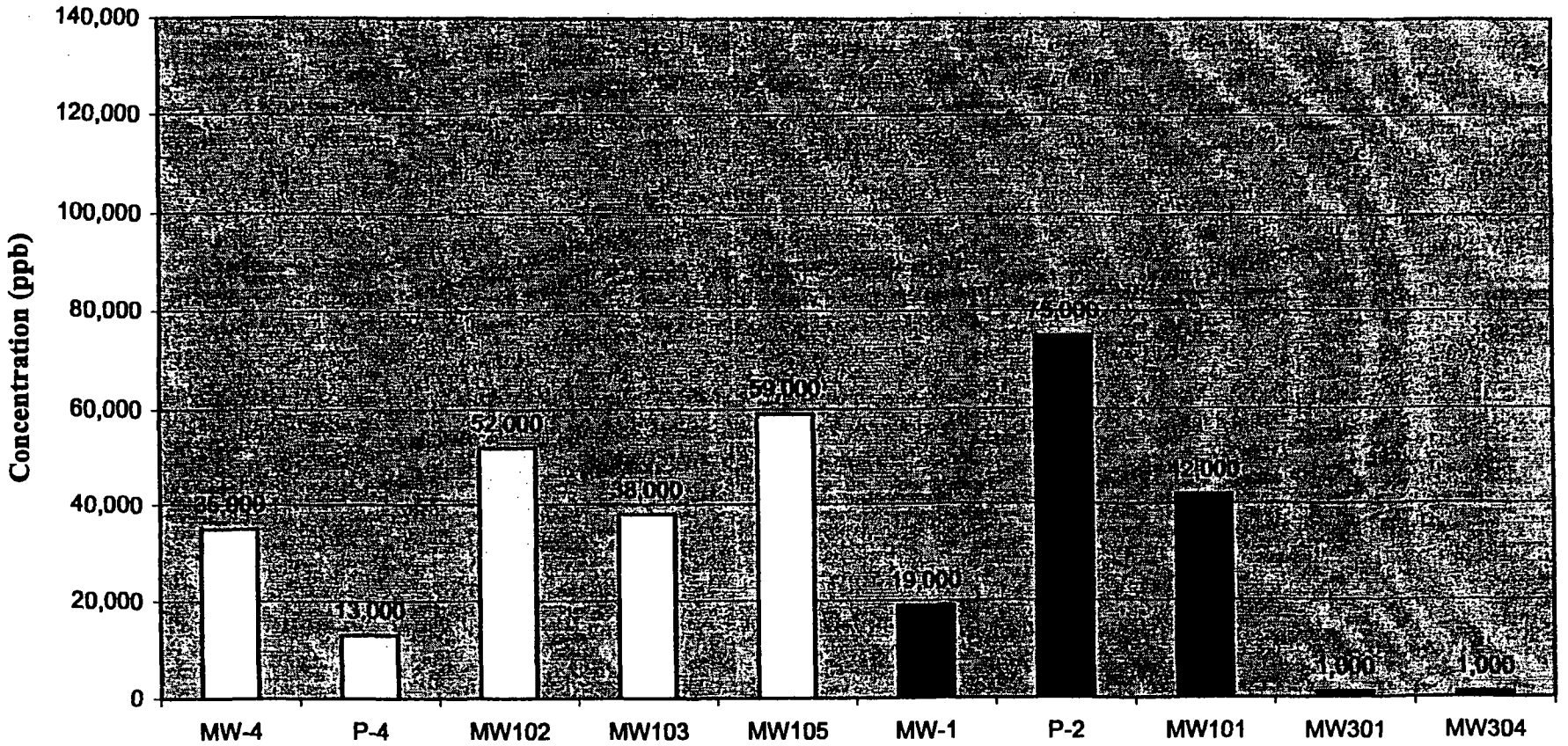


Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105
Impacted Wells = MW-1, P-2, P-3, MW101, MW301 and MW304

KR059B031535

00945

CHART NO. 5
SULFATE
December 2002
Non-Impacted Wells vs. Impacted Wells



Monitoring Well ID
Non-Impacted Wells = MW-4, P-4, MW102, MW103 and MW105
Impacted Wells = MW-1, P-2, MW101, MW301 and MW304

KR059B031536

09946

KR059B031537

ATTACHMENT D
ANALYTICAL REPORT

KR059B031538

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-254, Jackson

Date: February 28, 2003

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823B-5
- Sampling Dates of December 11 – 20, 2002

File Index: 520217-410-989
530217-410-005
530217-410-025
530217-410-034

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On December 13 - 23, 2002 the Chemistry Section (CHEM) of Laboratory Services received groundwater samples collected at the KALAMAZOO FORMER MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Dissolved Michigan 10 Metals
Available (OIA) and Free Cyanide
Dissolved Iron
Nitrate
Sulfate
Alkalinity

Analytical Notes: (1) BTEX TDLs for samples MW-1, MW-101D, MW-301, MW-302I, MW-304, MW-401, MW-403, MW-404I, and P-3 were raised due to required sample dilutions. (2) PAH TDLs for samples MW-1, MW-101D, MW-201R, MW-301, MW-401, MW-401I, MW-404D and Duplicate #1 were raised due to required sample dilutions. (3) All determinations were performed by CHEM and analytical results are attached for your review.

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 or parameter specific recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Aromatic Volatile Organics (BTEX) - Method 8260, Volatile Organic Compounds By Gas Chromatography / Mass Spectrometry. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

PAH Sample Extraction and Preparation - Method 3510, Separatory Funnel Liquid-Liquid Extraction. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Free - Method ASTM-D4282-95, Determination Of Free Cyanide In Water And Wastewater By Micro-diffusion, ASTM.

Cyanide, Available - Method OIA-1677, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry. EPA-821-R-99-013.

Dissolved Metals Preparation (Mercury) – Method 7470, Mercury in Liquid Waste. SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	EPA Method
Arsenic	6020
Barium	6020
Cadmium	6020
Chromium	6020
Copper	6020
Iron	6020
Lead	6020
Mercury	7470
Selenium	6020
Silver	6020
Zinc	6020

SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

ANALYTICAL METHODS

Inorganic Analytes

Analyte	Test Method
Nitrate	353.2
Sulfate	300.0
Alkalinity	310.1

Methods For Chemical Analysis of Water and Wastes, USEPA, EMSL.

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-1
Sample Depth, ft	7.9-11.6
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022034-02

BTEX, Method 8260	ug/L	TDL
Benzene	17	1
Toluene	140	100
Ethylbenzene	360	100
m/p-Xylene	720	200
o-Xylene	190	100
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-1
Sample Depth, ft	7.9-11.6
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-26-02
Analysis Date	01-24-03
Analyst	qy
Control Number	022034-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	790	10
2-Methylnaphthalene	15	10
Acenaphthylene	nd	10
Acenaphthene	nd	10
Fluorene	nd	10
Phenanthrene	nd	10
Anthracene	nd	10
Fluoranthene	nd	10
Pyrene	nd	10
Benzo(a)anthracene	nd	10
Chrysene	nd	10
Benzo(b)fluoranthene	nd	10
Benzo(k)fluoranthene	nd	10
Benzo(a)pyrene	nd	10
Indeno(1,2,3-cd)pyrene	nd	10
Dibenzo(a,h)anthracene	nd	10
Benzo(g,h,i)perylene	nd	10
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	65	35-114
2-Fluorobiphenyl	60	43-116
p-Terphenyl-d14	113	33-141

KR059B031542

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *pu* Date 2-28-03

Data File	K-zoo
MW-1	7.9-11.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-1
Sample Depth, ft	7.9-11.6
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-14-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022034-02

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	16	5
Barium - 6020	250	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	9,400	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

Sample Identification	MW-1
Sample Depth, ft	7.9-11.6
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022034-02

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031543

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-1	7.9-11.6

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-1	Sample Identification	MW-1
Sample Depth, ft	7.9-11.6	Sample Depth, ft	7.9-11.6
Sample Type	water	Sample Type	water
Sample Date	12-19-02	Sample Date	12-19-02
Received Date	12-23-02	Received Date	12-23-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-30-02	-	
Analyst	bek, dmj	-	
Control Number	022034-02	Control Number	022034-02

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	19,000	1,000
Alkalinity, as CaCO3 - 310.1	470,000	-

no entry	ug/L	no entry

KR059B031544

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By pd Date 022803

Data File	K-zoo
MW-1	7.9-11.6

00953

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-2
Sample Depth, ft	4.0-7.7
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-02

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	93	76-114
Toluene-d8	108	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-2
Sample Depth, ft	4.0-7.7
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-20-03
Analyst	qy
Control Number	022025-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	55	35-114
2-Fluorobiphenyl	56	43-116
p-Terphenyl-d14	105	33-141

KR059B031545

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
MW-2	4.0-7.7

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00954

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-2
Sample Depth, ft	4.0-7.7
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-13-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022025-02

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	19,000	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	53	10

Sample Identification	MW-2
Sample Depth, ft	4.0-7.7
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022025-02

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031546

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-2	4.0-7.7

INORG-1

00955

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-2	Sample Identification	MW-2
Sample Depth, ft	4.0-7.7	Sample Depth, ft	4.0-7.7
Sample Type	water	Sample Type	water
Sample Date	12-16-02	Sample Date	12-16-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022025-02	Control Number	022025-02

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	1,300,000	1,000
Alkalinity, as CaCO3 - 310.1	86,000	-

no entry	ug/L	no entry

KR059B031547

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By SM Date 03/28/03

Data File	K-zoo
MW-2	4.0-7.7

00956

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-3
Sample Depth, ft	2.9-7.8
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-20-02
Analyst	jdm
Control Number	021989-07

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	102	76-114
Toluene-d8	108	88-110
4-Bromofluorobenzene	113	86-115

Sample Identification	MW-3
Sample Depth, ft	2.9-7.8
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-18-02
Analysis Date	01-07-03
Analyst	qy
Control Number	021989-07

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	67	35-114
2-Fluorobiphenyl	59	43-116
p-Terphenyl-d14	116	33-141

KR059B031548

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Jel Date 022803

Data File	K-zoo
MW-3	2.9-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-3	Sample Identification	MW-3
Sample Depth, ft	2.9-7.8	Sample Depth, ft	2.9-7.8
Sample Type	water	Sample Type	water
Sample Date	12-12-02	Sample Date	12-12-02
Received Date	12-13-02	Received Date	12-13-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst (Hg)	01-07-03 / clh	Analysis Date, Available / Free	12-23-02 / 12-18-02
Analysis Date / Analyst (others)	01-03-03 / eb	Analyst	bek
Control Number	021989-07	Control Number	021989-07

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	110	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	150	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	12	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031549

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By SM Date 080803

Data File	K-zoo
MW-3	2.9-7.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-3	Sample Identification	MW-3
Sample Depth, ft	2.9-7.8	Sample Depth, ft	2.9-7.8
Sample Type	water	Sample Type	water
Sample Date	12-12-02	Sample Date	12-12-02
Received Date	12-13-02	Received Date	12-13-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	12-19-02	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	021989-07	Control Number	021989-07

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	18,000	1,000
Alkalinity, as CaCO3 - 310.1	290,000	-

no entry	ug/L	no entry

KR059B031550

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *AH* Date 02-28-03

Data File	K-zoo
MW-3	2.9-7.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-4
Sample Depth, ft	2.2-6.8
Sample Type	water
Sample Date	12-11-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-20-02
Analyst	jdm
Control Number	021989-01

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	109	88-110
4-Bromofluorobenzene	108	86-115

Sample Identification	MW-4
Sample Depth, ft	2.2-6.8
Sample Type	water
Sample Date	12-11-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-18-02
Analysis Date	01-07-03
Analyst	qy
Control Number	021989-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	45	35-114
2-Fluorobiphenyl	55	43-116
p-Terphenyl-d14	115	33-141

KR059B031551

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ad Date 022803

Data File	K-zoo
MW-4	2.2-6.8

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00960

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-4	Sample Identification	MW-4
Sample Depth, ft	2.2-6.8	Sample Depth, ft	2.2-6.8
Sample Type	water	Sample Type	water
Sample Date	12-11-02	Sample Date	12-11-02
Received Date	12-13-02	Received Date	12-13-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst (Hg)	01-07-03 / clh	Analysis Date, Available / Free	12-23-02 / 12-18-02
Analysis Date / Analyst (others)	01-03-03 / eb	Analyst	bek
Control Number	021989-01	Control Number	021989-01

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	2,000	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031552

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Acl Date 022803

Data File	K-zoo
MW-4	2.2-6.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-4	Sample Identification	MW-4
Sample Depth, ft	2.2-6.8	Sample Depth, ft	2.2-6.8
Sample Type	water	Sample Type	water
Sample Date	12-11-02	Sample Date	12-11-02
Received Date	12-13-02	Received Date	12-13-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	12-19-02	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	021989-01	Control Number	021989-01

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	100	100
Sulfate - 300.0	35,000	1,000
Alkalinity, as CaCO3 - 310.1	290,000	-

no entry	ug/L	no entry

KR059B031553

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
MW-4	2.2-6.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	P-2
Sample Depth, ft	7.6-12.1
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-11

BTEX, Method 8260	ug/L	TDL
Benzene	10	1
Toluene	1	1
Ethylbenzene	9	1
m/p-Xylene	28	2
o-Xylene	8	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	94	76-114
Toluene-d8	110	88-110
4-Bromofluorobenzene	99	86-115

Sample Identification	P-2
Sample Depth, ft	7.6-12.1
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-20-03
Analyst	qy
Control Number	022025-11

PAHs, Method 8270	ug/L	TDL
Naphthalene	120	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	36	5
Fluorene	15	5
Phenanthrene	33	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	57	35-114
2-Fluorobiphenyl	55	43-116
p-Terphenyl-d14	96	33-141

KR059B031554

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
P-2	7.6-12.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	P-2
Sample Depth, ft	7.6-12.1
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-13-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022025-11

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	7	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	5	5
Copper - 6020	nd	25
Iron - 6020	530	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

Sample Identification	P-2
Sample Depth, ft	7.6-12.1
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022025-11

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031555

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By dd Date 02-28-03

Data File	K-zoo
P-2	7.6-12.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	P-2	Sample Identification	P-2
Sample Depth, ft	7.6-12.1	Sample Depth, ft	7.6-12.1
Sample Type	water	Sample Type	water
Sample Date	12-17-02	Sample Date	12-17-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022025-11	Control Number	022025-11

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	75,000	1,000
Alkalinity, as CaCO3 - 310.1	490,000	-

no entry	ug/L	no entry

KR059B031556

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
P-2	7.6-12.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	P-2D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-10

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	109	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	P-2D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-20-03
Analyst	qy
Control Number	022025-10

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	58	35-114
2-Fluorobiphenyl	53	43-116
p-Terphenyl-d14	102	33-141

KR059B031557

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
P-2D	35-40

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00966

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	P-2D	Sample Identification	P-2D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	12-17-02	Sample Date	12-17-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst (Hg)	01-13-03 / clh	Analysis Date, Available / Free	12-23-02 / 12-27-02
Analysis Date / Analyst (others)	01-13-03 / eb	Analyst	bek
Control Number	022025-10	Control Number	022025-10

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	6	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	2,600	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031558

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 022803

Data File	K-zoo
P-2D	35-40

00967

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	P-2D	Sample Identification	P-2D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	12-17-02	Sample Date	12-17-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022025-10	Control Number	022025-10

INORGANICS	ug/L	TDL	no entry	ug/L	no entry
Nitrate as N - 353.2	nd	100			
Sulfate - 300.0	80,000	1,000			
Alkalinity, as CaCO3 - 310.1	300,000	-			

KR059B031559

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 020803

Data File	K-zoo
P-2D	35-40

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	12-13-02
Received Date	12-16-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-20-02
Analyst	jdm
Control Number	022005-02

BTEX, Method 8260	ug/L	TDL
Benzene	37	1
Toluene	4	1
Ethylbenzene	150	10
m/p-Xylene	8	2
o-Xylene	55	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	108	88-110
4-Bromofluorobenzene	112	86-115

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	12-13-02
Received Date	12-16-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-20-02
Analysis Date	01-07-03
Analyst	qy
Control Number	022005-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	16	5
Fluorene	15	5
Phenanthrene	13	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	100	35-114
2-Fluorobiphenyl	106	43-116
p-Terphenyl-d14	117	33-141

KR059B031560

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
P-3	2.9-7.3

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	12-13-02
Received Date	12-16-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-07-03 / clh
Analysis Date / Analyst (others)	01-03-03 / eb
Control Number	022005-02

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	7	5
Barium - 6020	360	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	3,900	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	13	5
Silver - 6020	nd	0.5
Zinc - 6020	49	10

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	12-13-02
Received Date	12-16-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-18-02
Analyst	bek
Control Number	022005-02

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031561

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
P-3	2.9-7.3

00370

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	P-3	Sample Identification	P-3
Sample Depth, ft	2.9-7.3	Sample Depth, ft	2.9-7.3
Sample Type	water	Sample Type	water
Sample Date	12-13-02	Sample Date	12-13-02
Received Date	12-16-02	Received Date	12-16-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	12-19-02	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022005-02	Control Number	022005-02

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	330,000	1,000
Alkalinity, as CaCO3 - 310.1	360,000	-

no entry	ug/L	no entry

KR059B031562

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
P-3	2.9-7.3

00971

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	P-3D
Sample Depth, ft	34.6-39.6
Sample Type	water
Sample Date	12-13-02
Received Date	12-16-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-20-02
Analyst	jdm
Control Number	022005-01

BTEX, Method 8260	ug/L	TDL
Benzene	54	1
Toluene	2	1
Ethylbenzene	nd	1
m/p-Xylene	7	2
o-Xylene	5	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	109	88-110
4-Bromofluorobenzene	113	86-115

Sample Identification	P-3D
Sample Depth, ft	34.6-39.6
Sample Type	water
Sample Date	12-13-02
Received Date	12-16-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-20-02
Analysis Date	01-07-03
Analyst	qy
Control Number	022005-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	7	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	44	35-114
2-Fluorobiphenyl	66	43-116
p-Terphenyl-d14	122	33-141

KR059B031563

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AL Date 022803

Data File	K-zoo
P-3D	34.6-39.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	P-3D	Sample Identification	P-3D
Sample Depth, ft	34.6-39.6	Sample Depth, ft	34.6-39.6
Sample Type	water	Sample Type	water
Sample Date	12-13-02	Sample Date	12-13-02
Received Date	12-16-02	Received Date	12-16-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst (Hg)	01-07-03 / clh	Analysis Date, Available / Free	12-23-02 / 12-18-02
Analysis Date / Analyst (others)	01-03-03 / eb	Analyst	bek
Control Number	022005-01	Control Number	022005-01

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	35	5
Barium - 6020	210	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	5,100	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031564

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 03-28-03

Data File	K-zoo
P-3D	34.6-39.6

INORG-1

00973

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	P-3D	Sample Identification	P-3D
Sample Depth, ft	34.6-39.6	Sample Depth, ft	34.6-39.6
Sample Type	water	Sample Type	water
Sample Date	12-13-02	Sample Date	12-13-02
Received Date	12-16-02	Received Date	12-16-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	12-19-02	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022005-01	Control Number	022005-01

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	360,000	-

no entry	ug/L	no entry

KR059B031565

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
P-3D	34.6-39.6

00974

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	P-4
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	12-11-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-20-02
Analyst	jdm
Control Number	021989-02

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	109	88-110
4-Bromofluorobenzene	111	86-115

Sample Identification	P-4
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	12-11-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-18-02
Analysis Date	01-07-03
Analyst	qy
Control Number	021989-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	44	35-114
2-Fluorobiphenyl	64	43-116
p-Terphenyl-d14	116	33-141

KR059B031566

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
P-4	2.9-7.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	P-4	Sample Identification	P-4
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	12-11-02	Sample Date	12-11-02
Received Date	12-13-02	Received Date	12-13-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst (Hg)	01-07-03 / clh	Analysis Date, Available / Free	12-23-02 / 12-18-02
Analysis Date / Analyst (others)	01-03-03 / eb	Analyst	bek
Control Number	021989-02	Control Number	021989-02

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	75	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031567

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 022803

Data File	K-zoo
P-4	2.9-7.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	P-4	**Sample Identification**	P-4
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	12-11-02	Sample Date	12-11-02
Received Date	12-13-02	Received Date	12-13-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	12-19-02	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	021989-02	Control Number	021989-02

INORGANICS	**ug/L**	**TDL**
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	13,000	1,000
Alkalinity, as CaCO3 - 310.1	330,000	-

no entry	**ug/L**	**no entry**

KR059B031568

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By dd Date 022803

Data File	K-zoo
P-4	2.9-7.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-101
Sample Depth, ft	12.2-16.9
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022034-01

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	53	1
Ethylbenzene	51	1
m/p-Xylene	86	2
o-Xylene	49	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	100	76-114
Toluene-d8	105	88-110
4-Bromofluorobenzene	100	86-115

Sample Identification	MW-101
Sample Depth, ft	12.2-16.9
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-26-02
Analysis Date	01-24-03
Analyst	qy
Control Number	022034-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	71	35-114
2-Fluorobiphenyl	60	43-116
p-Terphenyl-d14	118	33-141

KR059B031569

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-101	12.2-16.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-101
Sample Depth, ft	12.2-16.9
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-14-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022034-01

Sample Identification	MW-101
Sample Depth, ft	12.2-16.9
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022034-01

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	130	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	24	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031570

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 03/03/03

Data File	K-zoo
MW-101	12.2-16.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-101	Sample Identification	MW-101
Sample Depth, ft	12.2-16.9	Sample Depth, ft	12.2-16.9
Sample Type	water	Sample Type	water
Sample Date	12-19-02	Sample Date	12-19-02
Received Date	12-23-02	Received Date	12-23-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-30-02	-	
Analyst	bek, dmj	-	
Control Number	022034-01	Control Number	022034-01

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	1,200	100
Sulfate - 300.0	42,000	1,000
Alkalinity, as CaCO3 - 310.1	280,000	-

no entry	ug/L	no entry

KR059B031571

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-101	12.2-16.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-17

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	40	1
m/p-Xylene	770	20
o-Xylene	130	10
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	110	88-110
4-Bromofluorobenzene	95	86-115

Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-21-03
Analyst	qy
Control Number	022025-17

PAHs, Method 8270	ug/L	TDL
Naphthalene	1,400	10
2-Methylnaphthalene	380	10
Acenaphthylene	260	10
Acenaphthene	29	10
Fluorene	38	10
Phenanthrene	11	10
Anthracene	nd	10
Fluoranthene	nd	10
Pyrene	nd	10
Benzo(a)anthracene	nd	10
Chrysene	nd	10
Benzo(b)fluoranthene	nd	10
Benzo(k)fluoranthene	nd	10
Benzo(a)pyrene	nd	10
Indeno(1,2,3-cd)pyrene	nd	10
Dibenzo(a,h)anthracene	nd	10
Benzo(g,h,i)perylene	nd	10
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	65	35-114
2-Fluorobiphenyl	73	43-116
p-Terphenyl-d14	97	33-141

KR059B031572

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 03/28/03

Data File	K-zoo
MW-101D	34.5-39.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-101D	Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5	Sample Depth, ft	34.5-39.5
Sample Type	water	Sample Type	water
Sample Date	12-18-02	Sample Date	12-18-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst (Hg)	01-13-03 / clh	Analysis Date, Available / Free	12-23-02 / 12-27-02
Analysis Date / Analyst (others)	01-13-03 / eb	Analyst	bek
Control Number	022025-17	Control Number	022025-17

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	22	5
Barium - 6020	370	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	1,900	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031573

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-101D	34.5-39.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-101D	Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5	Sample Depth, ft	34.5-39.5
Sample Type	water	Sample Type	water
Sample Date	12-18-02	Sample Date	12-18-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022025-17	Control Number	022025-17

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	15,000	1,000
Alkalinity, as CaCO3 - 310.1	350,000	-

no entry	ug/L	no entry

KR059B031574

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 03-28-03

Data File	K-200
MW-101D	34.5-39.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-102
Sample Depth, ft	10.3-14.9
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-16

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	101	86-115

Sample Identification	MW-102
Sample Depth, ft	10.3-14.9
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-21-03
Analyst	qy
Control Number	022025-16

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	69	35-114
2-Fluorobiphenyl	63	43-116
p-Terphenyl-d14	105	33-141

KR059B031575

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-200
MW-102	10.3-14.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-102
Sample Depth, ft	10.3-14.9
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-13-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022025-16

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	6	5
Copper - 6020	nd	25
Iron - 6020	nd	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	8	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

Sample Identification	MW-102
Sample Depth, ft	10.3-14.9
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022025-16

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031576

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 02-28-03

Data File	K-zoo
MW-102	10.3-14.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-102	Sample Identification	MW-102
Sample Depth, ft	10.3-14.9	Sample Depth, ft	10.3-14.9
Sample Type	water	Sample Type	water
Sample Date	12-18-02	Sample Date	12-18-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022025-16	Control Number	022025-16

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	1,200	100
Sulfate - 300.0	52,000	1,000
Alkalinity, as CaCO3 - 310.1	290,000	-

no entry	ug/L	no entry

KR059B031577

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-102	10.3-14.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-103
Sample Depth, ft	10.7-15.3
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-18

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	92	76-114
Toluene-d8	109	88-110
4-Bromofluorobenzene	100	86-115

Sample Identification	MW-103
Sample Depth, ft	10.7-15.3
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-21-03
Analyst	qy
Control Number	022025-18

PAHs, Method 8270	ug/L	TDL
Naphthalene	6	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	55	35-114
2-Fluorobiphenyl	52	43-116
p-Terphenyl-d14	87	33-141

KR059B031578

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
MW-103	10.7-15.3

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-103	Sample Identification	MW-103
Sample Depth, ft	10.7-15.3	Sample Depth, ft	10.7-15.3
Sample Type	water	Sample Type	water
Sample Date	12-18-02	Sample Date	12-18-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst (Hg)	01-13-03 / clh	Analysis Date, Available / Free	12-23-02 / 12-27-02
Analysis Date / Analyst (others)	01-13-03 / eb	Analyst	bek
Control Number	022025-18	Control Number	022025-18

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	6	5
Barium - 6020	300	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	7	5
Copper - 6020	nd	25
Iron - 6020	300	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031579

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 022803

Data File	K-zoo
MW-103	10.7-15.3

INORG-1

00988

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-103	Sample Identification	MW-103
Sample Depth, ft	10.7-15.3	Sample Depth, ft	10.7-15.3
Sample Type	water	Sample Type	water
Sample Date	12-18-02	Sample Date	12-18-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022025-18	Control Number	022025-18

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	600	100
Sulfate - 300.0	38,000	1,000
Alkalinity, as CaCO3 - 310.1	460,000	-

no entry	ug/L	no entry

KR059B031580

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
MW-103	10.7-15.3

INORG-2

00989

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-104
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-05

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	95	76-114
Toluene-d8	108	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	MW-104
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-20-03
Analyst	qy
Control Number	022025-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	69	35-114
2-Fluorobiphenyl	53	43-116
p-Terphenyl-d14	97	33-141

KR059B031581

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 03/03/03

Data File	K-zoo
MW-104	4.4-9.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-104
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-13-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022025-05

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	190	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	7	5
Copper - 6020	nd	25
Iron - 6020	3,600	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	190	10

Sample Identification	MW-104
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022025-05

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031582

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-104	4.4-9.4

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-104	Sample Identification	MW-104
Sample Depth, ft	4.4-9.4	Sample Depth, ft	4.4-9.4
Sample Type	water	Sample Type	water
Sample Date	12-16-02	Sample Date	12-16-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022025-05	Control Number	022025-05

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	16,000	1,000
Alkalinity, as CaCO3 - 310.1	560,000	-

no entry	ug/L	no entry

KR059B031583

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AH Date 022803

Data File	K-zoo
MW-104	4.4-9.4

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-104D
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-08

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	108	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-104D
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-20-03
Analyst	qy
Control Number	022025-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	5	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	68	35-114
2-Fluorobiphenyl	64	43-116
p-Terphenyl-d14	104	33-141

KR059B031584

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 03-28-03

Data File	K-zoo
MW-104D	4.4-9.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-104D
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-13-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022025-08

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	23	5
Barium - 6020	270	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	5,100	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

Sample Identification	MW-104D
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022025-08

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031585

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-104D	4.4-9.4

INORG-1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-104D	Sample Identification	MW-104D
Sample Depth, ft	4.4-9.4	Sample Depth, ft	4.4-9.4
Sample Type	water	Sample Type	water
Sample Date	12-17-02	Sample Date	12-17-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022025-08	Control Number	022025-08

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	75,000	1,000
Alkalinity, as CaCO3 - 310.1	310,000	-

no entry	ug/L	no entry

KR059B031586

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 02-28-03

Data File	K-zoo
MW-104D	4.4-9.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-105
Sample Depth, ft	10.8-15.3
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-15

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	94	76-114
Toluene-d8	109	88-110
4-Bromofluorobenzene	107	86-115

Sample Identification	MW-105
Sample Depth, ft	10.8-15.3
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-21-03
Analyst	qy
Control Number	022025-15

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	54	35-114
2-Fluorobiphenyl	52	43-116
p-Terphenyl-d14	110	33-141

KR059B031587

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-105	10.8-15.3

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-105
Sample Depth, ft	10.8-15.3
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-13-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022025-15

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	nd	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	8	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

Sample Identification	MW-105
Sample Depth, ft	10.8-15.3
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022025-15

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031588

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date 02-28-03

Data File K-200
MW-105 10.8-15.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-105	**Sample Identification**	MW-105
Sample Depth, ft	10.8-15.3	Sample Depth, ft	10.8-15.3
Sample Type	water	Sample Type	water
Sample Date	12-18-02	Sample Date	12-18-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022025-15	Control Number	022025-15

INORGANICS	**ug/L**	**TDL**
Nitrate as N - 353.2	850	100
Sulfate - 300.0	59,000	1,000
Alkalinity, as CaCO3 - 310.1	350,000	-

no entry	**ug/L**	**no entry**

KR059B031589

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-105	10.8-15.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-105D
Sample Depth, ft	38.4-43.4
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-13

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	89	76-114
Toluene-d8	108	88-110
4-Bromofluorobenzene	108	86-115

Sample Identification	MW-105D
Sample Depth, ft	38.4-43.4
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-21-03
Analyst	qy
Control Number	022025-13

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	70	35-114
2-Fluorobiphenyl	65	43-116
p-Terphenyl-d14	98	33-141

KR059B031590

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
MW-105D	38.4-43.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-105D	Sample Identification	MW-105D
Sample Depth, ft	38.4-43.4	Sample Depth, ft	38.4-43.4
Sample Type	water	Sample Type	water
Sample Date	12-18-02	Sample Date	12-18-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst (Hg)	01-13-03 / clh	Analysis Date, Available / Free	12-23-02 / 12-27-02
Analysis Date / Analyst (others)	01-13-03 / eb	Analyst	bek
Control Number	022025-13	Control Number	022025-13

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	190	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	82	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	320	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031591

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-105D	38.4-43.4

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-105D	**Sample Identification**	MW-105D
Sample Depth, ft	38.4-43.4	Sample Depth, ft	38.4-43.4
Sample Type	water	Sample Type	water
Sample Date	12-18-02	Sample Date	12-18-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022025-13	Control Number	022025-13

INORGANICS	**ug/L**	**TDL**
Nitrate as N - 353.2	110	100
Sulfate - 300.0	81,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

no entry	**ug/L**	**no entry**

KR059B031592

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AJL Date 022803

Data File	K-zoo
MW-105D	38.4-43.4

INORG-2

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-201R
Sample Depth, ft	1.7-6.7
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-01

BTEX, Method 8260	ug/L	TDL
Benzene	27	1
Toluene	nd	1
Ethylbenzene	13	1
m/p-Xylene	21	2
o-Xylene	4	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	92	76-114
Toluene-d8	107	88-110
4-Bromofluorobenzene	93	86-115

Sample Identification	MW-201R
Sample Depth, ft	1.7-6.7
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-21-03
Analyst	qy
Control Number	022025-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	670	10
2-Methylnaphthalene	22	10
Acenaphthylene	nd	10
Acenaphthene	49	10
Fluorene	10	10
Phenanthrene	nd	10
Anthracene	nd	10
Fluoranthene	nd	10
Pyrene	nd	10
Benzo(a)anthracene	nd	10
Chrysene	nd	10
Benzo(b)fluoranthene	nd	10
Benzo(k)fluoranthene	nd	10
Benzo(a)pyrene	nd	10
Indeno(1,2,3-cd)pyrene	nd	10
Dibenzo(a,h)anthracene	nd	10
Benzo(g,h,i)perylene	nd	10
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	65	35-114
2-Fluorobiphenyl	69	43-116
p-Terphenyl-d14	101	33-141

KR059B031593

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 080803

Data File	K-zoo
MW-201R	1.7-6.7

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-201R
Sample Depth, ft	1.7-6.7
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-13-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022025-01

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	180	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	5	5
Copper - 6020	nd	25
Iron - 6020	5,200	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

Sample Identification	MW-201R
Sample Depth, ft	1.7-6.7
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022025-01

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031594

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AU Date 02-28-03

Data File	K-zoo
MW-201R	1.7-6.7

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-201R	**Sample Identification**	MW-201R
Sample Depth, ft	1.7-6.7	Sample Depth, ft	1.7-6.7
Sample Type	water	Sample Type	water
Sample Date	12-16-02	Sample Date	12-16-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022025-01	Control Number	022025-01

INORGANICS	**ug/L**	**TDL**
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	3,900	1,000
Alkalinity, as CaCO3 - 310.1	490,000	-

no entry	**ug/L**	**no entry**

KR059B031595

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By Bill Date 03/28/03

Data File	K-zoo
MW-201R	1.7-6.7

01004

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-14

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	102	88-110
4-Bromofluorobenzene	99	86-115

Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-21-03
Analyst	qy
Control Number	022025-14

PAHs, Method 8270	ug/L	TDL
Naphthalene	44	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	69	35-114
2-Fluorobiphenyl	65	43-116
p-Terphenyl-d14	103	33-141

KR059B031596

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-202D	55.4-60.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-13-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022025-14

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	180	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	nd	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	12-18-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022025-14

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031597

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02x803

Data File	K-zoo
MW-202D	55.4-60.4

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-202D	Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4	Sample Depth, ft	55.4-60.4
Sample Type	water	Sample Type	water
Sample Date	12-18-02	Sample Date	12-18-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022025-14	Control Number	022025-14

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	180	100
Sulfate - 300.0	68,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

no entry	ug/L	no entry

KR059B031598

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *JLL* Date 022803

Data File	K-zoo
MW-202D	55.4-60.4

INORG-2

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-301
Sample Depth, ft	4.0-10.1
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022034-04

BTEX, Method 8260	ug/L	TDL
Benzene	1,300	100
Toluene	16	1
Ethylbenzene	130	100
m/p-Xylene	110	2
o-Xylene	160	100
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	93	76-114
Toluene-d8	107	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-301
Sample Depth, ft	4.0-10.1
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-26-02
Analysis Date	01-24-03
Analyst	qy
Control Number	022034-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	3,600	50
2-Methylnaphthalene	430	50
Acenaphthylene	nd	50
Acenaphthene	190	50
Fluorene	47	50
Phenanthrene	54	50
Anthracene	54	50
Fluoranthene	nd	50
Pyrene	nd	50
Benzo(a)anthracene	nd	50
Chrysene	nd	50
Benzo(b)fluoranthene	nd	50
Benzo(k)fluoranthene	nd	50
Benzo(a)pyrene	nd	50
Indeno(1,2,3-cd)pyrene	nd	50
Dibenzo(a,h)anthracene	nd	50
Benzo(g,h,i)perylene	nd	50
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	diluted out	35-114
2-Fluorobiphenyl	diluted out	43-116
p-Terphenyl-d14	diluted out	33-141

KR059B031599

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Sel Date 03/28/03

Data File	K-zoo
MW-301	4.0-10.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-301
Sample Depth, ft	4.0-10.1
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-14-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022034-04

Sample Identification	MW-301
Sample Depth, ft	4.0-10.1
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022034-04

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	52	5
Barium - 6020	190	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	18,000	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031600

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *SLL* Date 02-28-03

Data File	K-zoo
MW-301	4.0-10.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-301	Sample Identification	MW-301
Sample Depth, ft	4.0-10.1	Sample Depth, ft	4.0-10.1
Sample Type	water	Sample Type	water
Sample Date	12-19-02	Sample Date	12-19-02
Received Date	12-23-02	Received Date	12-23-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-30-02	-	
Analyst	bek, dmj	-	
Control Number	022034-04	Control Number	022034-04

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	440,000	-

no entry	ug/L	no entry

KR059B031601

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-301	4.0-10.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-302
Sample Depth, ft	3.5-8.7
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-20-02
Analyst	jdm
Control Number	021989-09

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	107	88-110
4-Bromofluorobenzene	113	86-115

Sample Identification	MW-302
Sample Depth, ft	3.5-8.7
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-18-02
Analysis Date	01-07-03
Analyst	qy
Control Number	021989-09

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	47	35-114
2-Fluorobiphenyl	59	43-116
p-Terphenyl-d14	114	33-141

KR059B031602

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-302	3.5-8.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-302
Sample Depth, ft	3.5-8.7
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-07-03 / clh
Analysis Date / Analyst (others)	01-03-03 / eb
Control Number	021989-09

Sample Identification	MW-302
Sample Depth, ft	3.5-8.7
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-18-02
Analyst	bek
Control Number	021989-09

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	12	5
Barium - 6020	100	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	9,100	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031603

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By *SLL* Date 02-28-03

Data File	K-zoo
MW-302	3.5-8.7

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-302	Sample Identification	MW-302
Sample Depth, ft	3.5-8.7	Sample Depth, ft	3.5-8.7
Sample Type	water	Sample Type	water
Sample Date	12-12-02	Sample Date	12-12-02
Received Date	12-13-02	Received Date	12-13-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	12-19-02	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	021989-09	Control Number	021989-09

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	9,000	1,000
Alkalinity, as CaCO3 - 310.1	410,000	-

no entry	ug/L	no entry

KR059B031604

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By dll Date 02-28-03

Data File	K-zoo
MW-302	3.5-8.7

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-302I	Sample Identification	MW-302I
Sample Depth, ft	19.8-24.8	Sample Depth, ft	19.8-24.8
Sample Type	water	Sample Type	water
Sample Date	12-12-02	Sample Date	12-12-02
Received Date	12-13-02	Received Date	12-13-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	12-18-02
Preservation Type	HCl	Analysis Date	01-07-03
Analysis Date	12-20-02	Analyst	qy
Analyst	jdm		
Control Number	021989-08	Control Number	021989-08

BTEX, Method 8260	ug/L	TDL
Benzene	150	10
Toluene	nd	1
Ethylbenzene	6	1
m/p-Xylene	3	2
o-Xylene	3	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	109	88-110
4-Bromofluorobenzene	111	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	54	35-114
2-Fluorobiphenyl	64	43-116
p-Terphenyl-d14	111	33-141

KR059B031605

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
MW-302I	19.8-24.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-302I	Sample Identification	MW-302I
Sample Depth, ft	19.8-24.8	Sample Depth, ft	19.8-24.8
Sample Type	water	Sample Type	water
Sample Date	12-12-02	Sample Date	12-12-02
Received Date	12-13-02	Received Date	12-13-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst (Hg)	01-07-03 / clh	Analysis Date, Available / Free	12-23-02 / 12-18-02
Analysis Date / Analyst (others)	01-03-03 / eb	Analyst	bek
Control Number	021989-08	Control Number	021989-08

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	19	5
Barium - 6020	360	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	9,200	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031606

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
MW-302I	19.8-24.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-302I	Sample Identification	MW-302I
Sample Depth, ft	19.8-24.8	Sample Depth, ft	19.8-24.8
Sample Type	water	Sample Type	water
Sample Date	12-12-02	Sample Date	12-12-02
Received Date	12-13-02	Received Date	12-13-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	12-19-02	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	021989-08	Control Number	021989-08

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	290,000	-

no entry	ug/L	no entry

KR059B031607

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ad Date 02-28-03

Data File	K-zoo
MW-302I	19.8-24.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-302D
Sample Depth, ft	55.3-60.3
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-03

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	109	88-110
4-Bromofluorobenzene	104	86-115

Sample Identification	MW-302D
Sample Depth, ft	55.3-60.3
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-20-03
Analyst	qy
Control Number	022025-03

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	62	35-114
2-Fluorobiphenyl	61	43-116
p-Terphenyl-d14	108	33-141

KR059B031608

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
MW-302D	55.3-60.3

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-302D
Sample Depth, ft	55.3-60.3
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-13-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022025-03

Sample Identification	MW-302D
Sample Depth, ft	55.3-60.3
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022025-03

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	29	5
Barium - 6020	210	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	3,000	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031609

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 022807

Data File	K-zoo
MW-302D	55.3-60.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-302D	**Sample Identification**	MW-302D
Sample Depth, ft	55.3-60.3	Sample Depth, ft	55.3-60.3
Sample Type	water	Sample Type	water
Sample Date	12-16-02	Sample Date	12-16-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022025-03	Control Number	022025-03

INORGANICS	**ug/L**	**TDL**
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	60,000	1,000
Alkalinity, as CaCO3 - 310.1	300,000	-

no entry	**ug/L**	**no entry**

KR059B031610

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By *SLL* Date 022803

Data File	K-zoo
MW-302D	55.3-60.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-303
Sample Depth, ft	3.2-7.6
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-20-02
Analyst	jdm
Control Number	021989-05

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	109	88-110
4-Bromofluorobenzene	111	86-115

Sample Identification	MW-303
Sample Depth, ft	3.2-7.6
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-18-02
Analysis Date	01-07-03
Analyst	qy
Control Number	021989-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	63	35-114
2-Fluorobiphenyl	81	43-116
p-Terphenyl-d14	115	33-141

KR059B031611

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
MW-303	3.2-7.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-303
Sample Depth, ft	3.2-7.6
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-07-03 / clh
Analysis Date / Analyst (others)	01-03-03 / eb
Control Number	021989-05

Sample Identification	MW-303
Sample Depth, ft	3.2-7.6
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-18-02
Analyst	bek
Control Number	021989-05

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	350	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	6	5
Copper - 6020	nd	25
Iron - 6020	20,000	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031612

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-303	3.2-7.6

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-303	Sample Identification	MW-303
Sample Depth, ft	3.2-7.6	Sample Depth, ft	3.2-7.6
Sample Type	water	Sample Type	water
Sample Date	12-12-02	Sample Date	12-12-02
Received Date	12-13-02	Received Date	12-13-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	12-19-02	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	021989-05	Control Number	021989-05

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	4,000	1,000
Alkalinity, as CaCO3 - 310.1	680,000	-

no entry	ug/L	no entry

KR059B031613

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *AU* Date 022803

Data File	K-zoo
MW-303	3.2-7.6

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-304
Sample Depth, ft	4.0-10.1
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-20-02
Analyst	jdm
Control Number	021989-04

BTEX, Method 8260	ug/L	TDL
Benzene	140	10
Toluene	12	1
Ethylbenzene	130	10
m/p-Xylene	40	2
o-Xylene	3	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	108	88-110
4-Bromofluorobenzene	112	86-115

Sample Identification	MW-304
Sample Depth, ft	4.0-10.1
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-18-02
Analysis Date	01-07-03
Analyst	qy
Control Number	021989-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	78	5
2-Methylnaphthalene	58	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	44	35-114
2-Fluorobiphenyl	68	43-116
p-Terphenyl-d14	113	33-141

KR059B031614

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Jd* Date 022803

Data File	K-zoo
MW-304	4.0-10.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-304
Sample Depth, ft	4.0-10.1
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-07-03 / clh
Analysis Date / Analyst (others)	01-03-03 / eb
Control Number	021989-04

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	37	5
Barium - 6020	140	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	40,000	20
Lead - 6020	4	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

Sample Identification	MW-304
Sample Depth, ft	4.0-10.1
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-18-02
Analyst	bek
Control Number	021989-04

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031615

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 6/28/03

Data File	K-zoo
MW-304	4.0-10.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-304	Sample Identification	MW-304
Sample Depth, ft	4.0-10.1	Sample Depth, ft	4.0-10.1
Sample Type	water	Sample Type	water
Sample Date	12-12-02	Sample Date	12-12-02
Received Date	12-13-02	Received Date	12-13-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	12-19-02	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	021989-04	Control Number	021989-04

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	460,000	-

no entry	ug/L	no entry

KR059B031616

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By SM Date 022803

Data File	K-zoo
MW-304	4.0-10.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-304D
Sample Depth, ft	64.5-69.5
Sample Type	water
Sample Date	12-13-02
Received Date	12-16-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-20-02
Analyst	jdm
Control Number	022005-03

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	110	88-110
4-Bromofluorobenzene	112	86-115

Sample Identification	MW-304D
Sample Depth, ft	64.5-69.5
Sample Type	water
Sample Date	12-13-02
Received Date	12-16-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-20-02
Analysis Date	01-07-03
Analyst	qy
Control Number	022005-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	100	35-114
2-Fluorobiphenyl	106	43-116
p-Terphenyl-d14	120	33-141

KR059B031617

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date 02-28-03

Data File	K-zoo
MW-304D	64.5-69.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-304D
Sample Depth, ft	64.5-69.5
Sample Type	water
Sample Date	12-13-02
Received Date	12-16-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-07-03 / clh
Analysis Date / Analyst (others)	01-03-03 / eb
Control Number	022005-03

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	23	5
Barium - 6020	290	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	5,500	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

Sample Identification	MW-304D
Sample Depth, ft	64.5-69.5
Sample Type	water
Sample Date	12-13-02
Received Date	12-16-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-18-02
Analyst	bek
Control Number	022005-03

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031618

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 022803

Data File	K-zoo
MW-304D	64.5-69.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-304D	Sample Identification	MW-304D
Sample Depth, ft	64.5-69.5	Sample Depth, ft	64.5-69.5
Sample Type	water	Sample Type	water
Sample Date	12-13-02	Sample Date	12-13-02
Received Date	12-16-02	Received Date	12-16-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	12-19-02	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022005-03	Control Number	022005-03

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	90,000	1,000
Alkalinity, as CaCO3 - 310.1	290,000	-

no entry	ug/L	no entry

KR059B031619

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date 022803

Data File	K-zoo
MW-304D	64.5-69.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-401
Sample Depth, ft	7.5-17.5
Sample Type	water
Sample Date	12-20-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022034-09

BTEX, Method 8260	ug/L	TDL
Benzene	1,100	100
Toluene	2,300	100
Ethylbenzene	330	100
m/p-Xylene	2,000	200
o-Xylene	380	100
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	103	76-114
Toluene-d8	96	88-110
4-Bromofluorobenzene	106	86-115

Sample Identification	MW-401
Sample Depth, ft	7.5-17.5
Sample Type	water
Sample Date	12-20-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-26-02
Analysis Date	01-24-03
Analyst	qy
Control Number	022034-09

PAHs, Method 8270	ug/L	TDL
Naphthalene	1,000	10
2-Methylnaphthalene	77	10
Acenaphthylene	43	10
Acenaphthene	nd	10
Fluorene	nd	10
Phenanthrene	nd	10
Anthracene	nd	10
Fluoranthene	nd	10
Pyrene	nd	10
Benzo(a)anthracene	nd	10
Chrysene	nd	10
Benzo(b)fluoranthene	nd	10
Benzo(k)fluoranthene	nd	10
Benzo(a)pyrene	nd	10
Indeno(1,2,3-cd)pyrene	nd	10
Dibenzo(a,h)anthracene	nd	10
Benzo(g,h,i)perylene	nd	10
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	62	35-114
2-Fluorobiphenyl	62	43-116
p-Terphenyl-d14	114	33-141

KR059B031620

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *AU* Date *02-28-03*

Data File	K-zoo
MW-401	7.5-17.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-401
Sample Depth, ft	7.5-17.5
Sample Type	water
Sample Date	12-20-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-14-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022034-09

Sample Identification	MW-401
Sample Depth, ft	7.5-17.5
Sample Type	water
Sample Date	12-20-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022034-09

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	23	5
Barium - 6020	170	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	8,200	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031621

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 03/28/03

Data File	K-zoo
MW-401	7.5-17.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-401	Sample Identification	MW-401
Sample Depth, ft	7.5-17.5	Sample Depth, ft	7.5-17.5
Sample Type	water	Sample Type	water
Sample Date	12-20-02	Sample Date	12-20-02
Received Date	12-23-02	Received Date	12-23-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-30-02	-	
Analyst	bek, dmj	-	
Control Number	022034-09	Control Number	022034-09

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	69,000	1,000
Alkalinity, as CaCO3 - 310.1	470,000	-

no entry	ug/L	no entry

KR059B031622

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 03-28-03

Data File	K-zoo
MW-401	7.5-17.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-401I
Sample Depth, ft	37.5-42.5
Sample Type	water
Sample Date	12-20-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022034-08

BTEX, Method 8260	ug/L	TDL
Benzene	130	1
Toluene	2	1
Ethylbenzene	30	1
m/p-Xylene	29	2
o-Xylene	11	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	105	76-114
Toluene-d8	107	88-110
4-Bromofluorobenzene	100	86-115

Sample Identification	MW-401I
Sample Depth, ft	37.5-42.5
Sample Type	water
Sample Date	12-20-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-26-02
Analysis Date	01-24-03
Analyst	qy
Control Number	022034-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	540	10
2-Methylnaphthalene	25	10
Acenaphthylene	nd	10
Acenaphthene	18	10
Fluorene	nd	10
Phenanthrene	nd	10
Anthracene	nd	10
Fluoranthene	nd	10
Pyrene	nd	10
Benzo(a)anthracene	nd	10
Chrysene	nd	10
Benzo(b)fluoranthene	nd	10
Benzo(k)fluoranthene	nd	10
Benzo(a)pyrene	nd	10
Indeno(1,2,3-cd)pyrene	nd	10
Dibenzo(a,h)anthracene	nd	10
Benzo(g,h,i)perylene	nd	10
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	62	35-114
2-Fluorobiphenyl	60	43-116
p-Terphenyl-d14	115	33-141

KR059B031623

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-401I	37.5-42.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-401I
Sample Depth, ft	37.5-42.5
Sample Type	water
Sample Date	12-20-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-14-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022034-08

Sample Identification	MW-401I
Sample Depth, ft	37.5-42.5
Sample Type	water
Sample Date	12-20-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022034-08

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	43	5
Barium - 6020	210	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	6,400	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031624

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Sel Date 022803

Data File	K-zoo
MW-401I	37.5-42.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-404I	Sample Identification	MW-404I
Sample Depth, ft	34.7-39.7	Sample Depth, ft	34.7-39.7
Sample Type	water	Sample Type	water
Sample Date	12-16-02	Sample Date	12-16-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022025-04	Control Number	022025-04

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	330,000	-

no entry	ug/L	no entry

KR059B031625

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AK Date 08 8 03

Data File	K-zoo
MW-404I	34.7-39.7

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-401I	Sample Identification	MW-401I
Sample Depth, ft	37.5-42.5	Sample Depth, ft	37.5-42.5
Sample Type	water	Sample Type	water
Sample Date	12-20-02	Sample Date	12-20-02
Received Date	12-23-02	Received Date	12-23-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-30-02	-	
Analyst	bek, dmj	-	
Control Number	022034-08	Control Number	022034-08

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	380,000	-

no entry	ug/L	no entry

KR059B031626

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By SM Date 02-28-03

Data File	K-zoo
MW-401I	37.5-42.5

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-401D
Sample Depth, ft	67.3-72.3
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022034-03

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	15	1
Ethylbenzene	37	1
m/p-Xylene	39	2
o-Xylene	17	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	98	76-114
Toluene-d8	103	88-110
4-Bromofluorobenzene	102	86-115

Sample Identification	MW-401D
Sample Depth, ft	67.3-72.3
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-26-02
Analysis Date	01-24-03
Analyst	qy
Control Number	022034-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	160	5
2-Methylnaphthalene	130	5
Acenaphthylene	67	5
Acenaphthene	43	5
Fluorene	49	5
Phenanthrene	76	5
Anthracene	15	5
Fluoranthene	6	5
Pyrene	7	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	70	35-114
2-Fluorobiphenyl	58	43-116
p-Terphenyl-d14	113	33-141

KR059B031627

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By JM Date 03-28-03

Data File	K-zoo
MW-401D	67.3-72.3

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-401D	Sample Identification	MW-401D
Sample Depth, ft	67.3-72.3	Sample Depth, ft	67.3-72.3
Sample Type	water	Sample Type	water
Sample Date	12-19-02	Sample Date	12-19-02
Received Date	12-23-02	Received Date	12-23-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst (Hg)	01-14-03 / clh	Analysis Date, Available / Free	12-23-02 / 12-27-02
Analysis Date / Analyst (others)	01-13-03 / eb	Analyst	bek
Control Number	022034-03	Control Number	022034-03

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	200	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	1,300	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031628

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
MW-401D	67.3-72.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-401D	Sample Identification	MW-401D
Sample Depth, ft	67.3-72.3	Sample Depth, ft	67.3-72.3
Sample Type	water	Sample Type	water
Sample Date	12-19-02	Sample Date	12-19-02
Received Date	12-23-02	Received Date	12-23-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-30-02	-	
Analyst	bek, dmj	-	
Control Number	022034-03	Control Number	022034-03

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	34,000	1,000
Alkalinity, as CaCO3 - 310.1	370,000	-

no entry	ug/L	no entry

KR059B031629

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 03 28 03

Data File	K-zoo
MW-401D	67.3-72.3

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-402
Sample Depth, ft	3.6-8.6
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022034-05

BTEX, Method 8260	ug/L	TDL
Benzene	6	1
Toluene	nd	1
Ethylbenzene	4	1
m/p-Xylene	2	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	100	76-114
Toluene-d8	105	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-402
Sample Depth, ft	3.6-8.6
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-26-02
Analysis Date	01-24-03
Analyst	qy
Control Number	022034-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	32	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	6	5
Fluorene	5	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	68	35-114
2-Fluorobiphenyl	60	43-116
p-Terphenyl-d14	112	33-141

KR059B031630

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AU Date 03/28/03

Data File	K-zoo
MW-402	3.6-8.6

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-402
Sample Depth, ft	3.6-8.6
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-14-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	*022034-05*

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	6	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	6	5
Copper - 6020	nd	25
Iron - 6020	53,000	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

Sample Identification	MW-402
Sample Depth, ft	3.6-8.6
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	*022034-05*

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031631

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date 022803

Data File	*K-zoo*
MW-402	3.6-8.6

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-402	Sample Identification	MW-402
Sample Depth, ft	3.6-8.6	Sample Depth, ft	3.6-8.6
Sample Type	water	Sample Type	water
Sample Date	12-19-02	Sample Date	12-19-02
Received Date	12-23-02	Received Date	12-23-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-30-02	-	
Analyst	bek, dmj	-	
Control Number	022034-05	Control Number	022034-05

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	600,000	1,000
Alkalinity, as CaCO3 - 310.1	540,000	-

no entry	ug/L	no entry

KR059B031632

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By SM Date 08803

Data File	K-zoo
MW-402	3.6-8.6

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-402D
Sample Depth, ft	65-70
Sample Type	water
Sample Date	12-20-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022034-10

BTEX, Method 8260	ug/L	TDL
Benzene	4	1
Toluene	36	1
Ethylbenzene	6	1
m/p-Xylene	13	2
o-Xylene	4	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	105	76-114
Toluene-d8	105	88-110
4-Bromofluorobenzene	105	86-115

Sample Identification	MW-402D
Sample Depth, ft	65-70
Sample Type	water
Sample Date	12-20-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-26-02
Analysis Date	01-24-03
Analyst	qy
Control Number	022034-10

PAHs, Method 8270	ug/L	TDL
Naphthalene	61	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	64	35-114
2-Fluorobiphenyl	53	43-116
p-Terphenyl-d14	113	33-141

KR059B031633

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AU Date 022803

Data File	K-zoo
MW-402D	65-70

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-402D
Sample Depth, ft	65-70
Sample Type	water
Sample Date	12-20-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-14-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022034-10

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	150	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	27	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

Sample Identification	MW-402D
Sample Depth, ft	65-70
Sample Type	water
Sample Date	12-20-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022034-10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031634

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 022803

Data File	K-zoo
MW-402D	65-70

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-402D	Sample Identification	MW-402D
Sample Depth, ft	65-70	Sample Depth, ft	65-70
Sample Type	water	Sample Type	water
Sample Date	12-20-02	Sample Date	12-20-02
Received Date	12-23-02	Received Date	12-23-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-30-02	-	
Analyst	bek, dmj	-	
Control Number	022034-10	Control Number	022034-10

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	1,100	100
Sulfate - 300.0	58,000	1,000
Alkalinity, as CaCO3 - 310.1	330,000	-

no entry	ug/L	no entry

KR059B031635

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date 02-28-03

Data File	K-zoo
MW-402D	65-70

INORG-2

01044

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-403
Sample Depth, ft	2.8-7.8
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-20-02
Analyst	jdm
Control Number	021989-03

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	18	1
Toluene	13	1
Ethylbenzene	950	10
m/p-Xylene	2,300	20
o-Xylene	61	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	97	76-114
Toluene-d8	109	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-403
Sample Depth, ft	2.8-7.8
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-18-02
Analysis Date	01-07-03
Analyst	qy
Control Number	021989-03

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	91	5
2-Methylnaphthalene	32	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	55	35-114
2-Fluorobiphenyl	43	43-116
p-Terphenyl-d14	110	33-141

KR059B031636

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Jd Date 02-28-03

Data File	K-zoo
MW-403	2.8-7.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-403	Sample Identification	MW-403
Sample Depth, ft	2.8-7.8	Sample Depth, ft	2.8-7.8
Sample Type	water	Sample Type	water
Sample Date	12-12-02	Sample Date	12-12-02
Received Date	12-13-02	Received Date	12-13-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst (Hg)	01-07-03 / clh	Analysis Date, Available / Free	12-23-02 / 12-18-02
Analysis Date / Analyst (others)	01-03-03 / eb	Analyst	bek
Control Number	021989-03	Control Number	021989-03

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	130	5
Barium - 6020	120	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	4,400	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031637

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By SM Date 02-28-03

Data File	K-zoo
MW-403	2.8-7.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-403	Sample Identification	MW-403
Sample Depth, ft	2.8-7.8	Sample Depth, ft	2.8-7.8
Sample Type	water	Sample Type	water
Sample Date	12-12-02	Sample Date	12-12-02
Received Date	12-13-02	Received Date	12-13-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	12-19-02	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	021989-03	Control Number	021989-03

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	25,000	1,000
Alkalinity, as CaCO3 - 310.1	290,000	-

no entry	ug/L	no entry

KR059B031638

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
MW-403	2.8-7.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-403D
Sample Depth, ft	60.1-65.1
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-20-02
Analyst	jdm
Control Number	021989-06

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	103	76-114
Toluene-d8	110	88-110
4-Bromofluorobenzene	108	86-115

Sample Identification	MW-403D
Sample Depth, ft	60.1-65.1
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-18-02
Analysis Date	01-07-03
Analyst	qy
Control Number	021989-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	43	35-114
2-Fluorobiphenyl	52	43-116
p-Terphenyl-d14	113	33-141

KR059B031639

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By JCL Date 022803

Data File	K-zoo
MW-403D	60.1-65.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-403D
Sample Depth, ft	60.1-65.1
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-07-03 / clh
Analysis Date / Analyst (others)	01-03-03 / eb
Control Number	021989-06

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	12	5
Barium - 6020	240	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	7,500	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

Sample Identification	MW-403D
Sample Depth, ft	60.1-65.1
Sample Type	water
Sample Date	12-12-02
Received Date	12-13-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-18-02
Analyst	bek
Control Number	021989-06

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031640

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 03-28-03

Data File	K-zoo
MW-403D	60.1-65.1

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-403D	**Sample Identification**	MW-403D
Sample Depth, ft	60.1-65.1	Sample Depth, ft	60.1-65.1
Sample Type	water	Sample Type	water
Sample Date	12-12-02	Sample Date	12-12-02
Received Date	12-13-02	Received Date	12-13-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	12-19-02	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	021989-06	Control Number	021989-06

INORGANICS	**ug/L**	**TDL**
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	76,000	1,000
Alkalinity, as CaCO3 - 310.1	290,000	-

no entry	**ug/L**	**no entry**

KR059B031641

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By JLL Date 022803

Data File	K-zoo
MW-403D	60.1-65.1

01050

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-404	Sample Identification	MW-404
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	12-16-02	Sample Date	12-16-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Extraction Date	no sample
Preservation Type	HCl	Analysis Date	no sample
Analysis Date	12-26-02	Analyst	no sample
Analyst	jdm		
Control Number	022025-06	Control Number	022025-06

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
m/p-Xylene	nd	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	109	88-110
4-Bromofluorobenzene	104	86-115

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	1
Chrysene	-	5
Benzo(b)fluoranthene	-	2
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	2
Indeno(1,2,3-cd)pyrene	-	2
Dibenzo(a,h)anthracene	-	2
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

KR059B031642

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-404	2.9-7.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date / Analyst (Hg)	no sample
Analysis Date / Analyst (others)	no sample
Control Number	022025-06

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	-	5
Barium - 6020	-	100
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5
Copper - 6020	-	25
Iron - 6020	-	20
Lead - 6020	-	3
Mercury - 7470	-	0.2
Selenium - 6020	-	5
Silver - 6020	-	0.5
Zinc - 6020	-	10

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date, Available / Free	no sample
Analyst	no sample
Control Number	022025-06

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B031643

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *AM* Date 02-28-03

Data File	K-zoo
MW-404	2.9-7.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-404	Sample Identification	MW-404
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	12-16-02	Sample Date	12-16-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	no sample	-	
Analysis Date, Sulfate	no sample	-	
Analysis Date, Alkalinity	no sample	-	
Analyst	no sample	-	
Control Number	022025-06	Control Number	022025-06

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	-	100
Sulfate - 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

no entry	ug/L	no entry

KR059B031644

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Del Date 02 28 03

Data File	K-zoo
MW-404	2.9-7.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date	no sample
Analyst	no sample
Control Number	022025-12

BTEX, Method 8260	ug/L	TDL
Benzene	-	1
Toluene	-	1
Ethylbenzene	-	1
m/p-Xylene	-	2
o-Xylene	-	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	-	76-114
Toluene-d8	-	88-110
4-Bromofluorobenzene	-	86-115

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-21-03
Analyst	qy
Control Number	022025-12

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	46	35-114
2-Fluorobiphenyl	47	43-116
p-Terphenyl-d14	104	33-141

KR059B031645

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02/28/03

Data File	K-zoo
MW-404	2.9-7.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date / Analyst (Hg)	no sample
Analysis Date / Analyst (others)	no sample
Control Number	022025-12

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	-	5
Barium - 6020	-	100
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5
Copper - 6020	-	25
Iron - 6020	-	20
Lead - 6020	-	3
Mercury - 7470	-	0.2
Selenium - 6020	-	5
Silver - 6020	-	0.5
Zinc - 6020	-	10

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date, Available / Free	no sample
Analyst	no sample
Control Number	022025-12

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B031646

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Sd Date 02/28/03

Data File	K-zoo
MW-404	2.9-7.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-404	Sample Identification	MW-404
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	12-17-02	Sample Date	12-17-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	no sample	-	
Analysis Date, Sulfate	no sample	-	
Analysis Date, Alkalinity	no sample	-	
Analyst	no sample	-	
Control Number	022025-12	Control Number	022025-12

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	-	100
Sulfate - 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

no entry	ug/L	no entry

KR059B031647

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Sd Date 022803

Data File	K-zoo
MW-404	2.9-7.9

01056

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date	12-26-02
Analyst	no sample
Control Number	022034-06

BTEX, Method 8260	**ug/L**	**TDL**
Benzene	-	1
Toluene	-	1
Ethylbenzene	-	1
m/p-Xylene	-	2
o-Xylene	-	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	-	76-114
Toluene-d8	-	88-110
4-Bromofluorobenzene	-	86-115

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date	no sample
Analyst	no sample
Control Number	022034-06

PAHs, Method 8270	**ug/L**	**TDL**
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	1
Chrysene	-	5
Benzo(b)fluoranthene	-	2
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	2
Indeno(1,2,3-cd)pyrene	-	2
Dibenzo(a,h)anthracene	-	2
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

KR059B031648

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AU Date 022803

Data File	K-zoo
MW-404	2.9-7.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-14-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022034-06

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	310	100
Cadmium - 6020	1.2	0.5
Chromium (total) - 6020	5	5
Copper - 6020	nd	25
Iron - 6020	310	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	22	10

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022034-06

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031649

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
MW-404	2.9-7.9

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-404	Sample Identification	MW-404
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	12-19-02	Sample Date	12-19-02
Received Date	12-23-02	Received Date	12-23-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-30-02	-	
Analyst	bek, dmj	-	
Control Number	022034-06	Control Number	022034-06

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	300	100
Sulfate - 300.0	87,000	1,000
Alkalinity, as CaCO3 - 310.1	570,000	-

no entry	ug/L	no entry

KR059B031650

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
MW-404	2.9-7.9

01059

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-404I
Sample Depth, ft	34.7-39.7
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-04

BTEX, Method 8260	ug/L	TDL
Benzene	730	10
Toluene	nd	1
Ethylbenzene	6	1
m/p-Xylene	6	2
o-Xylene	3	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	94	76-114
Toluene-d8	109	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	MW-404I
Sample Depth, ft	34.7-39.7
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-20-03
Analyst	qy
Control Number	022025-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	160	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	53	35-114
2-Fluorobiphenyl	56	43-116
p-Terphenyl-d14	102	33-141

KR059B031651

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date 02-28-03

Data File	K-zoo
MW-404I	34.7-39.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-404I	Sample Identification	MW-404I
Sample Depth, ft	34.7-39.7	Sample Depth, ft	34.7-39.7
Sample Type	water	Sample Type	water
Sample Date	12-16-02	Sample Date	12-16-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	at collection	Preservation Date	at collection
Preservation Type	HNO3	Preservation Type	PbCO3 / NaOH
Analysis Date / Analyst (Hg)	01-13-03 / clh	Analysis Date, Available / Free	12-23-02 / 12-27-02
Analysis Date / Analyst (others)	01-13-03 / eb	Analyst	bek
Control Number	022025-04	Control Number	022025-04

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	25	5
Barium - 6020	430	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Iron - 6020	7,500	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031652

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
MW-404I	34.7-39.7

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-404D
Sample Depth, ft	74.8-79.8
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-09

BTEX, Method 8260	ug/L	TDL
Benzene	68	1
Toluene	nd	1
Ethylbenzene	84	1
m/p-Xylene	52	2
o-Xylene	15	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	93	76-114
Toluene-d8	105	88-110
4-Bromofluorobenzene	98	86-115

Sample Identification	MW-404D
Sample Depth, ft	74.8-79.8
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-21-03
Analyst	qy
Control Number	022025-09

PAHs, Method 8270	ug/L	TDL
Naphthalene	900	10
2-Methylnaphthalene	nd	10
Acenaphthylene	nd	10
Acenaphthene	54	10
Fluorene	nd	10
Phenanthrene	nd	10
Anthracene	nd	10
Fluoranthene	nd	10
Pyrene	nd	10
Benzo(a)anthracene	nd	10
Chrysene	nd	10
Benzo(b)fluoranthene	nd	10
Benzo(k)fluoranthene	nd	10
Benzo(a)pyrene	nd	10
Indeno(1,2,3-cd)pyrene	nd	10
Dibenzo(a,h)anthracene	nd	10
Benzo(g,h,i)perylene	nd	10
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	42	35-114
2-Fluorobiphenyl	53	43-116
p-Terphenyl-d14	89	33-141

KR059B031653

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ad Date 03/28/03

Data File	K-zoo
MW-404D	74.8-79.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-404D
Sample Depth, ft	74.8-79.8
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	01-13-03 / clh
Analysis Date / Analyst (others)	01-13-03 / eb
Control Number	022025-09

DISSOLVED METALS	**ug/L**	**TDL**
Arsenic - 6020	8	5
Barium - 6020	280	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	5	5
Copper - 6020	nd	25
Iron - 6020	4,000	20
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10

Sample Identification	MW-404D
Sample Depth, ft	74.8-79.8
Sample Type	water
Sample Date	12-17-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available / Free	12-23-02 / 12-27-02
Analyst	bek
Control Number	022025-09

INORGANICS	**ug/L**	**TDL**
Cyanide, Available - OIA1677	nd	20
Cyanide, Free - D4282	nd	10

KR059B031654

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Del Date 62803

Data File	K-zoo
MW-404D	74.8-79.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	MW-404D	Sample Identification	MW-404D
Sample Depth, ft	74.8-79.8	Sample Depth, ft	74.8-79.8
Sample Type	water	Sample Type	water
Sample Date	12-17-02	Sample Date	12-17-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	12-27-02	-	
Analysis Date, Sulfate	01-11-03	-	
Analysis Date, Alkalinity	12-20-02	-	
Analyst	bek, dmj	-	
Control Number	022025-09	Control Number	022025-09

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	nd	100
Sulfate - 300.0	nd	1,000
Alkalinity, as CaCO3 - 310.1	360,000	-

no entry	ug/L	no entry

KR059B031655

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AL Date 02-28-03

Data File	K-zoo
MW-404D	74.8-79.8

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	Duplicate#1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022025-07

BTEX, Method 8260	ug/L	TDL
Benzene	23	1
Toluene	nd	1
Ethylbenzene	11	1
m/p-Xylene	18	2
o-Xylene	4	1
Surrogate Recovery	%Recovery	Criteria
1,2-Dichloroethane-d4	92	76-114
Toluene-d8	108	88-110
4-Bromofluorobenzene	95	86-115

Sample Identification	Duplicate#1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-23-02
Analysis Date	01-21-03
Analyst	qy
Control Number	022025-07

PAHs, Method 8270	ug/L	TDL
Naphthalene	650	10
2-Methylnaphthalene	15	10
Acenaphthylene	nd	10
Acenaphthene	32	10
Fluorene	nd	10
Phenanthrene	nd	10
Anthracene	nd	10
Fluoranthene	nd	10
Pyrene	nd	10
Benzo(a)anthracene	nd	10
Chrysene	nd	10
Benzo(b)fluoranthene	nd	10
Benzo(k)fluoranthene	nd	10
Benzo(a)pyrene	nd	10
Indeno(1,2,3-cd)pyrene	nd	10
Dibenzo(a,h)anthracene	nd	10
Benzo(g,h,i)perylene	nd	10
Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	51	35-114
2-Fluorobiphenyl	55	43-116
p-Terphenyl-d14	81	33-141

KR059B031656

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
Duplicate#1	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	Duplicate#2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022034-07

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	44	1
Ethylbenzene	43	1
m/p-Xylene	70	2
o-Xylene	41	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	96	76-114
Toluene-d8	104	88-110
4-Bromofluorobenzene	103	86-115

Sample Identification	Duplicate#2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	12-26-02
Analysis Date	01-24-03
Analyst	qy
Control Number	022034-07

PAHs, Method 8270	ug/L	TDL
Naphthalene	21	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	68	35-114
2-Fluorobiphenyl	60	43-116
p-Terphenyl-d14	116	33-141

KR059B031657

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
Duplicate#2	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	12-05-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	12-26-02
Analyst	jdm
Control Number	022034-11

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	8	1
Ethylbenzene	2	1
m/p-Xylene	4	2
o-Xylene	nd	1
Surrogate Recovery	**%Recovery**	**Criteria**
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	109	88-110
4-Bromofluorobenzene	106	86-115

Sample Identification	Trip Blank
Sample Depth, ft	-
Sample Type	water
Sample Date	12-05-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date	no sample
Analyst	no sample
Control Number	022034-11

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	1
Chrysene	-	5
Benzo(b)fluoranthene	-	2
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	2
Indeno(1,2,3-cd)pyrene	-	2
Dibenzo(a,h)anthracene	-	2
Benzo(g,h,i)perylene	-	5
Surrogate Recovery	**%Recovery**	**Criteria**
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

KR059B031658

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Au Date 022803

Data File	K-zoo
Trip Blank	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	Duplicate#1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date / Analyst (Hg)	no sample
Analysis Date / Analyst (others)	no sample
Control Number	022025-07

Sample Identification	Duplicate#1
Sample Depth, ft	-
Sample Type	water
Sample Date	12-16-02
Received Date	12-19-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date, Available / Free	no sample
Analyst	no sample
Control Number	022025-07

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	-	5
Barium - 6020	-	100
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5
Copper - 6020	-	25
Iron - 6020	-	20
Lead - 6020	-	3
Mercury - 7470	-	0.2
Selenium - 6020	-	5
Silver - 6020	-	0.5
Zinc - 6020	-	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B031659

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 022803

Data File	K-zoo
Duplicate#1	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	Duplicate#2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date / Analyst (Hg)	no sample
Analysis Date / Analyst (others)	no sample
Control Number	022034-07

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	-	5
Barium - 6020	-	100
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5
Copper - 6020	-	25
Iron - 6020	-	20
Lead - 6020	-	3
Mercury - 7470	-	0.2
Selenium - 6020	-	5
Silver - 6020	-	0.5
Zinc - 6020	-	10

Sample Identification	Duplicate#2
Sample Depth, ft	-
Sample Type	water
Sample Date	12-19-02
Received Date	12-23-02
Report Date	02-28-03
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date, Available / Free	no sample
Analyst	no sample
Control Number	022034-07

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B031660

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
Duplicate#2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	Trip Blank	Sample Identification	Trip Blank
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-05-02	Sample Date	12-05-02
Received Date	12-23-02	Received Date	12-23-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preservation Date	no sample	Preservation Date	no sample
Preservation Type	no sample	Preservation Type	no sample
Analysis Date / Analyst (Hg)	no sample	Analysis Date, Available / Free	no sample
Analysis Date / Analyst (others)	no sample	Analyst	no sample
Control Number	022034-11	Control Number	022034-11

DISSOLVED METALS	ug/L	TDL
Arsenic - 6020	-	5
Barium - 6020	-	100
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5
Copper - 6020	-	25
Iron - 6020	-	20
Lead - 6020	-	3
Mercury - 7470	-	0.2
Selenium - 6020	-	5
Silver - 6020	-	0.5
Zinc - 6020	-	10

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	-	20
Cyanide, Free - D4282	-	10

KR059B031661

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 02-28-03

Data File	K-zoo
Trip Blank	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	Duplicate#1	Sample Identification	Duplicate#1
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-16-02	Sample Date	12-16-02
Received Date	12-19-02	Received Date	12-19-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	no sample	-	
Analysis Date, Sulfate	no sample	-	
Analysis Date, Alkalinity	no sample	-	
Analyst	no sample	-	
Control Number	022025-07	Control Number	022025-07

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	-	100
Sulfate - 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

no entry	ug/L	no entry

KR059B031662

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 028803

Data File	K-zoo
Duplicate#1	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	Duplicate#2	Sample Identification	Duplicate#2
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-19-02	Sample Date	12-19-02
Received Date	12-23-02	Received Date	12-23-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	no sample	-	
Analysis Date, Sulfate	no sample	-	
Analysis Date, Alkalinity	no sample	-	
Analyst	no sample	-	
Control Number	022034-07	Control Number	022034-07

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	-	100
Sulfate - 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

no entry	ug/L	no entry

KR059B031663

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 02-28-03

Data File	K-zoo
Duplicate#2	-

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project # KE31823B-5 - Sampling Dates of December 11 - 20, 2002	Project Numbers CHEM-03-1989, -2005 CHEM-03-2025, -2034

Sample Identification	Trip Blank	Sample Identification	Trip Blank
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	12-05-02	Sample Date	12-05-02
Received Date	12-23-02	Received Date	12-23-02
Report Date	02-28-03	Report Date	02-28-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Analysis Date, Nitrate	no sample	-	
Analysis Date, Sulfate	no sample	-	
Analysis Date, Alkalinity	no sample	-	
Analyst	no sample	-	
Control Number	022034-11	Control Number	022034-11

INORGANICS	ug/L	TDL
Nitrate as N - 353.2	-	100
Sulfate - 300.0	-	1,000
Alkalinity, as CaCO3 - 310.1	-	-

no entry	ug/L	no entry

KR059B031664

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By *Dll* Date 022803

Data File	K-zoo
Trip Blank	01073

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 12-13-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRESSE, SME-PLY

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX / PNAs	10 TL METALS	FREE + AVAILABLE CYANIDE	ALKALINITY	DISSOLVED IRON	NITRATE	SULFATE	REMARKS
02-1989-01	12-11	4:15	WATER	MW4	2.2-6.8	10	X	X	X	X	X	X	X	
↓ -02	12-11	5:10	WATER	P4	2.9-7.9	10	X	X	X	X	X	X	X	

KR059B031665

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12-11-02 6:45 PM	SME REFRIGERATOR (SAMPLE ROOM)
[signature]	12/13/02 2:00	[signature]

COMMENTS
- MORE METALS + ANALS
- CALL PAT B. w/ QUESTIONS

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 12-13-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASSE SME-PLY

PHONE:

ANALYSIS REQUESTED

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX / PNAs	10 PI METALS	FREE + AVAILABLE CYANIDE	ALKALINITY	DISSOLVED IRON	NITRATE	SULFATE	REMARKS
02-1989-03	12-12	9:20	W	MW403	2.8-7.8	10								
-04		10:20		MW304	4.0-10.1									
-05		11:15		MW303	3.2-7.6									
-06		1:05		MW403D	60.1-65.1									
-07		2:50		MW3	2.9-7.8									
-08		3:40		MW302I	19.8-24.8									
-09		4:40		MW302	3.5-8.7									

KR059B031666

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12-12-02 6:45	SME REFRIGERATOR (SAMPLE ROOM)
SME	12/13/02 2:00	Grabsman

COMMENTS
- MDEQ METHODS + MDLs
- CALL PAT B. w/ QUESTIONS

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-S

PAGE 1 OF 1

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 12-17-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

SEND REPORT TO: PAT BARASSE SITE - PLYMOUTH

PHONE:

ANALYSIS REQUESTED

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX / PNAs	Hg 10 METALS	FREE AMMONIA CYANIDE	ALKALINITY	DISSOLVED IRON	NITRATE	SULFATE	REMARKS
02-2005-01	12-13-02	12:15	W	P3D	34.6-37.6	10								
-02	↓	1:10	↓	P3	2.9-7.3	10								
-03	↓	2:15	↓	MW304D	64.5-69.5	10								

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12-13-02	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME 12/16/02 3:15	RECEIVED BY: (SIGNATURE) [signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

KR059B031667

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 12-16-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASSE SME-PCK

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX / PNAs	10 hr METALS	FREE & AVAILABLE CYANIDE	ALKALINITY	DISSOLVED IRON	NITRATE	SULFATE	REMARKS
02-2025-01	12-16	9:55	W	MW201R	1.7-6.7	10								
-02		11:05		MW2	4.0-7.7	10								
-03		1:45		MW302D	55.3-60.3	10								
-04		3:30		MW404I	34.7-39.7	10								
-05		4:45		MW104	4.4-9.4	10								
-06		4:10		MW404	2.9-7.9	2	X							BTEX VOAs ONLY
-07		—		DUPLICATE #1	—	3	X							

KR059B031668

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12-16-02 6:30	SME Refrigerator (Sample Room)
RELINQUISHED BY: (SIGNATURE) SME	DATE/ TIME 12/19/02 2:00	RECEIVED BY: (SIGNATURE) [signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ METHODS & MDLs
- CALL PAT B. w/ QUESTIONS
All Bottles checked in OK-CCS

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 12-19-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASSE SME - PLY

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX / PNAs	10 Al METALS	FREE + AVAILABLE CYANIDE	ALKALINITY	DISSOLVED IRON	NITRATE	SULFATE	REMARKS
02-2025-08	12-17	12:15	W	MW104D	4.4-9.4	10								
-09		2:35		MW404D	74.8-79.8	10								
-10		3:40		PZD	35-40	10								
-11		4:40		PZ	7.6-12.1	10								
-12		9:10		MW404	2.9-7.9	1	X							PNAs ONLY

KR059B031669

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12-17-02 6:30	SME Refrigerator (Sample Room)
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 12/19/02 2:00	RECEIVED BY: (SIGNATURE) Grabs Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

- MDEQ METHODS + MDLs
- CALL PAT B. w/ QUESTIONS
- All Bottles checked in OK-GES

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-S

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 12-19-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASSE SME - PLY

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX/PNA	10 PL METALS	FREE + AVAILABLE CYANIDE	ALKALINITY	DISSOLVED IRON	NITRATE	SULFATE	REMARKS
02-2025-13	12-18	11:55	W	MW105D	38.4-43.4	10								
-14		12:30		MW202D	55.4-60.4	10								
-15		1:35		MW105	10.8-15.3	10								
-16		2:25		MW102	10.3-14.9	10								
-17		3:30		MW101D	34.5-39.5	10								
-18		4:45		MW103	10.2-15.3	10								

KR059B031670

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12-18-02 6:30	SME SAMPLE Rec (Cooler w/ ice)
SME	12/19/02 2:00	Globe Sample

COMMENTS

- NOBA METHODS + MDLS
- CALL PAT B. w/ QUESTIONS
- All Bottles checked in-GCS

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 12-23-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRASE SME - PLYMOUTH

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX/PNAs	10 RI METALS	FAGE + AVAILABLE CYANIDE	ALKALINITY	DISSOLVED Fe	NITRATE	SULFATE	REMARKS
02-2084-01	12-19	10:05	W	MW101	12.2-16.9	10								
-02		11:30		MW1	7.9-11.6	10								
-03		2:20		MW401D	67.3-72.3	10								
-04		1:10		MW301	4.0-10.1	10								
-05		3:30		MW402	3.6-8.6	10								
-06		4:30		MW404	2.9-7.9	7			X	X	X	X	X	
-07		—		DUPLICATE #2	—	3	X	X	ALL					
[redacted]														
[redacted]														
[redacted]														
[redacted]														
[redacted]														

KR059B031671

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12-19-02 6:00	SME Refrigerator (Sample Room)
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 12/23/02 12:00	RECEIVED BY: (SIGNATURE) [signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MDEQ Methods + MDLs
- Call Pat B. w/ questions
Samples checked OK

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

PAGE 1 OF 1

SEND REPORT TO: PAT BARRESE SME-PLY

PHONE:

SAMPLING TEAM: DAVIN OJALA

DATE SHIPPED: 12-23-02

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

ANALYSIS REQUESTED

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX/PNAs	Total metals	Free cyanide	Alkalinity	Dissolved iron	Nitrate	Sulfate	REMARKS
02-2034-08	12-20	12:15	W	MW401I	37.5-42.5	10								
-09	↓	1:55	↓	MW401	7.5-12.5	10								
-10	↓	2:35	↓	MW402D	65-70	10								
-11	12/05	3:00 pm	↓	Trip Blank	—	1								

KR059B031672

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	12-20-02 6:00	SME Refrigerator (Sample Room)
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 12/23/02 12:00	RECEIVED BY: (SIGNATURE) Gabe Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- Need methods + MDLs
- Call Pat B. w/ questions
- Samples checked OK-GES

ORIGINAL TO LAB COPY TO CUSTOMER

EXHIBIT MGP-13

Consumers Energy

A CMS Energy Company

Environmental & Lab Services
1945 West Parnall Road
Jackson, MI 49201-8643

Fax: 517 788 2329
www.consumersenergy.com

WORKING COPY

June 24, 2003

Carol Weaver
Remediation and Redevelopment Division
Michigan Department of Environmental Quality
Kalamazoo District
7953 Adobe Road
Kalamazoo, MI 49009-5026

50111.3

GROUNDWATER MONITORING REPORT FOR MARCH 2003
CONSUMERS ENERGY FORMER
KALAMAZOO MANUFACTURED GAS PLANT SITE

Enclosed for your review is a copy of a June 19, 2003, "Groundwater Monitoring Report for March 2003" as prepared by our consultant, Soil and Materials Engineers (SME).

The enclosed summarizes the analytical results from groundwater samples collected between March 11 and 18, 2003.

Should you have any questions concerning the enclosed report, please contact me on 517-788-0350.

Robert G Neumann PE
Senior Engineer/Kalamazoo MGP Site Manager

cc WGierke, Pfizer w/3 copies
CRutland, City of Kalamazoo
JBosch, The Bosch Group, Kalamazoo
TEGriffiths, Consumers, Royal Oak w/o enclosure
GLKelterborn, Consumers, P-24-605A w/o enclosure
JHerdus, Consumers, Kalamazoo w/o enclosure
AMAurino, Consumers, Owosso w/o enclosure
PBarrese, SME, Plymouth w/o enclosure

KR059B031674

00603-24.RGN

soil and materials engineers, inc.

43980 Plymouth Oaks Blvd. Plymouth, MI 48170-2584 (734) 454-9900 FAX (734) 454-0629

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1964 38 2002 Years of Service

June 19, 2003

WORKING COPY

Mr. Robert G. Neumann, P.E.
Environmental & Laboratory Services Department
Consumers Energy Company
1945 W. Parnall Road, Room P-22-520
Jackson, Michigan 49201

RE: Groundwater Monitoring Report for March 2003
Kalamazoo MGP
Consumers Energy Company
Kalamazoo, Michigan
SME Project No. KE31823

Dear Mr. Neumann:

This letter presents the results for groundwater monitoring that SME conducted at the above referenced site on March 10 through 14, 17 and 18, 2003. Groundwater monitoring is being conducted in accordance with the scope of services that were presented in our correspondence to you dated March 5, 2003.

As indicated in our March 5, 2003 correspondence, the scope of services for groundwater monitoring to be conducted during the calendar year 2003 was modified as follows:

1. Groundwater samples are being collected from MW-4, P-4, MW102, MW103, MW105 and MW105D on an annual basis only because previous analytical results for these wells indicate the former manufactured gas plant (MGP) has not impacted them.

2. With the exception of P-2, groundwater samples from other site wells are not being analyzed for free and available cyanide since cyanide has not been detected at concentrations greater than the target detection limits (TDLs) since analysis for this parameter was implemented in February 2000.

3. The laboratory analysis of natural attenuation parameters, alkalinity, nitrate, dissolved iron and sulfate is also only being conducted on an annual basis for the groundwater monitoring event when all site wells are sampled. In addition, groundwater samples will continue to be measured in the field for pH, specific conductivity and dissolved oxygen (DO) on a quarterly basis.

Detroit
Bay City
Grand Rapids
Kalamazoo
Lansing
Toledo

Consultants in the geosciences, materials, and the environment

SCOPE OF SERVICES

The scope of services conducted for the groundwater monitoring event is presented below.

1. Measured groundwater elevations at MW-1, MW-2, MW-3, MW-4, P-1, P-2, P-2D, P-3, P-3D, P-4, MW101, MW101D, MW102, MW103, MW104, MW104D, MW105, MW105D, MW201R, MW202D, MW301, MW302, MW302I, MW302D, MW303, MW304, MW304D, MW401, MW401I, MW401D, MW402, MW402D, MW403, MW403D, MW404, MW404I and MW404D on March 10, 2003. In addition, the water elevation in Portage Creek was measured at Gauging Station 1. Figure No. 1 of Attachment A depicts the locations of the wells and gauging station.

2. Collected groundwater samples from MW-1, MW-2, MW-3, P-2, P-2D, P-3, P-3D, MW101, MW101D, MW104, MW104D, MW201R, MW202D, MW301, MW302, MW302I, MW302D, MW303, MW304, MW304D, MW401, MW401I, MW401D, MW402, MW402D, MW403, MW403D, MW404, MW404I and MW404D on March 10 through 14, 17 and 18, 2003.

   Each groundwater sample was submitted to Consumers Energy Company's (Consumers Energy's) Chemistry & Material Services Department (C&MSD) in Jackson, Michigan for laboratory analysis of benzene, toluene, ethylbenzene and xylene(s) (BTEX); polynuclear aromatic hydrocarbons (PAHs); and Michigan 10 Metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc). The groundwater sample from P-2 was also submitted for laboratory analysis of available cyanide.

   Groundwater samples were measured in the field for pH, specific conductivity and DO.

   There was insufficient water present in P-1 to collect a groundwater sample.

3. Prepared this summary letter report which includes the following:

   - a monitoring well location diagram;
   - a groundwater elevation diagram for March 10, 2003;
   - tabulated groundwater elevation data;
   - tabulated analytical test results;
   - isoconcentration and distribution diagrams; and
   - a copy of the laboratory analytical report.

PROCEDURES

Groundwater sampling procedures were consistent with those presented in the "Report of Fourth Phase of Remedial Investigation and Groundwater Monitoring Activities," dated January 13, 2003. Purge water collected from monitoring wells was returned to the corresponding well after sampling activities had been completed. Analytical methods and detection limits for BTEX, PAHs, the Michigan 10 Metals and cyanide (available) were also consistent with those presented in the "Report of Fourth Phase of Remedial Investigation and Groundwater Monitoring Activities," dated January 13, 2003.

RESULTS

The results for the March 2003 groundwater monitoring event are discussed below. The discussion of the results is supported by the attached figures and tables listed below.

- Figure No. 2 of Attachment A shows the groundwater elevation contours for groundwater levels measured in site monitoring wells on March 10, 2003.
- Figure Nos. 3, 4 and 5 of Attachment A present isoconcentration contours for benzene, xylenes(s) and naphthalene impact to groundwater at the water table, respectively.
- Figure Nos. 5, 6 and 7 of Attachment A present the distribution of benzene, xylenes(s) and naphthalene impact to groundwater below the water table, respectively.
- Table 1 of Attachment B lists groundwater elevations gauged on March 10, 2003, as well as groundwater elevations measured during previous groundwater monitoring events.
- Table 2 of Attachment B presents the analytical results for the March 2003 groundwater monitoring event, as well as analytical results from previous groundwater sampling events.
- Copies of analytical test results for the March 2003 groundwater monitoring event are presented in Attachment C.

Groundwater Elevations

For March 2003, groundwater was encountered at depths below ground surface ranging from approximately 4 feet at P-4 to approximately 15 feet at MW202D. With the exception of P-1, P-2 and P-4, groundwater elevations for March 2003 were lower by 0.05 to 0.49 feet compared with groundwater elevations measured in December 2002. Groundwater elevations at P-1, P-2 and P-4 were higher by 0.09 to 0.29 feet compared with the groundwater elevations measured in December 2002.

Groundwater elevations measured at P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D, MW304D, MW401I, MW401D, MW402D, MW403D, MW404I and MW404D were not used to interpret groundwater flow conditions at the water table because the well screens are set below the water table surface.

For the northern portion of the site, where former MGP production components, storage structures and/or transfer lines had been located, groundwater flow appears to be to the east with a calculated horizontal hydraulic gradient of 0.004 feet per foot. This horizontal hydraulic gradient was calculated between the 756.4 and 758.4 contour lines on the north side of the site. For the southern portion of the site, groundwater flow also appears to be generally to the east with a calculated horizontal hydraulic gradient of 0.007 feet per foot. This horizontal hydraulic gradient was also calculated between the 756.4 and 758.4 contour lines on the south side of the site. The interpreted groundwater flow direction and corresponding horizontal gradients are generally consistent with previous groundwater gauging events. However, a lower groundwater elevation at MW402 has been identified for

the last 3 consecutive groundwater monitoring events relative to the groundwater levels gauged in other monitoring wells in the same general area. The lower elevation at MW402 will continue to be evaluated during future groundwater monitoring events.

The measured elevation of Portage Creek at Gauging Station 1 was 756.16. This elevation is slightly lower than groundwater elevations measured at MW302, MW304 and MW403, which are located downstream of the gauging station, adjacent to the creek and are screened at the water table. However, the measured creek elevation was slightly higher than the groundwater elevation measured at MW404, which is also located downstream of the gauging station, adjacent to the creek and is screened at the water table.

Vertical hydraulic gradients were calculated for the following well pairs, P-2/P-2D, P-3/P-3D, MW101/MW202D, MW104/MW104D, MW105/MW105D, MW302/MW302D, MW304/MW304D, MW401/MW401D, MW402/MW402D, MW403/MW403D, and MW404/MW404D. The following table summarizes the calculated vertical gradients.

Well Pair Location	Gradient (feet per foot) and Direction
P-2/P-2D	0.028 – Downward
P-3/P-3D	0.013 – Downward
MW101/MW202D	0.021 – Downward
MW104/MW104D	0.005 – Upward
MW105/MW105D	0.024 – Downward
MW302/MW302D	0.007 – Upward
MW304/MW304D	0.005 – Upward
MW401/MW401D	0.005 – Downward
MW402/MW402D	No Apparent Gradient
MW403/MW403D	No Apparent Gradient
MW404/MW404D	0.005 – Upward

The calculated vertical hydraulic gradients are generally consistent with those calculated for December 2002 groundwater monitoring event. The calculated vertical gradients for well pairs located on the west side of Pitcher Street, P-2/P-2D, P-3/P-3D, MW101/MW202D, MW105/MW105D and MW401/MW401D, are downward, however, calculated vertical gradients for well pairs located on the east side of Pitcher Street, MW104/MW104D, MW302/MW302D, MW304/MW304D and MW404/MW404D are upward. The designation of "No Apparent Gradient" at MW402/MW402D and MW403/MW403D means the calculated hydraulic gradient was equal to or less than 0.001 feet per foot.

Analytical Results – MGP Parameters

BTEX and PAHs concentrations for all groundwater samples were less than the Part 201 Generic Commercial II Cleanup Criteria for Volatilization to Indoor Air Inhalation and the Part 201 Screening Levels for Flammability/Explosivity, Acute Inhalation and Water Solubility.

Comparisons of analytical results to Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and GSI are discussed below. As previously stated, the analytical results are summarized in Table 2 of Attachment B.

BTEX

BTEX concentrations at MW-1 and MW401 exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and/or the Part 201 Cleanup Criteria for GSI. In addition, the benzene concentration at MW401 also exceeded the Part 201 Cleanup Criterion for Groundwater Contact Protection.

Benzene, ethylbenzene and/or xylene(s) concentrations at P-2, P-3, MW101D, MW201R, MW301, MW304, MW401I, MW403, MW404I and MW404D exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and/or the Part 201 Cleanup Criteria for GSI. In addition, the benzene concentration at MW404I also exceeded the Part 201 Cleanup Criterion for Groundwater Contact Protection. The toluene concentrations at these wells were either less than the target detection levels (TDLs) or the Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

Benzene concentrations at P-3D and MW302I exceeded the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water. The toluene, ethylbenzene and xylene(s) concentrations at these wells were less than the Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

BTEX concentrations for groundwater samples collected from other wells were either less than the TDLs or the Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

PAHs

Acenaphthene, acenaphthylene, fluorene, fluoranthene, naphthalene and/or phenanthrene concentrations at P-2, P-3, MW101D, MW301, and MW401D exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and/or the Part 201 Cleanup Criteria for GSI. The concentrations of other PAHs at these wells either were less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

Acenaphthene and naphthalene concentrations at MW201R and MW404D exceeded the Part 201 Generic Commercial II Cleanup Criteria for Drinking Water and/or the Part 201 Cleanup Criteria for GSI. The concentrations of other PAHs at these wells either were less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

Naphthalene concentrations at MW-1, P-3D, MW304, MW401, MW401I, MW402, MW403 and MW404I exceeded the Part 201 Cleanup Criterion for GSI. In addition, the naphthalene concentration at MW401 exceeded the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water. The concentrations of other PAHs at these wells either were less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

PAH concentrations for groundwater samples collected from other wells were either less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

Michigan 10 Metals

The arsenic concentration at MW403 exceeded the Part 201 Generic Commercial II Cleanup Criterion for Drinking Water. The selenium and/or zinc concentrations at P-3 and MW104 exceeded the Part 201 Generic Commercial II Cleanup Criteria for GSI. The concentrations of other metals at these wells either were less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

Metals concentrations for groundwater samples collected from other wells were either less than the TDLs or Part 201 Generic Commercial II Cleanup Criteria and Screening Levels.

Cyanide

The available cyanide concentration was less than the TDL for the groundwater sample collected from P-2.

GENERAL

The next round of groundwater monitoring was implemented on June 9, 2003. If you have any questions or comments concerning this report, please call.

Sincerely,

SOIL AND MATERIALS ENGINEERS, INC.

for:

Nicholas B. Larabel
Project Geologist

Patrick G. Barrese, CPG
Senior Project Consultant

Attachments:

Attachment A: Figures

Attachment B: Tables

Attachment C: Analytical Report

h:\ke31823\2003\rpt6-13.doc\nbl\pgb\6-18-03

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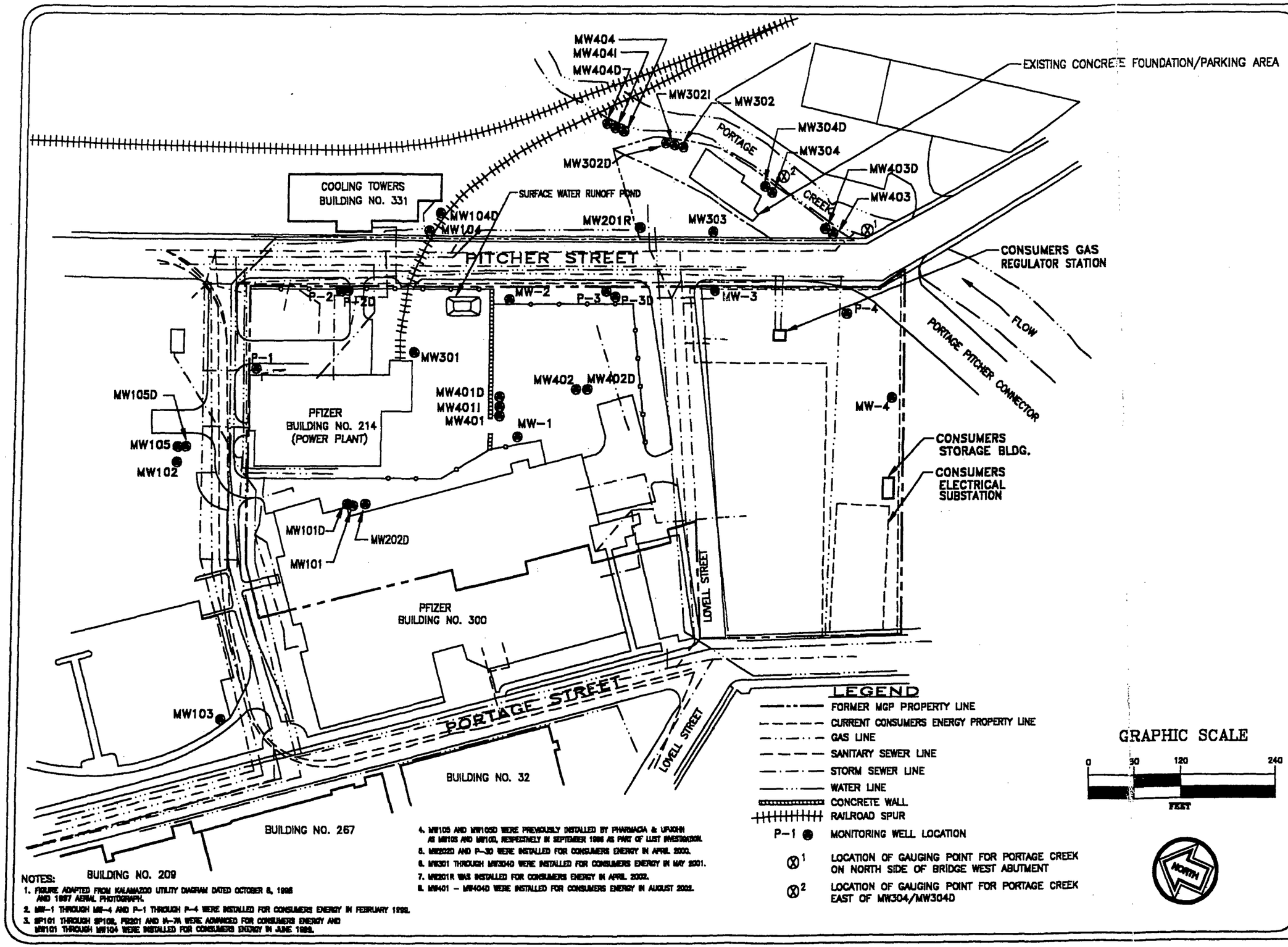
KR059B031681

ATTACHMENT A

FIGURES

Figure No. 1 - Monitoring Well Location Diagram
Figure No. 2 - Groundwater Elevation Contour Diagram, March 10, 2003
Figure No. 3 – Isoconcentration Diagram for Benzene Impact to Groundwater at the Water Table
Figure No. 4 – Isoconcentration Diagram for Xylene(s) Impact to Groundwater at the Water Table
Figure No. 5 – Isoconcentration Diagram for Naphthalene Impact to Groundwater at the Water Table
Figure No. 6 – Distribution of Benzene Impact to Groundwater Below the Water Table
Figure No. 7 – Distribution of Xylene(s) Impact to Groundwater Below the Water Table
Figure No. 8 – Distribution of Naphthalene Impact to Groundwater Below the Water Table

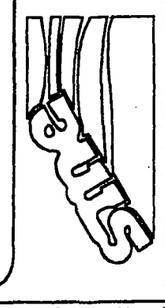


NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 6, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. SP101 THROUGH SP108, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW10D, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LIST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.

MONITORING WELL LOCATION DIAGRAM
FORMER KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 10-14-02
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

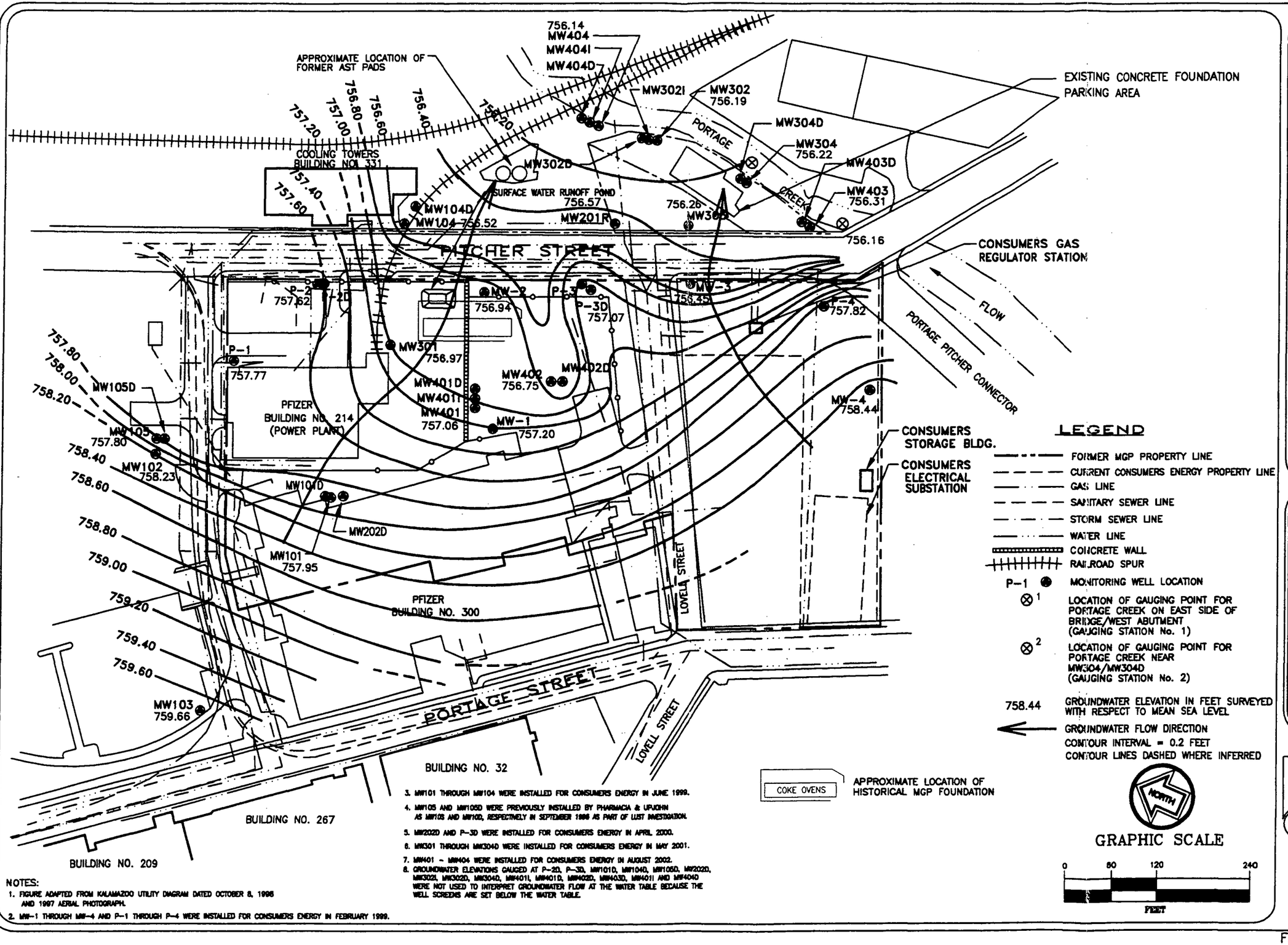


FILE NAME H:CECO\31823-11A.DWG

KR059B031683

Figure No. 1

01091



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW103 AND MW102, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LIST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW401 - MW404 WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
8. GROUNDWATER ELEVATIONS GAUGED AT P-2D, P-3D, MW101D, MW104D, MW105D, MW202D, MW302I, MW302D, MW304D, MW401I, MW401D, MW402D, MW403D, MW404I AND MW404D WERE NOT USED TO INTERPRET GROUNDWATER FLOW AT THE WATER TABLE BECAUSE THE WELL SCREENS ARE SET BELOW THE WATER TABLE.

GROUNDWATER ELEVATION CONTOUR DIAGRAM
MARCH 10, 2003
FORMER KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 03-18-03
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823B-8

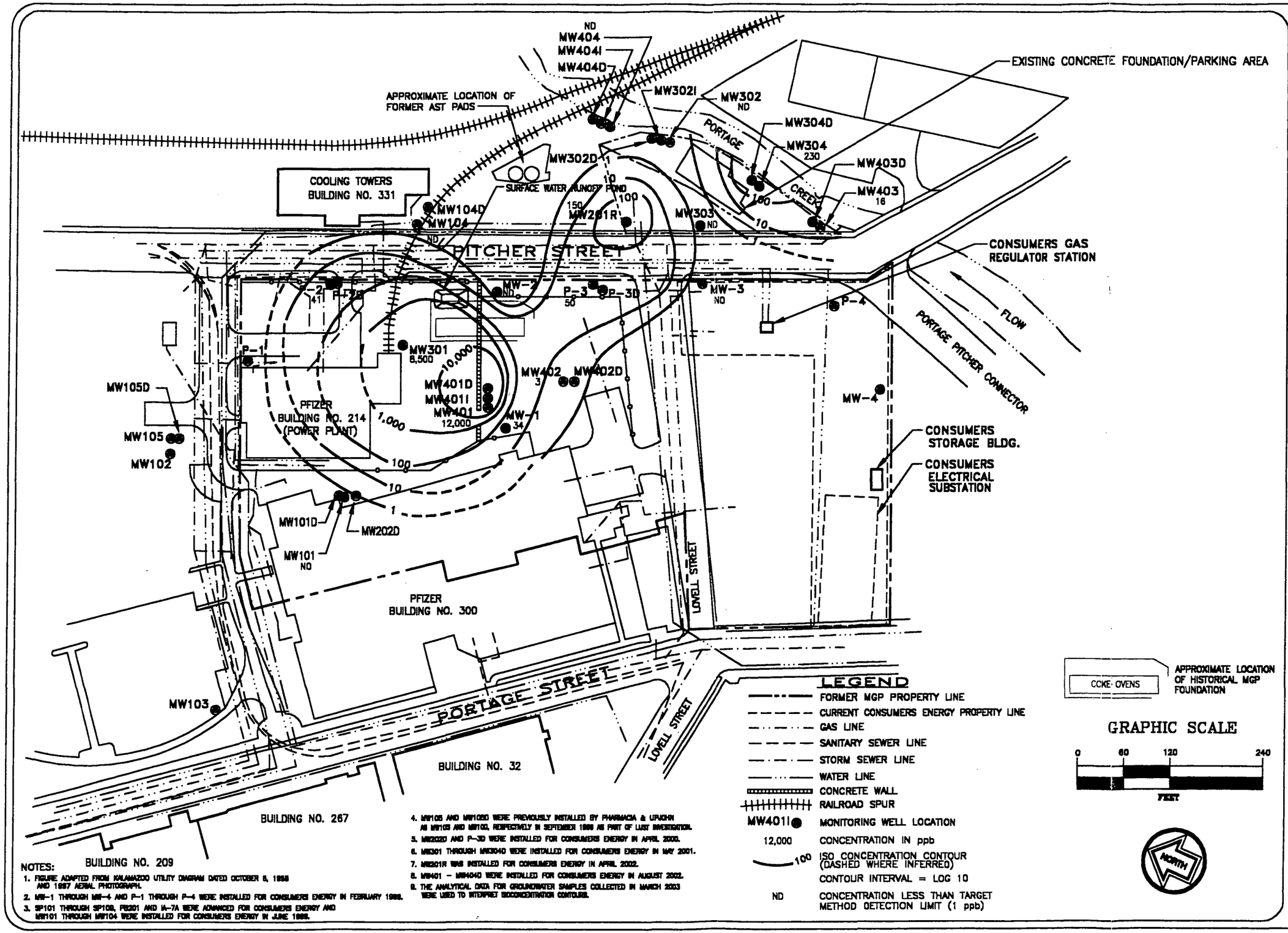
KR059B031684

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-14.DWG

Figure No. 2

01092



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. SP101 THROUGH SP108, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW105I, RESPECTIVELY IN SEPTEMBER 1998 AS PART OF LUST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. THE ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN MARCH 2003 WERE USED TO INTERPRET ISOCONCENTRATION CONTOURS.

ISOCONCENTRATION DIAGRAM FOR BENZENE IMPACT TO GROUNDWATER AT THE WATER TABLE
FORMER KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 05-05-03
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

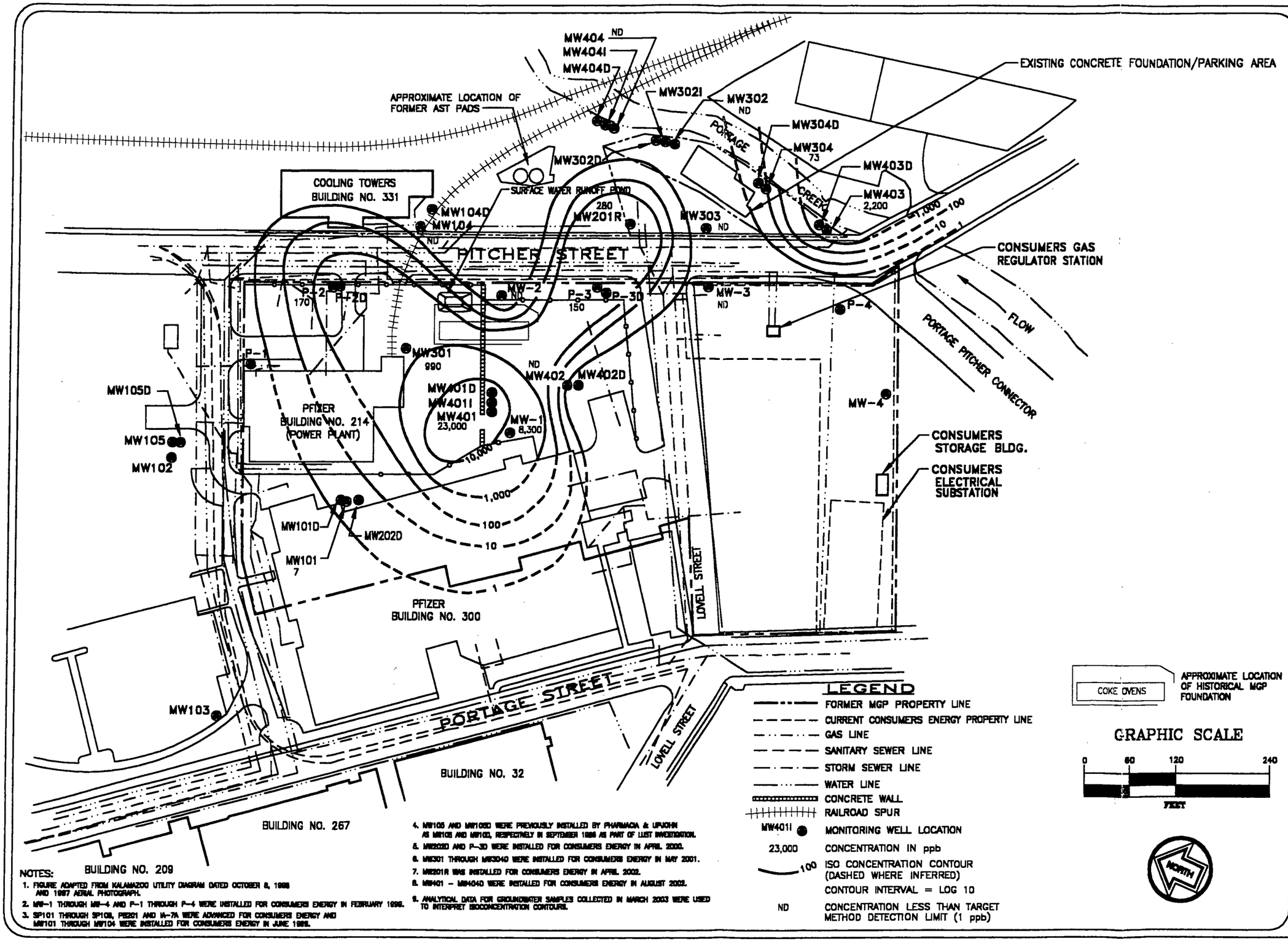
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11A.DWG

KR059B031685

Figure No. 3

01093



LEGEND

- FORMER MGP PROPERTY LINE
- CURRENT CONSUMERS ENERGY PROPERTY LINE
- GAS LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- WATER LINE
- CONCRETE WALL
- RAILROAD SPUR
- MW401I — MONITORING WELL LOCATION
- 23,000 — CONCENTRATION IN ppb
- 100 — ISO CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- CONTOUR INTERVAL = LOG 10
- ND — CONCENTRATION LESS THAN TARGET METHOD DETECTION LIMIT (1 ppb)

NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1998.
3. SP101 THROUGH SP108, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1998.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW103, RESPECTIVELY IN SEPTEMBER 1998 AS PART OF LIST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN MARCH 2003 WERE USED TO INTERPRET ISOCONCENTRATION CONTOURS.

ISOCONCENTRATION DIAGRAM FOR XYLENES IMPACT TO GROUNDWATER AT THE WATER TABLE
FORMER KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 05-05-03
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

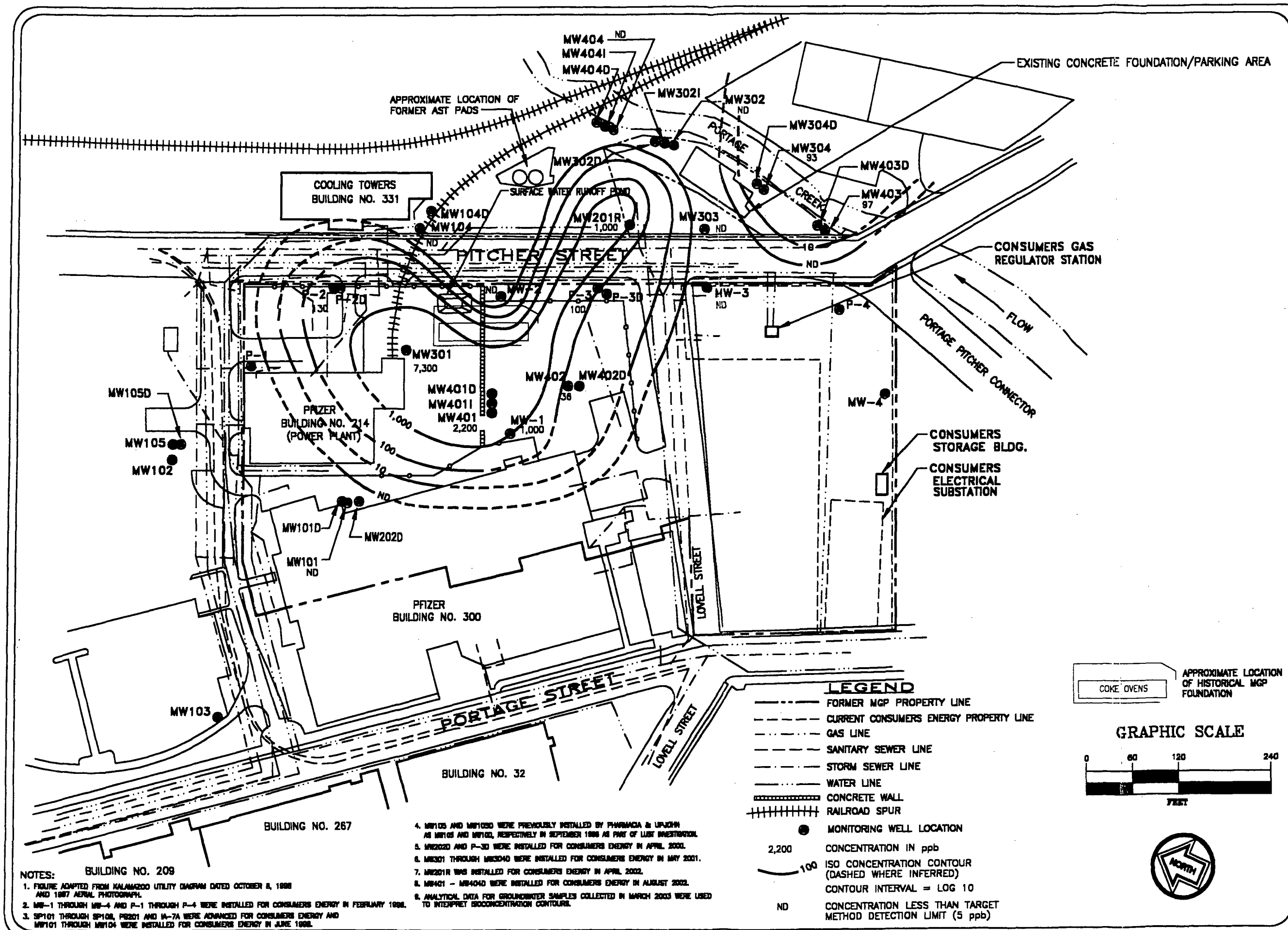
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11A.DWG

KR059B031686

Figure No. 4

01094



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1998.
3. SP101 THROUGH SP108, PS201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1998.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW102, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LIST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. ANALYTICAL DATA FOR GROUNDWATER SAMPLES COLLECTED IN MARCH 2003 WERE USED TO INTERPRET ISOCONCENTRATION CONTOURS.

ISOCONCENTRATION DIAGRAM FOR NAPHTHALENE IMPACT TO GROUNDWATER AT THE WATER TABLE
FORMER KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 05-05-03
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

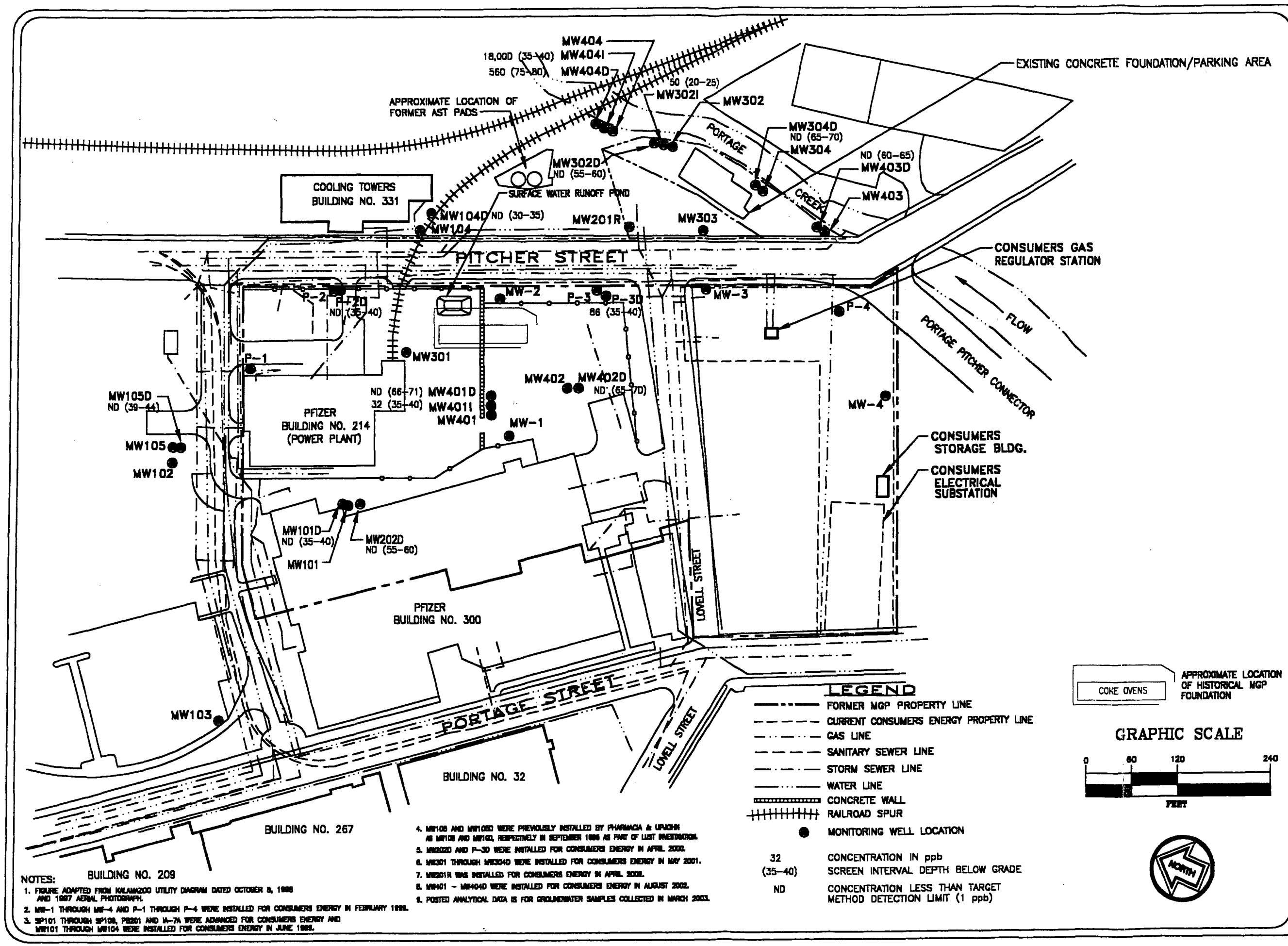
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11A.DWG

KR059B031687

Figure No. 5

01095

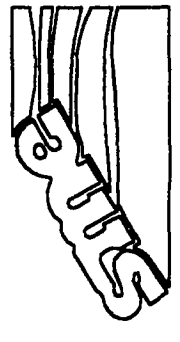


NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 6, 1986 AND 1987 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1999.
3. SP101 THROUGH SP109, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1999.
4. MW108 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW108 AND MW103, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LUST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 - MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. POSTED ANALYTICAL DATA IS FOR GROUNDWATER SAMPLES COLLECTED IN MARCH 2003.

DISTRIBUTION OF BENZENE IMPACT TO GROUNDWATER BELOW THE WATER TABLE
FORMER KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 5-8-03
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

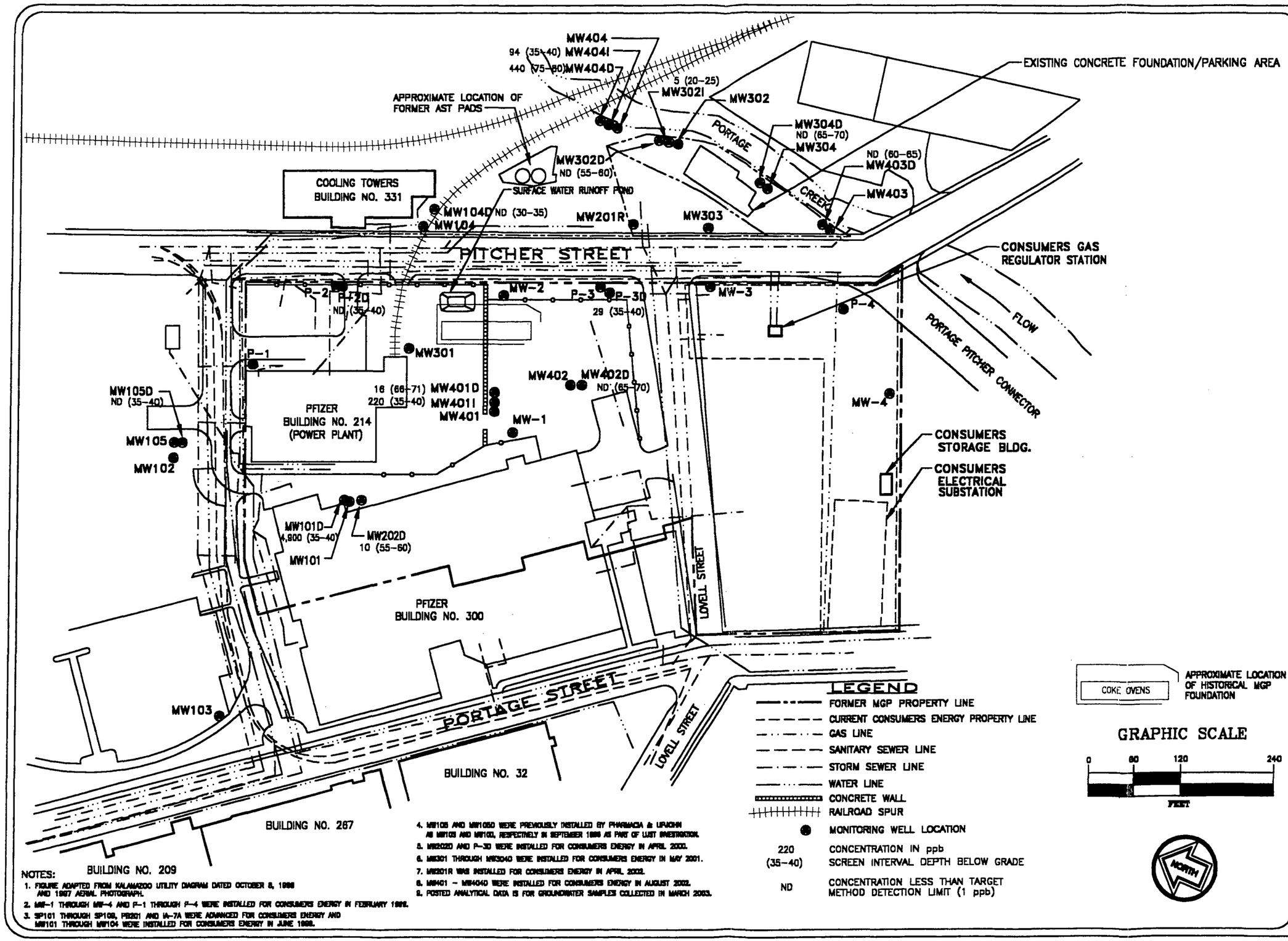


FILE NAME H:CECO\31823-11A.DWG

KR059B031688

Figure No. 6

01095



NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 8, 1998 AND 1997 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1992.
3. SP101 THROUGH SP103, PB201 AND IA-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1998.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW103 AND MW100, RESPECTIVELY IN SEPTEMBER 1996 AS PART OF LIST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. POSTED ANALYTICAL DATA IS FOR GROUNDWATER SAMPLES COLLECTED IN MARCH 2003.

DISTRIBUTION OF XYLENES IMPACT TO GROUNDWATER BELOW THE WATER TABLE
FORMER KALAMAZOO MGP
CONSUMERS ENERGY COMPANY
KALAMAZOO, MICHIGAN

DATE: 5-08-03
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

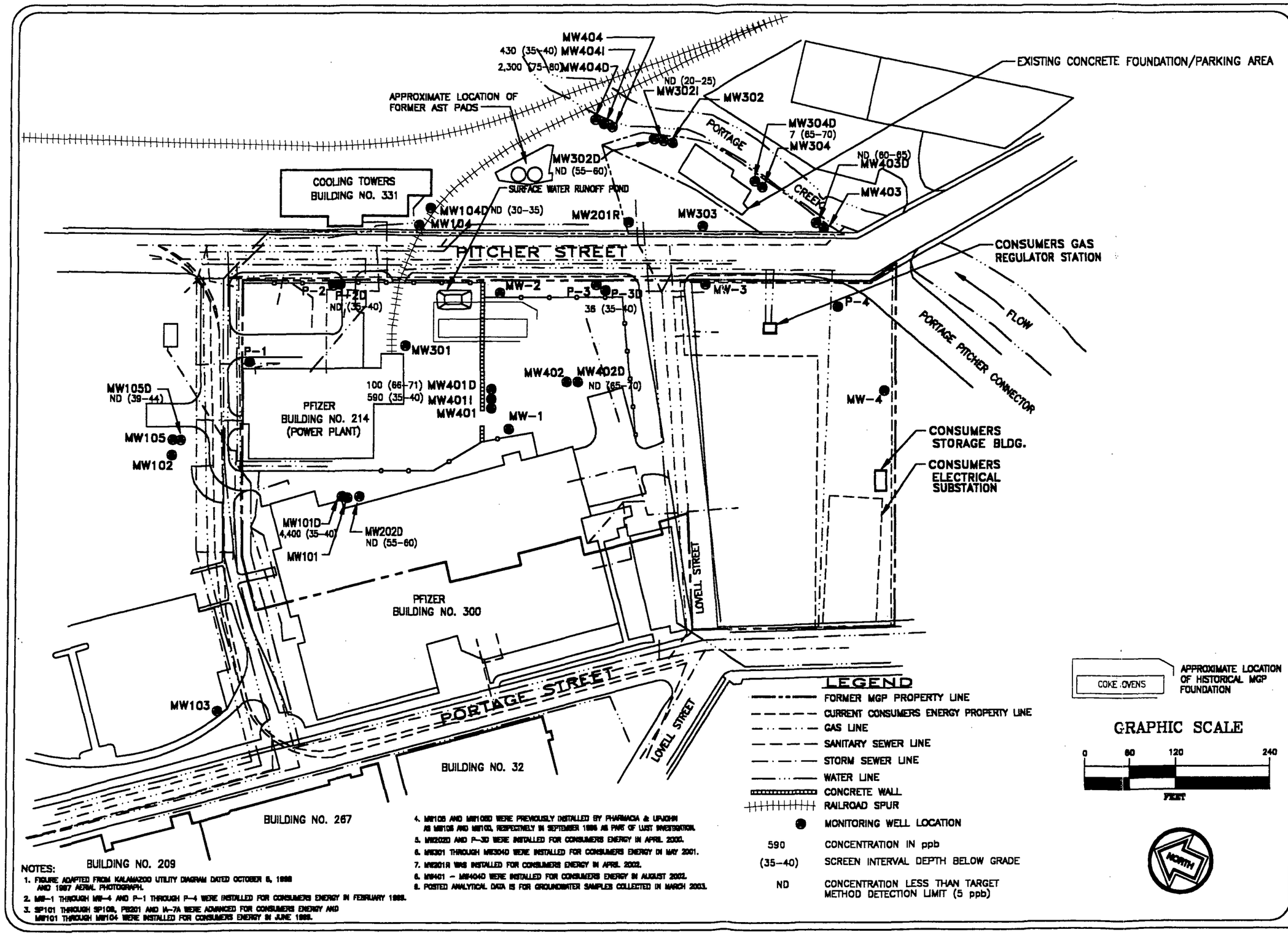
BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11A.DWG

KR059B031689

Figure No. 7

01097



LEGEND

- FORMER MGP PROPERTY LINE
- CURRENT CONSUMERS ENERGY PROPERTY LINE
- GAS LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- WATER LINE
- CONCRETE WALL
- RAILROAD SPUR
- MONITORING WELL LOCATION
- 590 — CONCENTRATION IN ppb
- (35-40) — SCREEN INTERVAL DEPTH BELOW GRADE
- ND — CONCENTRATION LESS THAN TARGET METHOD DETECTION LIMIT (5 ppb)

NOTES:

1. FIGURE ADAPTED FROM KALAMAZOO UTILITY DIAGRAM DATED OCTOBER 6, 1988 AND 1987 AERIAL PHOTOGRAPH.
2. MW-1 THROUGH MW-4 AND P-1 THROUGH P-4 WERE INSTALLED FOR CONSUMERS ENERGY IN FEBRUARY 1988.
3. SP101 THROUGH SP108, PB201 AND W-7A WERE ADVANCED FOR CONSUMERS ENERGY AND MW101 THROUGH MW104 WERE INSTALLED FOR CONSUMERS ENERGY IN JUNE 1988.
4. MW105 AND MW105D WERE PREVIOUSLY INSTALLED BY PHARMACIA & UPJOHN AS MW105 AND MW102, RESPECTIVELY IN SEPTEMBER 1986 AS PART OF LIST INVESTIGATION.
5. MW202D AND P-3D WERE INSTALLED FOR CONSUMERS ENERGY IN APRIL 2000.
6. MW301 THROUGH MW304D WERE INSTALLED FOR CONSUMERS ENERGY IN MAY 2001.
7. MW201R WAS INSTALLED FOR CONSUMERS ENERGY IN APRIL 2002.
8. MW401 – MW404D WERE INSTALLED FOR CONSUMERS ENERGY IN AUGUST 2002.
9. POSTED ANALYTICAL DATA IS FOR GROUNDWATER SAMPLES COLLECTED IN MARCH 2003.

DISTRIBUTION OF NAPHTHALENE IMPACT TO GROUNDWATER BELOW THE WATER TABLE FORMER KALAMAZOO MGP CONSUMERS ENERGY COMPANY KALAMAZOO, MICHIGAN

DATE: 5-08-03
SCALE: 1" = 120'
DRAFTER: ARR/MBA/GM
JOB: KE 31823

BAY CITY KALAMAZOO LANSING
PLYMOUTH TOLEDO

FILE NAME H:CECO\31823-11A.DWG

KR059B031690

Figure No. 8

01090

KR059B031691

ATTACHMENT B

TABLES

Table 1 - Groundwater Elevation Summary
Table 2 - Analytical Summary - Groundwater

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	8.47	758.04	8.77	757.74	9.13	757.38
MW-2	763.00	762.56	759.6 - 754.6	4.89	757.67	5.27	757.29	5.66	756.90
MW-3	761.43	760.86	758.2 - 753.2	3.63	757.23	3.82	757.04	4.32	756.54
MW-4	761.70	760.99	759.2 - 754.2	2.68	758.31	3.02	757.97	3.45	757.54
P-1	768.91	768.38	762.4 - 757.4	NI	NI	10.44	757.94	10.50	757.88
P-2	766.95	766.35	759.4 - 754.4	8.17	758.18	8.38	757.97	8.87	757.48
P-2D	766.84	766.61	731.7 - 726.7	NI	NI	NI	NI	9.61	757.00
P-3	761.87	761.35	758.6 - 753.6	3.82	757.53	4.16	757.19	4.61	756.74
P-4	761.95	761.51	758.7 - 753.7	3.39	758.12	3.95	757.56	4.46	757.05
MW101	771.74	771.41	759.6 - 754.6	NI	NI	NI	NI	13.28	758.13
MW101D	771.59	770.91	736.5 - 731.5	NI	NI	NI	NI	13.19	757.72
MW102	770.02	769.88	760.1 - 755.1	NI	NI	NI	NI	11.32	758.56
MW103	771.99	771.52	761.3 - 756.3	NI	NI	NI	NI	11.42	760.10
MW104	763.07	762.74	758.4 - 753.4	NI	NI	NI	NI	6.04	756.70
MW104D	762.92	762.66	732.8 - 727.8	NI	NI	NI	NI	5.81	756.85
MW105	770.61	770.31	760.1 - 755.1	NG	NG	NG	NG	11.77 (5)	758.54
MW105D	770.61	770.20	731.9 - 726.9	NG	NG	NG	NG	12.85 (5)	757.35

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) NG = Groundwater elevation not gauged.
(5) Groundwater elevations for MW105 and MW105D were gauged on June 23, 1999.

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL) (2)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.) (2)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	9.58	756.93	7.92	758.59	9.17	757.34
MW-2	763.00	762.56	759.6 - 754.6	6.04	756.52	4.24	758.32	5.44	757.12
MW-3	761.43	760.86	758.2 - 753.2	4.62	756.24	3.23	757.63	4.35	756.51
MW-4	761.70	760.99	759.2 - 754.2	3.78 (4)	757.21	2.52	758.47	3.38	757.61
P-1	768.91	768.38	762.4 - 757.4	DRY	DRY	9.27	759.11	10.57	757.81
P-2	766.95	766.35	759.4 - 754.4	8.94	757.41	7.54	758.81	8.35	758.00
P-2D	766.84	766.61	731.7 - 726.7	10.00	756.61	8.29	758.32	9.59	757.02
P-3	761.87	761.35	758.6 - 753.6	4.82	756.53	3.33	758.02	3.95	757.40
P-3D	762.58	762.16	727.6 - 722.6	NI	NI	3.49	758.67	—	—
P-3D (5)	761.81	761.39	727.6 - 722.6	—	—	—	—	4.52	756.87
P-4	761.95	761.51	758.7 - 753.7	4.42 (4)	757.09	3.30	758.21	4.45	757.06
MW101	771.74	771.41	759.6 - 754.6	13.80	757.61	12.24	759.17	13.16	758.25
MW101D	771.59	770.91	736.5 - 731.5	13.63	757.28	12.01	758.90	13.35	757.56
MW102	770.02	769.88	760.1 - 755.1	11.93	757.95	10.10	759.78	11.44	758.44
MW103	771.99	771.52	761.3 - 756.3	12.12	759.40	10.46	761.06	11.63	759.89
MW104	763.07	762.74	758.4 - 753.4	6.34	756.40	4.65	758.09	6.01	756.73
MW104D	762.92	762.66	732.8 - 727.8	6.18	756.48	4.46	758.20	5.80	756.86
MW105	770.61	770.31	760.1 - 755.1	12.42	757.89	10.62	759.69	11.92	758.39
MW105D	770.61	770.20	731.9 - 726.9	13.28	756.92	11.58	758.62	12.89	757.31
MW201	761.78	761.31	759.8 - 754.8	NI	NI	3.12	758.19	4.28	757.03
MW202D	771.89	771.53	716.1 - 711.1	NI	NI	13.07	758.46	14.35	757.18

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) NI = Monitoring well not installed at time of gauging event.
(4) Groundwater elevations for MW-4 and P-4 were gauged on February 22, 2000.
(5) Top of casing elevations for P3 and P3D were resurveyed as a result of landscaping surface modifications+A140.

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	7.92	758.59	8.45	758.06	7.52	758.99
MW-2	763.00	762.56	759.6 - 754.6	4.00	758.56	4.69	757.87	3.69	758.87
MW-3	761.43	760.86	758.2 - 753.2	2.99	757.87	3.72	757.14	2.65	758.21
MW-4 (3)	763.08	762.42	759.2 - 754.2	3.64	758.78	4.50	757.92	3.25	759.17
P-1	768.91	768.38	762.4 - 757.4	9.38	759.00	9.82	758.56	8.94	759.44
P-2	766.95	766.35	759.4 - 754.4	7.61	758.74	8.09	758.26	7.38	758.97
P-2D	766.84	766.61	731.7 - 726.7	8.16	758.45	8.72	757.89	7.77	758.84
P-3	761.87	761.35	758.6 - 753.6	2.88	758.47	3.47	757.88	2.55	758.80
P-3D	761.81	761.39	727.6 - 722.6	3.06	758.33	3.66	757.73	2.70	758.69
P-4	761.95	761.51	758.7 - 753.7	2.93	758.58	3.94	757.57	– (5)	– (5)
MW101	771.74	771.41	759.6 - 754.6	12.26	759.15	12.60	758.81	11.75	759.66
MW101D	771.59	770.91	736.5 - 731.5	11.94	758.97	12.35	758.56	11.48	759.43
MW102	770.02	769.88	760.1 - 755.1	10.36	759.52	10.68	759.20	9.53	760.35
MW103	771.99	771.52	761.3 - 756.3	10.76	760.76	11.10	760.42	10.04	761.48
MW104	763.07	762.74	758.4 - 753.4	4.64	758.10	5.27	757.47	4.38	758.36
MW104D	762.92	762.66	732.8 - 727.8	4.34	758.32	4.94	757.72	3.96	758.70
MW105	770.61	770.31	760.1 - 755.1	10.84	759.47	11.17	759.14	10.04	760.27
MW105D	770.61	770.20	731.9 - 726.9	11.51	758.69	12.04	758.16	11.09	759.11
MW201 (4)	761.78	761.31	759.8 - 754.8	3.05	758.26	3.67	757.64	NG	NG
MW202D	771.89	771.53	716.1 - 711.1	12.96	758.57	13.50	758.03	12.55	758.98
MW301	762.93	762.54	757.4 - 752.4	4.02	758.52	4.63	757.91	3.69	758.85
MW302	761.48	761.07	757.4 - 752.4	3.48	757.59	4.14	756.93	3.17	757.90
MW302I	761.51	760.97	741.2 - 736.2	3.41	757.56	4.07	756.90	3.10	757.87
MW302D	761.49	761.19	705.9 - 700.9	2.95	758.24	3.56	757.63	2.59	758.60
MW303	761.25	760.78	758.2 - 753.2	3.18	757.60	3.79	756.99	2.83	757.95
MW304	761.96	761.54	756.4 - 751.4	4.00	757.54	4.67	756.87	3.68	757.86
MW304D	761.96	761.63	697.1 - 692.1	3.42	758.21	4.04	757.59	3.08	758.55
Gauging Station No. 1	—	759.41	—	3.00	756.41	3.05	756.36	1.65	757.76

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) Top of casing and ground level elevations for MW-4 were resurveyed as a result of landscaping surface modifications.
(4) NG = Groundwater elevation not gauged.
(5) The groundwater elevation gauged at P4 appeared to anomalous compared to historical elevation data.

KR059B031695

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TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID	Ground Surface Elevation (ft. MSL)	TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
				Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)	Depth to Water from TOC (ft.)	Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	8.38	758.13	9.13	757.38	9.22	757.29
MW-2	763.00	762.56	759.6 - 754.6	4.72	757.84	5.39	757.17	5.55	757.01
MW-3	761.43	760.86	758.2 - 753.2	3.66	757.20	4.26	756.60	4.35	756.51
MW-4 (3)	763.08	762.42	759.2 - 754.2	3.73	758.69	3.90	758.52	3.65	758.77
P-1	768.91	768.38	762.4 - 757.4	9.84	758.54	10.57	757.81	10.72	757.66
P-2	766.95	766.35	759.4 - 754.4	8.19	758.16	8.69	757.66	8.82	757.53
P-2D	766.84	766.61	731.7 - 726.7	8.81	757.80	9.65	756.96	9.72	756.89
P-3	761.87	761.35	758.6 - 753.6	3.38	757.97	3.58	757.77	4.18	757.17
P-3D	761.81	761.39	727.6 - 722.6	3.75	757.64	4.60	756.79	4.65	756.74
P-4	761.95	761.51	758.7 - 753.7	3.30	758.21	3.58	757.93	3.98	757.53
MW101	771.74	771.41	759.6 - 754.6	12.56	758.85	13.28	758.13	13.35	758.06
MW101D	771.59	770.91	736.5 - 731.5	12.35	758.56	13.11	757.80	13.21	757.70
MW102	770.02	769.88	760.1 - 755.1	10.64	759.24	11.37	758.51	11.55	758.33
MW103	771.99	771.52	761.3 - 756.3	10.94	760.58	11.45	760.07	11.76	759.76
MW104	763.07	762.74	758.4 - 753.4	5.00	757.74	6.02	756.72	6.12	756.62
MW104D	762.92	762.66	732.8 - 727.8	5.33	757.33	5.85	756.81	5.91	756.75
MW105	770.61	770.31	760.1 - 755.1	11.12	759.19	11.87	758.44	12.40	757.91
MW105D	770.61	770.20	731.9 - 726.9	12.10	758.10	12.92	757.28	13.02	757.18
MW201R	761.40	760.83	759.8 - 754.8	3.51	757.32	4.10	756.73	4.18	756.65
MW202D	771.89	771.53	716.1 - 711.1	13.58	757.95	13.38	758.15	14.46	757.07
MW301	762.93	762.54	757.4 - 752.4	4.65	757.89	5.36	757.18	5.48	757.06
MW302	761.48	761.07	757.4 - 752.4	4.20	756.87	4.75	756.32	4.80	756.27
MW302I	761.51	760.97	741.2 - 736.2	4.12	756.85	4.65	756.32	4.70	756.27
MW302D	761.49	761.19	705.9 - 700.9	3.68	757.51	4.53	756.66	4.57	756.62
MW303	761.25	760.78	758.2 - 753.2	3.79	756.99	4.40	756.38	4.03	756.75
MW304	761.96	761.54	756.4 - 751.4	4.68	756.86	5.19	756.35	5.24	756.30
MW304D	761.96	761.63	697.1 - 692.1	4.14	757.49	5.00	756.63	5.04	756.59
MW401	763.77	766.30	758.8 - 748.8	NI	NI	9.03	757.27	9.13	757.17
MW401I	763.78	766.27	728.7 - 723.7	NI	NI	9.32	756.95	9.40	756.87
MW401D	763.81	766.28	697.9 - 692.7	NI	NI	9.33	756.95	9.41	756.87
MW402	763.38	762.91	759.3 - 754.3	NI	NI	5.97	756.94	6.10	756.81
MW402D	763.38	762.99	698.0 - 693.0	NI	NI	6.09	756.90	6.15	756.84
MW403	761.92	761.61	758.8 - 753.8	NI	NI	5.21	756.40	5.18	756.43
MW403D	762.03	761.72	701.6 - 696.6	NI	NI	5.12	756.60	5.28	756.44
MW404	763.12	762.67	759.7 - 754.7	NI	NI	6.41	756.26	6.43	756.24
MW404I	763.21	762.92	728.2 - 723.2	NI	NI	6.33	756.59	6.36	756.56
MW404D	763.09	762.82	688.0 - 683.0	NI	NI	6.20	756.62	6.25	756.57
Gauging Station No. 1	—	759.41	—	—	—	3.20	756.21	NG	NG
Gauging Station No. 2	—	756.69	—	—	—	0.49	756.20	2.70	753.99

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) Top of casing and ground level elevations for MW-4 were resurveyed as a result of landscaping surface modifications.
(4) NG = Groundwater elevation not gauged.
(5) NI = Monitoring well not installed at time of gauging event.

TABLE 1
KALAMAZOO MGP
GROUNDWATER ELEVATION SUMMARY
SME Project No. KE31823

Well ID (1)	Ground Surface Elevation (ft. MSL)	T-TOC Elevation (ft. MSL)	Screen Interval Elevation (ft. MSL)	Depth to Water (2) from TOC (ft.)	Static Groundwater Elevation (ft.)
MW-1	767.05	766.51	760.0 - 755.0	9.31	757.20
MW-2	763.00	762.56	759.6 - 754.6	5.62	756.94
MW-3	761.43	760.86	758.2 - 753.2	4.41	756.45
MW-4 (3)	763.08	762.42	759.2 - 754.2	3.98	758.44
P-1	768.91	768.38	762.4 - 757.4	10.61	757.77
P-2	766.95	766.35	759.4 - 754.4	8.73	757.62
P-2D	766.84	766.61	731.7 - 726.7	9.77	756.84
P-3	761.87	761.35	758.6 - 753.6	4.28	757.07
P-3D	761.81	761.39	727.6 - 722.6	4.73	756.66
P-4	761.95	761.51	758.7 - 753.7	3.69	757.82
MW101	771.74	771.41	759.6 - 754.6	13.46	757.95
MW101D	771.59	770.91	736.5 - 731.5	13.30	757.61
MW102	770.02	769.88	760.1 - 755.1	11.65	758.23
MW103	771.99	771.52	761.3 - 756.3	11.86	759.66
MW104	763.07	762.74	758.4 - 753.4	6.22	756.52
MW104D	762.92	762.66	732.8 - 727.8	6.00	756.66
MW105	770.61	770.31	760.1 - 755.1	12.51	757.80
MW105D	770.61	770.20	731.9 - 726.9	13.07	757.13
MW201R	761.40	760.83	759.8 - 754.8	4.26	756.57
MW202D	771.89	771.53	716.1 - 711.1	14.51	757.02
MW301	762.93	762.54	757.4 - 752.4	5.57	756.97
MW302	761.48	761.07	757.4 - 752.4	4.88	756.19
MW302I	761.51	760.97	741.2 - 736.2	4.79	756.18
MW302D	761.49	761.19	705.9 - 700.9	4.65	756.54
MW303	761.25	760.78	758.2 - 753.2	4.52	756.26
MW304	761.96	761.54	756.4 - 751.4	5.32	756.22
MW304D	761.96	761.63	697.1 - 692.1	5.12	756.51
MW401	763.77	766.30	758.8 - 748.8	9.24	757.06
MW401I	763.78	766.27	728.7 - 723.7	9.49	756.78
MW401D	763.81	766.28	697.9 - 692.7	9.51	756.77
MW402	763.38	762.91	759.3 - 754.3	6.16	756.75
MW402D	763.38	762.99	698.0 - 693.0	6.21	756.78
MW403	761.92	761.61	758.8 - 753.8	5.30	756.31
MW403D	762.03	761.72	701.6 - 696.6	5.36	756.36
MW404	763.12	762.67	759.7 - 754.7	6.53	756.14
MW404I	763.21	762.92	728.2 - 723.2	6.46	756.46
MW404D	763.09	762.82	688.0 - 683.0	6.34	756.48
Gauging Station No. 1	—	759.41	—	3.25	756.16
Gauging Station No. 2	—	756.69	—	2.73	753.96

Notes:
(1) TOC = Top of Casing.
(2) ft. MSL = feet above mean sea level.
(3) Top of casing and ground level elevations for MW-4 were resurveyed as a result of landscaping surface modifications.
(4) NG = Groundwater elevation not gauged.
(5) NI = Monitoring well not installed at time of gauging event.

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW-1 7-12 02/08/99	MW-1 7-12 06/22/99	MW-1 7-12 02/15/00	MW-1 7-12 05/22/00	MW-1 7-12 11/07/00	MW-1 7-12 05/31/01	MW-1 7-12 12/12/01	MW-1 7-12 03/15/02	MW-1 7-12 06/13/02	MW-1 7-12 09/23/02	MW-1 7-12 12/19/02	MW-1 7-12 03/17/03
VOLATILES														
Benzene		200					ND	ND	ND	ND	NR	4	17	31
Toluene										ND	NR			300
Ethylbenzene											NR			
Xylenes											NR			
SEMI-VOLATILES PAHs														
Naphthalene	1,500										NR		300	900
2-Methylnaphthalene	750	ID	21	7	ND	ND	ND	17	20	5	NR	ND	15	19
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
INORGANICS														
Arsenic	50	150	ND	8	13	ND	6	7	11	13	14	18	16	14
Barium	2,000	1,200	ND	190	130	160	220	290	110	200	260	320	250	230
Chromium	100	11**	ND	ND	ND	ND	7	ND	6	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
NATURAL ATTENUATION PARAMETERS														
pH (ph Units)	NL	NL	NE	NE	7.26	7.1	--	7.11	7.31	7.28	7.12	7.18	7.44	7.33
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,920	1,960	3,590	1,482	1,208	2,210	1,873	NE	2,860	2,030
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.65	0.35	0.38	0.4	0.3	0.48	0.32	0.53	0.8	0.98
Iron	30,000	NA	NE	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NE
Nitrate	10,000	NA	NE	NE	ND	160	ND	270	ND	310	ND	ND	ND	NE
Sulfate	250,000	NA	NE	NE	33,000	110,000	61,000	73,000	33,000	36,000	22,000	30,000	19,000	NE
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	470,000	420,000	400,000	470,000	390,000	370,000	420,000	470,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

	[illegible]	[illegible]	MW-2 3-8 02/08/99	MW-2 3-8 06/22/99	MW-2 3-8 02/15/00	MW-2 3-8 05/22/00	MW-2 3-8 11/06/00	MW-2 3-8 05/31/01	MW-2 3-8 12/11/01	MW-2 3-8 03/13/02	MW-2 3-8 06/12/02	MW-2 3-8 09/18/02	MW-2 3-8 12/16/02	MW-2 3-8 03/12/03
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]														
Benzene	5	200	1	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Toluene	790	140	4	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Xylenes	280	35	7	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
[illegible] PAHs														
Naphthalene	1,500	13	6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
INORGANICS														
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	98	[illegible]	ND	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	100	30	60	46	63	57	56	45	53	69
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
NATURAL ATTENUATION PARAMETERS														
pH (pH units)	NL	NL	NE	NE	5.5	6.59	6.50	6.43	6.19	6.51	6.45	6.46	6.3	6.31
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	3,050	860	2,110	1,267	939	1,890	1,882	1,805	2,180	1,833
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.84	0.51	0.40	0.52	0.37	0.48	0.46	0.38	1.13	1.41
Iron	[illegible]	NA	NE	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	19,000	NE
Nitrate	10,000	NA	NE	NE	140	1,100	600	850	100	490	ND	310	ND	NE
Sulfate	[illegible]	NA	NE	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NE
Alkalinity (as CaCO3)	NL	NL	NE	NE	26,000	130,000	91,000	110,000	82,000	130,000	160,000	140,000	86,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW-3 3-8 02/08/99	MW-3 3-8 06/22/99	MW-3 3-8 02/15/00	MW-3 3-8 05/24/00	MW-3 3-8 11/06/00	MW-3 3-8 05/30/01	MW-3 3-8 12/11/01	MW-3 3-8 03/12/02	MW-3 3-8 06/11/02	MW-3 3-8 09/17/02	MW-3 3-8 12/12/02	MW-3 3-8 03/11/03
BTEX														
Benzene	[illegible]	[illegible]	3	ND	ND	ND	ND	[illegible]	ND	ND	NR	ND	ND	ND
Toluene	790	140	1	ND	ND	ND	ND	13	ND	ND	NR	ND	ND	ND
Ethylbenzene	[illegible]	[illegible]	1	ND	ND	ND	ND	[illegible]	ND	ND	NR	ND	ND	ND
Xylenes	[illegible]	[illegible]	3	ND	ND	ND	ND	[illegible]	ND	ND	NR	ND	ND	ND
PAHs														
Naphthalene	1,500	[illegible]	ND	ND	ND	ND	ND	[illegible]	ND	ND	NR	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
INORGANICS														
Arsenic	50	150	13	8	8	ND	7	ND	ND	ND	ND	6	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	150	110	150
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	13	ND	ND	17	12	11
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
NATURAL ATTENUATION PARAMETERS														
pH (pH units)	NL	NL	NE	NE	7.27	7.7	7.22	7.71	7.43	7.86	7.61	7.34	7.6	7.3
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	1,290	1,380	860	473	362	167	436	911	NE	1,688
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.53	0.7	0.48	0.85	0.63	0.72	0.66	0.51	1.11	--
Iron	300	NA	NE	NE	110	ND	[illegible]	64	160	22	ND	170	150	NE
Nitrate	10,000	NA	NE	NE	ND	ND	ND	1,300	ND	590	110	ND	ND	NE
Sulfate	250,000	NA	NE	NE	33,000	26,000	25,000	17,000	8,900	5,700	10,000	19,000	18,000	NE
Alkalinity (as CaCO3)	NL	NL	NE	NE	260,000	230,000	290,000	190,000	210,000	110,000	180,000	300,000	290,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW-4 3-8 02/08/99	MW-4 3-8 06/22/99	MW-4 3-8 01/12/00	MW-4 3-8 05/24/00	MW-4 3-8 11/06/00	MW-4 3-8 05/30/01	MW-4 3-8 12/11/01	MW-4 3-8 03/13/02	MW-4 3-8 06/11/02	MW-4 3-8 09/17/02	MW-4 3-8 12/11/02
BTEX													
Benzene	5	[illegible]	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Xylenes	280	[illegible]	2	ND	ND	ND	ND	ND	ND	ND	NR	3	ND
PAHs													
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
INORGANICS													
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	ND	6	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	15	ND	40	17	14	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS													
pH (pH units)	NL	NL	NE	NE	NE	7.09	7.02	7.04	7.02	7.16	7.15	7.1	7.52
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	850	1,370	800	612	720	889	1,030	865
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.39	0.67	0.45	0.43	0.49	0.95	0.64	0.89
Iron	[illegible]	NA	NE	NE	[illegible]	[illegible]	[illegible]	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Nitrate	10,000	NA	NE	NE	ND	230	ND	2,000	ND	1,200	290	ND	100
Sulfate	250,000	NA	NE	NE	6,900	22,000	27,000	40,000	20,000	29,000	36,000	44,000	35,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	360,000	410,000	420,000	360,000	380,000	260,000	310,000	330,000	290,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SMB Project No. KB31823

			P-1 7-12 See (13)	P-1 7-12 6/22/99	P-1 7-12 5/22/00	P-1 7-12 See (14)	P-1 7-12 12/13/01	P-1 7-12 3/15/02
[illegible]								
[illegible]								
Benzene	5	200	ND	ND	ND	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND
[illegible]								
Naphthalene	1,500	13	ND	NE	ND	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	NE	ND	ND	ND	ND
Acenaphthylene	150	ID	ND	NE	ND	ND	ND	ND
Acenaphthene	3,800	19	ND	NE	ND	ND	ND	ND
Fluorene	2,000	12	ND	NE	ND	ND	ND	ND
Phenanthrene	150	5	ND	NE	ND	ND	ND	ND
Anthracene	43	ID	ND	NE	ND	ND	ND	ND
Fluoranthene	210	1.6	ND	NE	ND	ND	ND	ND
Pyrene	140	ID	ND	NE	ND	ND	ND	ND
[illegible]								
Arsenic	50	150	ND	NE	ND	ND	NE	NE
Barium	2,000	1,200	ND	NE	100	140	NE	NE
Chromium (Total)	100	11 **	ND	NE	8	6	NE	NE
Selenium	50	[illegible]	[illegible]	NE	ND	ND	NE	NE
Zinc	5,000	270	ND	NE	ND	ND	NE	NE
Cyanide (available)	200	20	NE	NE	ND	ND	NE	NE
Cyanide (amenable)	200	20	ND	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	NE	ND	ND	NE	NE
[illegible]								
pH (pH units)	NL	NL	NE	NE	NE	NE	NE	NE
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	NE	NE	NE
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	NE	NE	NE
Iron	[illegible]	NA	NE	NE	[illegible]	ND	NE	NE
Nitrate	10,000	NA	NE	NE	7,200	5,400	NE	NE
Sulfate	250,000	NA	NE	NE	84,000	57,000	NE	NE
Alkalinity (as CaCO3)	NL	NL	NE	NE	320,000	300,000	NE	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

	[illegible]	[illegible]	P-2 8-13 02/08/99	P-2 8-13 06/23/99	P-2 8-13 02/16/00	P-2 8-13 05/23/00	P-2 8-13 11/08/00	P-2 8-13 06/04/01	P-2 8-13 12/12/01	P-2 8-13 03/14/02	P-2 8-13 06/14/02	P-2 8-13 09/20/02	P-2 8-13 12/17/02	P-2 8-13 03/14/03
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BTEX														
Benzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	NR	10	[illegible]	[illegible]
Toluene	790	[illegible]	[illegible]	[illegible]	86	40	54	83	[illegible]	ND	NR	19	1	15
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	NR	[illegible]	9	[illegible]
Xylenes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	NR	[illegible]	36	[illegible]
PAHs														
Naphthalene	[illegible]	11	[illegible]	[illegible]	[illegible]	ND	[illegible]	[illegible]	[illegible]	ND	NR	[illegible]	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	59	15	21	ND	16	27	35	ND	NR	11	ND	5
Acenaphthylene	150	ID	ND	8	5	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	[illegible]	[illegible]	[illegible]	[illegible]	13	[illegible]	[illegible]	[illegible]	ND	NR	[illegible]	[illegible]	[illegible]
Fluorene	2,000	[illegible]	[illegible]	[illegible]	[illegible]	6	[illegible]	[illegible]	[illegible]	ND	NR	[illegible]	[illegible]	[illegible]
Phenanthrene	150	[illegible]	[illegible]	[illegible]	5	ND	[illegible]	[illegible]	[illegible]	ND	NR	[illegible]	[illegible]	[illegible]
Anthracene	43	ID	ND	8	5	ND	8	11	6	ND	NR	ND	ND	ND
Fluoranthene	210	[illegible]	ND	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	NR	[illegible]	ND	[illegible]
Pyrene	140	ID	ND	5	ND	10	15	10	5	ND	NR	9	ND	ND
INORGANICS														
Arsenic	50	150	8	8	9	8	13	11	5	ND	10	12	7	6
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	5	4.6	ND	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND	ND	ND
Chromium (Total)	100	[illegible]	ND	ND	ND	5	[illegible]	ND	ND	ND	ND	ND	5	ND
Lead	[illegible]	29	ND	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	[illegible]	ND	[illegible]	ND	NE	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
NATURAL ATTENUATION PARAMETERS														
pH (pH units)	NL	NL	NE	NE	7.09	7.61	--	6.98	7.15	7.25	6.55	7.13	7.43	7.31
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	920	1,570	1,660	628	747	1,460	1,402	1,499	1,465	880
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.82	0.43	0.91	0.85	0.43	0.4	0.43	0.33	0.65	0.58
Iron	[illegible]	NA	NE	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NE
Nitrate	10,000	NA	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
Sulfate	250,000	NA	NE	NE	32,000	47,000	14,000	12,000	3,200	79,000	16,000	46,000	75,000	NE
Alkalinity (as CaCO3)	NL	NL	NE	NE	530,000	360,000	550,000	340,000	450,000	240,000	390,000	450,000	490,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	P-2D 35-40 06/23/99	P-2D 35-40 02/16/00	P-2D 35-40 05/23/00	P-2D 35-40 11/08/00	P-2D 35-40 06/04/01	P-2D 35-40 12/12/01	P-2D 35-40 03/14/02	P-2D 35-40 06/14/02	P-2D 35-40 09/20/02	P-2D 35-40 12/17/02	P-2D 35-40 03/14/03
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]													
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
[illegible]													
Naphthalene	1,500	13	ND	ND	ND	6	ND	ND	ND	NR	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Phenanthrene	150	5	5	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Anthracene	43	ID	6	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
[illegible]													
Arsenic	50	150	ND	8	5	6	9	7	8	6	7	6	6
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	110	120	110	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	21	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
[illegible]													
pH (pH units)	NL	NL	NE	7.34	7.02	--	7.01	7.36	7.33	7.13	7.34	7.52	7.52
Specific Conductivity (umhos/cm)	NL	NL	NE	990	1,170	2,100	858	928	1,610	1,645	1,802	1,621	1,520
Dissolved Oxygen (ppm)	NA	7	NE	3.04	2.64	1.62	2.01	0.56	0.38	0.32	0.39	0.72	0.71
Iron	[illegible]	NA	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2,600	NE
Nitrate	10,000	NA	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
Sulfate	250,000	NA	NE	86,000	93,000	110,000	100,000	110,000	100,000	110,000	93,000	80,000	NE
Alkalinity (as CaCO3)	NL	NL	NE	300,000	300,000	310,000	300,000	300,000	310,000	310,000	300,000	300,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KB31823

	[illegible]	[illegible]	P-3 3-8 02/08/99	P-3 3-8 06/22/99	P-3 3-8 02/15/00	P-3 3-8 05/22/00	P-3 3-8 11/06/00	P-3 3-8 05/30/01	P-3 3-8 12/11/01	P-3 3-8 03/13/02	P-3 3-8 06/12/02	P-3 3-8 09/18/02	P-3 3-8 12/13/02	P-3 3-8 03/11/03
[illegible]														
[illegible]														
Benzene	[illegible]	200	3	[illegible]	[illegible]	ND	[illegible]	ND	ND	ND	NR	2	[illegible]	[illegible]
Toluene	790	140	5	21	5	ND	2	ND	ND	ND	NR	1	4	9
Ethylbenzene	[illegible]	[illegible]	13	[illegible]	[illegible]	ND	67	ND	ND	ND	NR	6	[illegible]	230
Xylenes	[illegible]	[illegible]	31	[illegible]	[illegible]	ND	65	ND	ND	ND	NR	10	[illegible]	150
[illegible]														
Naphthalene	1,500	[illegible]	[illegible]	[illegible]	[illegible]	ND	[illegible]	ND	ND	[illegible]	NR	13	ND	100
2-Methylnaphthalene	750	ID	ND	5	10	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	5	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	[illegible]	ND	9	14	ND	ND	ND	ND	ND	NR	ND	16	[illegible]
Fluorene	2,000	[illegible]	ND	10	12	ND	ND	ND	ND	ND	NR	ND	[illegible]	[illegible]
Phenanthrene	150	[illegible]	ND	[illegible]	[illegible]	ND	ND	ND	ND	ND	NR	ND	[illegible]	[illegible]
Anthracene	43	ID	ND	5	6	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	5	ND	ND	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
[illegible]														
Arsenic	50	150	ND	ND	6	ND	ND	ND	ND	ND	14	ND	7	6
Barium	2,000	1,200	ND	150	290	ND	190	200	130	150	150	180	360	400
Cadmium	5	[illegible]	ND	ND	ND	0.5	[illegible]	0.8	0.9	0.7	ND	0.6	ND	ND
Chromium (total)	100	[illegible]	ND	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND	ND	ND
Lead	4	29	ND	ND	ND	ND	4	ND	ND	ND	ND	ND	ND	ND
Selenium	[illegible]	[illegible]	[illegible]	ND	ND	[illegible]	[illegible]	ND	[illegible]	ND	[illegible]	ND	[illegible]	[illegible]
Zinc	5,000	[illegible]	ND	ND	ND	190	260	[illegible]	180	[illegible]	14	170	49	19
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
Cyanide (amenable)	200	[illegible]	ND	ND	[illegible]	NE	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
[illegible]														
pH (pH units)	NL	NL	NE	NE	7.26	7.18	7.05	7.25	7.34	7.20	7.22	7.39	7.70	7.30
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	4,320	1,790	4,770	1,692	1,568	2,810	2,310	2,430	–	–
Dissolved Oxygen (ppm)	NA	7	NE	NE	0.95	0.61	1.98	1.1	0.57	0.66	0.35	0.71	1.01	1.39
Iron	[illegible]	NA	NE	NE	[illegible]	210	[illegible]	300	300	[illegible]	[illegible]	[illegible]	[illegible]	NE
Nitrate	10,000	NA	NE	NE	ND	3,200	600	500	270	310	ND	490	ND	NE
Sulfate	250,000	NA	NE	NE	35,000	76,000	80,000	130,000	[illegible]	69,000	[illegible]	[illegible]	[illegible]	NE
Alkalinity (as CaCO3)	NL	NL	NE	NE	410,000	400,000	440,000	310,000	270,000	310,000	280,000	200,000	360,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			P-3D 35-40 05/22/00	P-3D 35-40 11/06/00	P-3D 35-40 05/31/01	P-3D 35-40 12/11/01	P-3D 35-40 03/13/02	P-3D 35-40 06/13/02	P-3D 35-40 09/18/02	P-3D 35-40 12/13/02	P-3D 35-40 03/11/03
VOLATILE ORGANICS											
Benzene	5	200	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]	[illegible]
Toluene	790	140	2	2	2	ND	6	NR	1	2	5
Ethylbenzene	74	18	1	2	2	ND	ND	NR	ND	ND	5
Xylenes	280	35	10	9	7	ND	ND	NR	4	12	29
SEMI-VOLATILE PAHs											
Naphthalene	1,500	[illegible]	[illegible]	[illegible]	[illegible]	6	5	NR	[illegible]	7	[illegible]
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	NR	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	NR	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	NR	ND	ND	ND
INORGANICS											
Arsenic	50	150	27	30	35	31	33	35	36	35	31
Barium	2,000	1,200	190	200	200	200	200	210	210	210	200
Mercury	2	[illegible]	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	30	ND	ND	10	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	NE
NATURAL ATTENUATION PARAMETERS											
pH (pH units)	NL	NL	8.26	7.36	7.34	7.39	7.33	7.56	7.51	7.69	7.52
Specific Conductivity (umhos/cm)	NL	NL	1,630	1,740	1,021	850	1,500	1,233	1,459	--	1,396
Dissolved Oxygen (ppm)	NA	7	1.5	0.40	0.73	0.42	0.39	0.32	0.31	1.15	1.13
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NE
Nitrate	10,000	NA	ND	ND	ND	ND	ND	ND	ND	ND	NE
Sulfate	250,000	NA	ND	ND	ND	ND	ND	ND	1,000	ND	NE
Alkalinity (as CaCO3)	NL	NL	320,000	320,000	330,000	350,000	350,000	360,000	340,000	360,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

	[illegible]	[illegible]	P-4 3-8 02/08/99	P-4 3-8 06/22/99	P-4 3-8 2/22/00	P-4 3-8 05/24/00	P-4 3-8 11/06/00	P-4 3-8 05/30/01	P-4 3-8 12/11/01	P-4 3-8 03/12/02	P-4 3-8 06/11/02	P-4 3-8 09/17/02	P-4 3-8 12/11/02
[illegible]													
BTEX													
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Ethylbenzene	74	18	ND	ND	1	ND	ND	ND	ND	ND	NR	ND	ND
Xylenes	280	35	ND	ND	7	ND	ND	ND	ND	ND	NR	ND	ND
PAHs													
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
INORGANICS													
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	ND	9	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	12	ND	ND	ND
Cyanide (available)	200	20	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NATURAL ATTENUATION PARAMETERS													
pH (pH units)	NL	NL	NE	NE	NE	7.59	7.11	7.09	6.93	7.46	7.16	7.12	7.32
Specific Conductivity (umhos/cm)	NL	NL	NE	NE	NE	1,770	1,990	1,619	1,065	755	1,468	1,175	957
Dissolved Oxygen (ppm)	NA	7	NE	NE	NE	0.15	0.28	0.45	0.53	0.89	0.31	0.47	0.79
Iron	[illegible]	NA	NE	NE	[illegible]	ND	[illegible]	24	ND	28	ND	39	75
Nitrate	10,000	NA	NE	NE	240	430	ND	490	280	120	ND	ND	ND
Sulfate	250,000	NA	NE	NE	21,000	37,000	22,000	58,000	16,000	15,000	22,000	14,000	13,000
Alkalinity (as CaCO3)	NL	NL	NE	NE	340,000	390,000	440,000	350,000	350,000	320,000	400,000	360,000	330,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

Parameter	Criteria	Criteria Exceedance Date (Month/Year)	MW101 12-17 06/23/99	MW101 12-17 02/16/00	MW101 12-17 05/23/00	MW101 12-17 11/07/00	MW101 12-17 05/31/01	MW101 12-17 12/13/01	MW101 12-17 03/15/02	MW101 12-17 06/14/02	MW101 12-17 09/23/02	MW101 12-17 12/19/02	MW101 12-17 03/17/03
VOLATILES													
Benzene	[illegible]	200	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	ND	NR	[illegible]	ND	ND
Toluene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	NR	16,000	53	ND
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	NR	2,600	51	3
Xylenes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	NR	13,100	131	7
SEMI-VOLATILES													
Naphthalene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	NR	[illegible]	ND	ND
2-Methylnaphthalene	750	ID	55	31	35	150	110	39	ND	NR	56	ND	ND
Acenaphthylene	150	ID	75	33	ND	88	30	20	ND	NR	31	ND	ND
Acenaphthene	3,800	[illegible]	ND	6	[illegible]	ND	[illegible]	ND	ND	NR	ND	ND	ND
Fluorene	2,000	[illegible]	[illegible]	11	ND	ND	ND	ND	ND	NR	ND	ND	ND
Phenanthrene	150	[illegible]	[illegible]	[illegible]	ND	ND	ND	ND	ND	NR	ND	ND	ND
Anthracene	43	ID	ND	7	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	[illegible]	ND	ND	ND	ND	[illegible]	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	17	ND	ND	NR	ND	ND	ND
INORGANICS													
Arsenic	50	150	7	9	6	6	5	5	ND	ND	6	ND	ND
Barium	2,000	1,200	760	230	230	190	230	190	ND	200	160	130	160
Cadmium	5	4	ND	ND	0.5	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	7	ND	ND	ND	ND	ND	ND	ND
Selenium	50	[illegible]	ND	ND	[illegible]	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
NATURAL ATTENUATION PARAMETERS													
pH (pH units)	NL	NL	NE	7.34	7.44	--	7.28	7.32	7.59	7.4	7.35	7.8	7.49
Specific Conductivity (umhos/cm)	NL	NL	NE	1,420	3,040	2,350	2,890	1,483	2,230	2,750	1,876	3,450	5,730
Dissolved Oxygen (ppm)	NCA	7	NE	0.58	0.62	0.42	0.36	0.33	0.4	0.96	0.48	--	4.33
Iron	[illegible]	NA	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	37	250	[illegible]	24	NE
Nitrate	10,000	NA	NE	310	4,500	710	970	900	1,900	1,200	460	1,200	NE
Sulfate	250,000	NA	NE	63,000	70,000	44,000	96,000	44,000	51,000	55,000	28,000	42,000	NE
Alkalinity (as CaCO3)	NL	NL	NE	470,000	490,000	490,000	380,000	460,000	410,000	480,000	390,000	280,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW101D 35-40 06/23/99	MW101D 35-40 02/16/00	MW101D 35-40 05/23/00	MW101D 35-40 11/07/00	MW101D 35-40 06/01/01	MW101D 35-40 12/13/01	MW101D 35-40 03/14/02	MW101D 35-40 06/17/02	MW101D 35-40 09/23/02	MW101D 35-40 12/18/02	MW101D 35-40 03/14/03
BTEX													
Benzene	5	200	2	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Toluene	790	140	12	5	ND	15	ND	ND	ND	NR	1	ND	ND
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]	[illegible]
Xylenes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]	[illegible]
PAHs													
Naphthalene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	210	120	400	530	710	380	270	NR	500	380	430
Acenaphthylene	[illegible]	ID	[illegible]	150	[illegible]	[illegible]	[illegible]	120	[illegible]	NR	[illegible]	[illegible]	[illegible]
Acenaphthene	3,800	[illegible]	[illegible]	5	ND	ND	ND	ND	ND	NR	[illegible]	[illegible]	[illegible]
Fluorene	2,000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ND	ND	[illegible]	NR	[illegible]	[illegible]	[illegible]
Phenanthrene	150	[illegible]	ND	5	ND	ND	ND	ND	ND	NR	ND	[illegible]	ND
Anthracene	43	ID	ND	5	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	1D	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
INORGANICS													
Arsenic	50	150	16	23	23	23	27	25	25	23	25	22	22
Barium	2,000	1,200	420	450	430	390	330	280	330	340	370	370	470
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	98	[illegible]	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
NATURAL ATTENUATION PARAMETERS													
pH (pH units)	NL	NL	NE	7.34	8.04	–	7.42	7.40	7.63	7.50	7.60	7.58	7.34
Specific Conductivity (mhos/cm)	NL	NL	NE	1,970	2,510	3,090	1,217	1,256	1,780	1,522	2,100	2,140	2,310
Dissolved Oxygen (ppm)	NA	7	NE	2.59	1.27	0.65	0.68	0.31	0.33	0.41	0.31	0.63	0.74
Iron	[illegible]	NA	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NE
Nitrate	10,000	NA	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
Sulfate	250,000	NA	NE	15,000	15,000	15,000	11,000	18,000	10,000	11,000	20,000	15,000	NE
Alkalinity (as CaCO3)	NL	NL	NE	330,000	410,000	340,000	360,000	350,000	360,000	360,000	360,000	350,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	MW103 11-16 06/22/99	MW103 11-16 02/16/00	MW103 11-16 05/22/00	MW103 11-16 11/07/00	MW103 11-16 05/31/01	MW103 11-16 12/13/01	MW103 11-16 03/15/02	MW103 11-16 06/17/02	MW103 11-16 09/20/02	MW103 11-16 12/18/02
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]												
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Ethylbenzene	74	18	2	ND	ND	ND	ND	ND	ND	NR	ND	ND
Xylenes	280	35	2	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	NR	ND	6
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Arsenic	50	150	ND	5	11	14	ND	11	ND	ND	7	6
Barium	2,000	1,200	ND	ND	160	ND	480	ND	390	600	240	300
Chromium (total)	100	11**	ND	ND	ND	9	ND	7	ND	ND	ND	7
Selenium	50	[illegible]	ND	ND	[illegible]	ND	ND	ND	ND	ND	ND	ND
Silver	98	[illegible]	ND	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]												
pH (pH units)	NL	NL	NE	7.84	8.65	7.64	7.37	7.79	7.77	7.35	7.64	7.75
Specific Conductivity (umhos/cm)	NL	NL	NE	2,370	6,370	2,390	4,680	1,608	1,389	9,370	6,020	7,860
Dissolved Oxygen (ppm)	NA	7	NE	1.38	1.5	1.85	1.9	1.12	5.33	3.11	1.01	1.08
Iron	300	NA	NE	ND	[illegible]	ND	100	ND	210	84	250	300
Nitrate	10,000	NA	NE	410	2,500	1,400	3,300	720	2,100	2,400	640	600
Sulfate	250,000	NA	NE	19,000	58,000	27,000	150,000	15,000	110,000	130,000	35,000	38,000
Alkalinity (as CaCO3)	NL	NL	NE	430,000	410,000	490,000	230,000	480,000	330,000	290,000	450,000	460,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	MW104 5-10 06/23/99	MW104 5-10 02/15/00	MW104 5-10 05/24/00	MW104 5-10 11/06/00	MW104 5-10 05/31/01	MW104 5-10 12/11/01	MW104 5-10 03/13/02	MW104 5-10 06/13/02	MW104 5-10 09/19/02	MW104 5-10 12/16/02	MW104 5-10 03/13/03
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]													
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
[illegible]													
Naphthalene	1,500	13	ND	ND	ND	10	ND	ND	ND	NR	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
[illegible]													
Arsenic	50	150	5	ND	ND	ND	ND	ND	ND	ND	6	ND	ND
Barium	2,000	1,200	340	190	420	220	310	140	150	400	270	190	330
Cadmium	5	4	ND	ND	0.8	ND	ND	ND	ND	ND	0.8	ND	0.6
Chromium (total)	100	11**	ND	ND	ND	10.0	ND	ND	ND	ND	ND	7	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	[illegible]	ND	240	[illegible]	210	150	64	88	120	210	190	[illegible]
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
[illegible] PARAMETERS													
pH (pH units)	NL	NL	NE	7.37	6.88	7.42	7.20	7.29	7.37	7.26	7.33	7.54	7.37
Specific Conductivity (umhos/cm)	NL	NL	NE	3,570	4,600	4,180	2,580	1,373	1,790	4,240	4,060	3,320	4,610
Dissolved Oxygen (ppm)	NA	7	NE	0.49	0.54	0.39	0.39	0.43	0.93	0.39	0.48	0.89	0.97
Iron	[illegible]	NA	NE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NE
Nitrate	10,000	NA	NE	340	220	ND	ND	ND	460	ND	ND	ND	NE
Sulfate	250,000	NA	NE	18,000	43,000	16,000	45,000	29,000	48,000	36,000	25,000	16,000	NE
Alkalinity (as CaCO3)	NL	NL	NE	490,000	440,000	590,000	380,000	450,000	320,000	390,000	550,000	560,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW104D 30-35 6/23/1999	MW104D 30-35 2/15/2000	MW104D 30-35 5/24/2000	MW104D 30-35 11/6/2000	MW104D 30-35 5/31/2001	MW104D 30-35 12/12/2001	MW104D 30-35 3/14/2002	MW104D 30-35 6/13/2002	MW104D 30-35 9/19/2002	MW104D 30-35 12/17/02	MW104D 30-35 03/13/03
BTEX													
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Toluene	790	140	1	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Ethylbenzene	74	18	1	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Xylenes	280	35	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
PAHs													
Naphthalene	1,500	113	[illegible]	ND	ND	ND	ND	ND	ND	NR	9	5	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND
INORGANICS													
Arsenic	50	150	16	28	27	25	25	22	24	23	25	23	21
Barium	2,000	1,200	230	260	250	270	240	230	270	300	270	270	290
Chromium (total)	100	11**	ND	ND	ND	5	ND	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	28	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
NATURAL ATTENUATION PARAMETERS													
pH (pH units)	NL	NL	NE	7.34	7.44	7.52	7.34	7.34	7.35	7.3	7.48	7.63	7.53
Specific Conductivity (mmhos/cm)	NL	NL	NE	1,540	1,090	1,660	742	721	1,100	1,168	1,383	1,370	1,260
Dissolved Oxygen (ppm)	NA	7	NE	3.5	2.42	1.18	1.52	0.46	0.52	0.30	0.25	0.88	0.96
Iron	300	NA	NE	[illegible]	5,700	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6,300	5,100	NE
Nitrate	10,000	NA	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	NE
Sulfate	250,000	NA	NE	77,000	71,000	76,000	71,000	70,000	71,000	76,000	76,000	75,000	NE
Alkalinity (as CaCO3)	NL	NL	NE	280,000	320,000	320,000	310,000	320,000	310,000	310,000	300,000	310,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW105 11-16 06/24/99	MW105 11-16 02/16/00	MW105 11-16 05/22/00	MW105 11-16 11/07/00	MW105 11-16 06/01/01	MW105 11-16 12/14/01	MW105 11-16 03/14/02	MW105 11-16 06/14/02	MW105 11-16 09/19/02	MW105 11-16 12/18/02
[illegible]												
Benzene	[illegible]	[illegible]	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Ethylbenzene	[illegible]	[illegible]	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Xylenes	280	[illegible]	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Naphthalene	1,500	13	6	ND	ND	ND	ND	ND	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]												
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (total)	100	11**	ND	ND	ND	7	ND	5	ND	ND	ND	ND
Selenium	50	[illegible]	ND	ND	ND	[illegible]	ND	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Silver	98	[illegible]	ND	ND	ND	[illegible]	ND	ND	ND	ND	ND	ND
Zinc	5,000	[illegible]	ND	ND	160	ND	ND	10	[illegible]	ND	ND	ND
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]												
pH (pH units)	NL	NL	NE	7.50	8.43	7.24	7.48	7.44	7.44	7.68	7.66	7.79
Specific Conductivity (umhos/cm)	NL	NL	NE	730	1,690	1,460	878	662	600	759	890	799
Dissolved Oxygen (ppm)	NA	7	NE	2.76	5.84	2.10	3.25	1.07	0.94	0.78	1.19	0.92
Iron	300	NA	NE	ND	150	ND	ND	ND	ND	ND	ND	ND
Nitrate	10,000	NA	NE	5,300	1,400	2,900	1,100	940	220	790	830	850
Sulfate	250,000	NA	NE	90,000	51,000	80,000	50,000	50,000	23,000	47,000	64,000	59,000
Alkalinity (as CaCO3)	NL	NL	NE	270,000	370,000	350,000	410,000	420,000	400,000	430,000	370,000	350,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	MW105D 39-44 06/24/99	MW105D 39-44 02/16/00	MW105D 39-44 05/22/00	MW105D 39-44 11/07/00	MW105D 39-44 06/01/01	MW105D 39-44 12/14/01	MW105D 39-44 03/14/02	MW105D 39-44 06/17/02	MW105D 39-44 09/20/02	MW105D 39-44 12/18/02
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Benzene	5	200	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Xylenes	280	35	2	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Naphthalene	1,500	13	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	150	150	150	180	160	150	170	160	190	190
Lead	4	29	ND	ND	ND	ND	ND	ND	ND	ND	4	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	[illegible]	ND	ND	210	200	230	180	110	[illegible]	[illegible]	320
Cyanide (available)	200	20	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (amenable)	200	20	ND	ND	NE	NE	NE	NE	NE	NE	NE	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pH (pH units)	NL	NL	NE	7.37	8.15	7.15	7.45	7.34	7.4	7.52	7.32	7.48
Specific Conductivity (umhos/cm)	NL	NL	NE	1,030	1,920	1,830	878	871	1,330	1,138	1,652	1,620
Dissolved Oxygen (ppm)	NA	7	NE	2.21	2.46	1.72	2.25	0.36	0.37	0.94	0.39	0.83
Iron	[illegible]	NA	NE	ND	[illegible]	200	52	ND	110	ND	99	82
Nitrate	10,000	NA	NE	540	640	400	730	770	420	1,000	170	110
Sulfate	250,000	NA	NE	73,000	76,000	86,000	76,000	74,000	76,000	69,000	69,000	81,000
Alkalinity (as CaCO3)	NL	NL	NE	300,000	380,000	300,000	300,000	310,000	310,000	310,000	300,000	300,000

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW201 3-8 05/23/00	MW201 3-8 11/6/2000	MW201 3-8 05/29/01	MW201 3-8 12/10/01	MW201R 3-8 06/13/02	MW201R 3-8 09/18/02	MW201R 3-8 12/16/02	MW201R 3-8 03/11/03
VOLATILES										
Benzene	[illegible]	[illegible]	[illegible]	[illegible]	ND	[illegible]	NR	[illegible]	[illegible]	150
Toluene	790	[illegible]	5	ND	ND	ND	NR	4	ND	10
Ethylbenzene	[illegible]	[illegible]	[illegible]	16	ND	[illegible]	NR	[illegible]	13	270
Xylenes	[illegible]	[illegible]	[illegible]	11	ND	[illegible]	NR	[illegible]	25	280
SEMI-VOLATILES										
Naphthalene	1,500	[illegible]	[illegible]	[illegible]	ND	ND	NR	ND	[illegible]	1,000
2-Methylnaphthalene	750	ID	10	27	ND	ND	NR	8	22	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	[illegible]	11	[illegible]	ND	ND	NR	[illegible]	[illegible]	[illegible]
Fluorene	2,000	[illegible]	ND	8	ND	ND	NR	12	10	ND
Phenanthrene	150	[illegible]	ND	ND	ND	ND	NR	[illegible]	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	NR	ND	ND	ND
INORGANICS										
Arsenic	50	150	ND	ND	8	8	ND	6	ND	ND
Barium	2,000	1,200	200	190	120	140	180	210	180	190
Chromium (total)	100	11**	ND	8	ND	ND	ND	ND	5	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND
Silver	98	[illegible]	ND	[illegible]	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	NE
NATURAL ATTENUATION PARAMETERS										
pH (pH units)	NL	NL	6.59	7.07	7.17	7.10	6.95	7.05	7.16	7.24
Specific Conductivity (umhos/cm)	NL	NL	1,970	2,480	1,164	1,368	2,240	2,570	2,330	2,610
Dissolved Oxygen (ppm)	NA	7	0.35	0.34	0.41	0.38	0.36	0.41	1.03	0.96
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NE
Nitrate	10,000	NA	ND	ND	100	ND	ND	ND	ND	NE
Sulfate	250,000	NA	34,000	ND	21,000	3,000	3,700	2,000	3,900	NE
Alkalinity (as CaCO3)	NL	NL	490,000	450,000	440,000	500,000	490,000	480,000	490,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW202D 55-60 05/23/00	MW202D 55-60 11/07/00	MW202D 55-60 06/01/01	MW202D 55-60 12/13/01	MW202D 55-60 03/15/02	MW202D 55-60 06/14/02	MW202D 55-60 09/23/02	MW202D 55-60 12/18/02	MW202D 55-60 03/14/03
VOLATILES											
Benzene	5	200	ND	ND	ND	ND	ND	NR	ND	ND	ND
Toluene	790	140	ND	ND	ND	ND	ND	NR	2	ND	ND
Ethylbenzene	74	18	ND	ND	ND	ND	ND	NR	5	ND	4
Xylenes	280	35	5	8	ND	ND	ND	NR	6	ND	10
SVOCs											
Naphthalene	1,500	[illegible]	[illegible]	[illegible]	[illegible]	17	ND	NR	[illegible]	[illegible]	ND
2-Methylnaphthalene	750	ID	ND	6	ND	ND	ND	NR	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	ND	ND	NR	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	ND	ND	NR	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	ND	ND	NR	ND	ND	ND
INORGANICS											
Arsenic	50	150	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	2,000	1,200	170	180	170	160	170	180	180	180	180
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	ND	ND	NE
NATURAL ATTENUATION PARAMETERS											
pH (pH units)	NL	NL	7.53	--	7.17	7.38	7.55	7.41	7.38	7.54	7.4
Specific Conductivity (umhos/cm)	NL	NL	1,720	1,770	877	843	1,190	1,132	1,362	1,303	1,260
Dissolved Oxygen (ppm)	NA	7	1.48	0.55	1.02	0.29	0.33	0.32	0.59	0.63	0.8
Iron	900	NA	310	170	39	ND	86	25	36	ND	NE
Nitrate	10,000	NA	560	300	540	330	170	190	ND	180	NE
Sulfate	250,000	NA	66,000	68,000	67,000	68,000	65,000	65,000	66,000	68,000	NE
Alkalinity (as CaCO3)	NL	NL	310,000	330,000	300,000	300,000	310,000	310,000	310,000	300,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SMB Project No. KE31823

	[illegible]	[illegible]	MW301 5-10 06/01/01	MW301 5-10 12/12/01	MW301 5-10 03/14/02	MW301 5-10 06/14/02	MW301 5-10 09/24/02	MW301 5-10 12/19/02	MW301 5-10 03/14/03
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Benzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]	[illegible]
Toluene	790	140	30	ND	ND	NR	13	16	ND
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]	[illegible]
Xylenes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Naphthalene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	290	250	190	NR	590	430	600
Acenaphthylene	150	ID	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]	[illegible]
Fluorene	2,000	[illegible]	ND	ND	[illegible]	NR	[illegible]	[illegible]	[illegible]
Phenanthrene	150	[illegible]	ND	ND	ND	NR	[illegible]	[illegible]	[illegible]
Anthracene	[illegible]	ID	ND	ND	ND	NR	ND	[illegible]	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	NR	ND	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arsenic	[illegible]	150	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	43
Barium	2,000	1,200	160	160	170	180	190	190	200
Chromium (total)	100	11**	ND	5	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	NE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pH (pH units)	NL	NL	6.93	7.09	7.13	7.07	7.24	7.35	7.28
Specific Conductivity (umhos/cm)	NL	NL	968	852	1,410	1,516	1,839	2,003	1,730
Dissolved Oxygen (ppm)	NA	7	0.74	0.39	0.41	0.46	0.43	0.82	0.61
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NE
Nitrate	10,000	NA	ND	ND	ND	ND	ND	ND	NE
Sulfate	250,000	NA	ND	ND	ND	ND	1,400	ND	NE
Alkalinity (as CaCO3)	NL	NL	400,000	410,000	420,000	410,000	380,000	440,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW302 4-9 05/29/01	MW302 4-9 12/10/01	MW302 4-9 03/13/02	MW302 4-9 06/12/02	MW302 4-9 09/17/02	MW302 4-9 12/12/02	MW302 4-9 03/10/03
VOLATILES									
Benzene	5	200	ND	ND	ND	NR	ND	ND	ND
Toluene	790	140	ND	ND	ND	NR	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	NR	ND	ND	ND
Xylenes	280	35	ND	ND	ND	NR	ND	ND	ND
PAHs									
Naphthalene	1,500	13	ND	6	ND	NR	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	NR	ND	ND	ND
INORGANICS									
Arsenic	50	150	9	8	ND	7	16	12	8
Barium	2,000	1,200	ND	ND	ND	ND	100	100	ND
Chromium (total)	100	11**	ND	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	NE
NATURAL ATTENUATION PARAMETERS									
pH (pH units)	NL	NL	7.33	7.11	7.28	7.16	7.2	7.38	7.36
Specific Conductivity (umhos/cm)	NL	NL	750	526	1,410	816	1,011	--	952
Dissolved Oxygen (ppm)	NA	7	0.55	0.45	1.2	0.67	0.98	1.03	--
Iron	300	NA	2,500	4,500	[illegible]	[illegible]	[illegible]	3,100	NE
Nitrate	10,000	NA	ND	ND	210	ND	ND	ND	NE
Sulfate	250,000	NA	20,000	5,400	18,000	19,000	6,900	9,000	NE
Alkalinity (as CaCO3)	NL	NL	230,000	330,000	270,000	230,000	310,000	410,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KR31823

			MW302I 20-25 05/29/01	MW302I 20-25 12/10/01	MW302I 20-25 03/13/02	MW302I 20-25 06/12/02	MW302I 20-25 09/17/02	MW302I 20-25 12/12/02	MW302I 20-25 03/10/03
[illegible]									
Benzene	[illegible]	[illegible]	ND	[illegible]	[illegible]	NR	[illegible]	[illegible]	[illegible]
Toluene	790	140	ND	ND	ND	NR	2	ND	1
Ethylbenzene	74	[illegible]	ND	ND	[illegible]	NR	[illegible]	6	2
Xylenes	280	[illegible]	ND	ND	[illegible]	NR	10	6	5
[illegible]									
Naphthalene	1,500	13	ND	ND	ND	NR	5	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	NR	ND	ND	ND
[illegible]									
Arsenic	50	150	15	20	20	19	20	19	14
Barium	2,000	1,200	890	1,200	650	460	330	360	330
Chromium (total)	100	11**	ND	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	NE
[illegible]									
pH (pH units)	NL	NL	7.33	7.11	7.23	7.2	7.3	7.43	7.31
Specific Conductivity (umhos/cm)	NL	NL	2,550	2,960	3,020	1,766	1,262	–	1,257
Dissolved Oxygen (ppm)	NA	7	0.52	0.45	0.50	0.29	0.36	0.76	–
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NE
Nitrate	10,000	NA	ND	ND	ND	ND	ND	ND	NE
Sulfate	250,000	NA	32,000	25,000	14,000	ND	ND	ND	NE
Alkalinity (as CaCO3)	NL	NL	330,000	420,000	330,000	300,000	270,000	290,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	MW302D 55-60 05/29/01	MW302D 55-60 12/11/01	MW302D 55-60 03/13/02	MW302D 55-60 06/12/02	MW302D 55-60 09/18/02	MW302D 55-60 12/16/02	MW302D 55-60 03/12/03
[illegible]									
Benzene	5	200	ND	ND	ND	NR	ND	ND	ND
Toluene	790	140	ND	ND	ND	NR	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND	NR	ND	ND	ND
Xylenes	280	35	ND	ND	ND	NR	ND	ND	ND
[illegible]									
Naphthalene	1,500	13	ND	ND	ND	NR	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	NR	ND	ND	ND
[illegible]									
Arsenic	50	150	29	26	30	29	30	29	28
Barium	2,000	1,200	200	180	200	210	210	210	210
Chromium (total)	100	11**	ND	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	NE
[illegible]									
pH (pH units)	NL	NL	7.5	7.34	7.33	7.33	7.52	7.66	7.51
Specific Conductivity (umhos/cm)	NL	NL	953	816	1,410	1,272	1,376	1,401	1,271
Dissolved Oxygen (ppm)	NA	7	0.76	0.56	0.55	0.33	0.29	0.88	1.00
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NE
Nitrate	10,000	NA	ND	ND	ND	ND	ND	ND	NE
Sulfate	250,000	NA	6,400	23,000	19,000	17,000	62,000	60,000	NE
Alkalinity (as CaCO3)	NL	NL	330,000	330,000	330,000	340,000	300,000	300,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW303 3-8 05/29/01	MW303 3-8 12/10/01	MW303 3-8 03/12/02	MW303 3-8 06/11/02	MW303 3-8 09/16/02	MW303 3-8 12/12/02	MW303 3-8 03/11/03
[illegible]									
Benzene	[illegible]	[illegible]	[illegible]	ND	ND	NR	ND	ND	ND
Toluene	790	[illegible]	10	ND	ND	NR	ND	ND	ND
Ethylbenzene	[illegible]	[illegible]	[illegible]	ND	ND	NR	ND	ND	ND
Xylenes	[illegible]	[illegible]	[illegible]	ND	ND	NR	ND	ND	ND
[illegible]									
Naphthalene	1,500	[illegible]	[illegible]	5	ND	NR	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	NR	ND	ND	ND
[illegible]									
Arsenic	50	[illegible]	ND	ND	ND	[illegible]	6	ND	ND
Barium	2,000	1,200	370	150	180	ND	420	350	270
Chromium (total)	100	11**	ND	8	ND	ND	ND	6	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	20	ND	ND	ND	ND	NE
Cyanide (free)	200	20	ND	10	ND	ND	ND	ND	NE
[illegible]									
pH (pH units)	NL	NL	6.94	6.9	7.23	6.96	6.84	7.19	7.12
Specific Conductivity (umhos/cm)	NL	NL	1,702	1,236	1,013	2,440	3,060	--	3,410
Dissolved Oxygen (ppm)	NA	7	0.67	0.85	0.89	0.36	0.68	1.06	--
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NE
Nitrate	10,000	NA	ND	ND	ND	ND	ND	ND	NE
Sulfate	250,000	NA	130,000	3,600	53,000	1,500	ND	4,000	NE
Alkalinity (as CaCO3)	NL	NL	680,000	720,000	620,000	710,000	430,000	680,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	MW304 5-10 05/30/01	MW304 5-10 12/10/01	MW304 5-10 03/12/02	MW304 5-10 06/11/02	MW304 5-10 09/16/02	MW304 5-10 12/12/02	MW304 5-10 03/11/03
[illegible]									
[illegible]									
Benzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]	[illegible]
Toluene	790	140	7	5	5	NR	[illegible]	12	19
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]	[illegible]
Xylenes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]	[illegible]
[illegible]									
Naphthalene	1,500	[illegible]	[illegible]	[illegible]	[illegible]	NR	[illegible]	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	120	58	69
Acenaphthylene	150	ID	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	NR	ND	ND	ND
[illegible]									
Arsenic	[illegible]	150	36	28	27	32	51	37	27
Barium	2,000	1,200	220	180	200	200	190	140	150
Chromium (total)	100	11**	ND	ND	ND	ND	ND	ND	ND
Lead	4	29	4.0	4.0	4.0	4.0	4	4	4
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	NE
[illegible]									
pH (pH units)	NL	NL	7.06	6.95	6.91	7.04	6.66	6.94	6.91
Specific Conductivity (umhos/cm)	NL	NL	1,079	1,595	787	1,965	1,423	–	1,191
Dissolved Oxygen (ppm)	NA	7	0.44	0.8	0.83	0.41	0.51	0.93	–
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NE
Nitrate	10,000	NA	ND	ND	ND	ND	ND	ND	NE
Sulfate	250,000	NA	3,200	ND	ND	ND	ND	ND	NE
Alkalinity (as CaCO3)	NL	NL	380,000	390,000	460,000	410,000	570,000	460,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW304D 65-70 05/30/01	MW304D 65-70 12/10/01	MW304D 65-70 03/12/02	MW304D 65-70 06/11/02	MW304D 65-70 09/26/02	MW304D 65-70 12/13/02	MW304D 65-70 03/13/03
[illegible]									
[illegible]									
Benzene	5	200	ND	ND	ND	NR	ND	ND	ND
Toluene	790	140	ND	ND	ND	NR	2	ND	ND
Ethylbenzene	74	18	ND	ND	ND	NR	ND	ND	ND
Xylenes	280	35	ND	ND	ND	NR	1	ND	ND
[illegible]									
Naphthalene	1,500	13	ND	ND	ND	NR	ND	ND	7
2-Methylnaphthalene	750	ID	ND	ND	ND	NR	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND	NR	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND	NR	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND	NR	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND	NR	ND	ND	ND
Anthracene	43	ID	ND	ND	ND	NR	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND	NR	ND	ND	ND
Pyrene	140	ID	ND	ND	ND	NR	ND	ND	ND
[illegible]									
Arsenic	50	150	23	22	25	25	24	23	23
Barium	2,000	1,200	270	270	290	300	300	290	290
Chromium (total)	100	11**	ND	ND	ND	ND	ND	ND	ND
Selenium	50	5	ND	ND	ND	ND	ND	ND	ND
Silver	98	0.2	ND	ND	ND	ND	ND	ND	ND
Zinc	5,000	270	ND	ND	ND	ND	ND	ND	ND
Cyanide (available)	200	20	ND	ND	ND	ND	ND	ND	NE
Cyanide (free)	200	20	ND	ND	ND	ND	ND	ND	NE
[illegible]									
pH (pH units)	NL	NL	7.4	7.37	7.37	7.76	7.39	7.76	7.55
Specific Conductivity (umhos/cm)	NL	NL	896	896	618	1,298	1,332	–	1,340
Dissolved Oxygen (ppm)	NA	7	0.58	0.7	0.83	0.68	0.73	1.11	0.65
Iron	[illegible]	NA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NE
Nitrate	10,000	NA	ND	ND	ND	ND	ND	ND	NE
Sulfate	250,000	NA	68,000	69,000	67,000	65,000	78,000	90,000	NE
Alkalinity (as CaCO3)	NL	NL	290,000	300,000	300,000	310,000	290,000	290,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KH31823

[illegible]	[illegible]	[illegible]	MW401 5 - 15 09/24/02	MW401 5 - 15 12/20/02	MW401 5 - 15 03/17/03
[illegible]					
[illegible]					
Benzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Toluene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Xylenes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Naphthalene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	100	77	110
Acenaphthylene	150	ID	59	43	70
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arsenic	50	150	28	23	16
Barium	2,000	1,200	150	170	110
Chromium (total)	100	11**	ND	ND	ND
Lead	4	29	ND	ND	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	NE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pH (pH units)	NL	NL	7.29	7.54	7.45
Specific Conductivity (umhos/cm)	NL	NL	2,460	2,490	1,860
Dissolved Oxygen (ppm)	NA	7	0.48	0.78	0.93
Iron	[illegible]	NA	[illegible]	[illegible]	NE
Nitrate	10,000	NA	ND	ND	NE
Sulfate	250,000	NA	91,000	69,000	NE
Alkalinity (as CaCO3)	NL	NL	370,000	470,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	MW401I 35 - 40 09/23/02	MW401I 35 - 40 12/20/02	MW401I 35 - 40 03/17/03
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Benzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Toluene	790	140	9	2	ND
Ethylbenzene	74	[illegible]	[illegible]	[illegible]	[illegible]
Xylenes	280	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Naphthalene	1,500	[illegible]	[illegible]	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	46	25	25
Acenaphthylene	150	ID	7	ND	ND
Acenaphthene	3,800	[illegible]	[illegible]	18	19
Fluorene	2,000	12	9	ND	ND
Phenanthrene	150	[illegible]	[illegible]	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arsenic	50	150	43	43	40
Barium	2,000	1,200	230	210	220
Chromium (total)	100	11**	ND	ND	ND
Lead	4	29	ND	ND	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	NE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pH (pH units)	NL	NL	7.28	7.58	7.5
Specific Conductivity (umhos/cm)	NL	NL	1,590	1,533	1,590
Dissolved Oxygen (ppm)	NA	7	0.47	0.92	0.94
Iron	[illegible]	NA	[illegible]	[illegible]	NE
Nitrate	10,000	NA	250	ND	NE
Sulfate	250,000	NA	2,600	ND	NE
Alkalinity (as CaCO3)	NL	NL	330,000	330,000	NE

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KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	MW401D 66 - 71 09/24/02	MW401D 66 - 71 12/19/02	MW401D 66 - 71 03/18/03
[illegible]					
Benzene	[illegible]	200	[illegible]	ND	ND
Toluene	790	140	57	15	4
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]	14
Xylenes	280	[illegible]	[illegible]	[illegible]	16
[illegible]					
Naphthalene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	500	130	44
Acenaphthylene	[illegible]	ID	[illegible]	[illegible]	44
Acenaphthene	3,800	[illegible]	[illegible]	[illegible]	[illegible]
Fluorene	2,000	[illegible]	[illegible]	[illegible]	[illegible]
Phenanthrene	150	[illegible]	[illegible]	[illegible]	[illegible]
Anthracene	43	ID	14	15	14
Fluoranthene	210	[illegible]	ND	[illegible]	[illegible]
Pyrene	140	ID	ND	7	6
[illegible]					
Arsenic	50	150	ND	ND	ND
Barium	2,000	1,200	210	200	200
Chromium (total)	100	11**	ND	ND	ND
Lead	4	29	ND	ND	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	NE
[illegible]					
pH (pH units)	NL	NL	7.55	7.55	7.49
Specific Conductivity (umhos/cm)	NL	NL	1,576	1,499	1,300
Dissolved Oxygen (ppm)	NA	7	0.37	0.76	0.83
Iron	[illegible]	NA	[illegible]	[illegible]	NE
Nitrate	10,000	NA	ND	ND	NE
Sulfate	250,000	NA	35,000	34,000	NE
Alkalinity (as CaCO3)	NL	NL	340,000	370,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	MW402 4-9 09/24/02	MW402 4-9 12/19/02	MW402 4-9 03/17/03
[illegible]					
[illegible]					
Benzene	[illegible]	200	3	[illegible]	3
Toluene	790	140	8	ND	ND
Ethylbenzene	74	18	2	4	ND
Xylenes	280	35	10	2	ND
[illegible]					
Naphthalene	1,500	[illegible]	15	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	5	6	ND
Fluorene	2,000	12	6	5	5
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
[illegible]					
Arsenic	50	150	8	6	ND
Barium	2,000	1,200	ND	ND	ND
Chromium (total)	100	11**	ND	6	ND
Lead	4	29	ND	ND	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	NE
[illegible]					
pH (pH units)	NL	NL	6.78	6.97	6.94
Specific Conductivity (umhos/cm)	NL	NL	4,100	3,730	6,940
Dissolved Oxygen (ppm)	NA	7	0.5	0.91	0.89
Iron	[illegible]	NA	[illegible]	[illegible]	NE
Nitrate	10,000	NA	ND	ND	NE
Sulfate	[illegible]	NA	[illegible]	[illegible]	NE
Alkalinity (as CaCO3)	NL	NL	500,000	540,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	MW402 D 65 - 70 09/24/02	MW402 D 65 - 70 12/20/02	MW402 D 65 - 70 03/17/03
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					
Benzene	5	200	5	4	ND
Toluene	790	140	26	36	ND
Ethylbenzene	74	18	3	6	ND
Xylenes	280	35	11	17	ND
[illegible]					
Naphthalene	1,500	[illegible]	ND	[illegible]	ND
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
[illegible]					
Arsenic	50	150	ND	ND	ND
Barium	2,000	1,200	150	150	160
Chromium (total)	100	11**	ND	ND	ND
Lead	4	29	ND	ND	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	NE
[illegible]					
pH (pH units)	NL	NL	7.72	7.76	7.39
Specific Conductivity (umhos/cm)	NL	NL	1,264	1,217	1,340
Dissolved Oxygen (ppm)	NA	7	0.46	0.81	0.93
Iron	300	NA	52	27	NE
Nitrate	10,000	NA	1,000	1,100	NE
Sulfate	250,000	NA	56,000	58,000	NE
Alkalinity (as CaCO3)	NL	NL	310,000	330,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

		[illegible]	MW403D 60 - 65 09/17/02	MW403D 60 - 65 12/12/02	MW403D 60 - 65 03/11/03
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					
Benzene	5	200	ND	ND	ND
Toluene	790	140	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND
Xylenes	280	35	ND	ND	ND
[illegible]					
Naphthalene	1,500	13	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
[illegible]					
Arsenic	50	150	12	12	12
Barium	2,000	1,200	250	240	240
Chromium (total)	100	11**	ND	ND	ND
Lead	4	29	ND	ND	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	NE
[illegible]					
pH (pH units)	NL	NL	7.37	7.44	7.49
Specific Conductivity (umhos/cm)	NL	NL	1,324	--	1,277
Dissolved Oxygen (ppm)	NA	7	0.59	0.87	1.11
Iron	[illegible]	NA	[illegible]	[illegible]	NE
Nitrate	10,000	NA	ND	ND	NE
Sulfate	250,000	NA	64,000	76,000	NE
Alkalinity (as CaCO3)	NL	NL	300,000	290,000	NE

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TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

			MW404 3 - 8 See (14)	MW404 3 - 8 See (14)	MW404 3 - 8 03/14/03
[illegible]					
[illegible]					
Benzene	5	200	ND	ND	ND
Toluene	790	140	ND	ND	ND
Ethylbenzene	74	18	ND	ND	ND
Xylenes	280	35	ND	ND	ND
[illegible]					
Naphthalene	1,500	13	ND	ND	ND
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
[illegible]					
Arsenic	50	150	ND	ND	ND
Barium	2,000	1,200	260	310	300
Cadmium	5		ND	1.2	ND
Chromium (total)	100	11**	ND	5	ND
Lead	4	29	ND	ND	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	11	22	17
Cyanide (available)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	NE
[illegible]					
pH (pH units)	NL	NL	--	7.23	7.29
Specific Conductivity (umhos/cm)	NL	NL	--	1,785	1,398
Dissolved Oxygen (ppm)	NA	7	--	0.77	--
Iron	300	NA	24	[illegible]	NE
Nitrate	10,000	NA	630	300	NE
Sulfate	250,000	NA	80,000	87,000	NE
Alkalinity (as CaCO3)	NL	NL	500,000	570,000	NE

SEE NOTES ON PAGE 38

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SMB Project No. KE31823

[illegible]	[illegible]	[illegible]	MW404I 3 - 8 09/18/02	MW404I 3 - 8 12/17/02	MW404I 3 - 8 03/12/03
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Benzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Toluene	790	140	8	ND	ND
Ethylbenzene	74	[illegible]	[illegible]	6	[illegible]
Xylenes	280	[illegible]	[illegible]	9	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Naphthalene	1,500	[illegible]	[illegible]	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	19	ND	ND	ND
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arsenic	50	150	25	25	25
Barium	2,000	1,200	450	430	420
Chromium (total)	100	11**	ND	ND	ND
Lead	4	29	ND	ND	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	NE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pH (pH units)	NL	NL	7.47	7.67	7.53
Specific Conductivity (umhos/cm)	NL	NL	1,672	3,320	1,474
Dissolved Oxygen (ppm)	NA	7	0.88	0.8	0.92
Iron	[illegible]	NA	[illegible]	[illegible]	NE
Nitrate	10,000	NA	ND	ND	NE
Sulfate	250,000	NA	1,000	ND	NE
Alkalinity (as CaCO3)	NL	NL	320,000	330,000	NE

SEE NOTES ON PAGE 38

KR059B031731

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

[illegible]	[illegible]	[illegible]	MW404D 75 - 80 09/19/02	MW404D 75 - 80 12/17/02	MW404D 75 - 80 03/13/03
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Benzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Toluene	790	140	5	ND	21
Ethylbenzene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Xylenes	280	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Naphthalene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2-Methylnaphthalene	750	ID	ND	ND	ND
Acenaphthylene	150	ID	ND	ND	ND
Acenaphthene	3,800	[illegible]	[illegible]	[illegible]	[illegible]
Fluorene	2,000	12	ND	ND	ND
Phenanthrene	150	5	ND	ND	ND
Anthracene	43	ID	ND	ND	ND
Fluoranthene	210	1.6	ND	ND	ND
Pyrene	140	ID	ND	ND	ND
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Arsenic	50	150	9	8	8
Barium	2,000	1,200	290	280	280
Chromium (total)	100	11**	ND	5	ND
Lead	4	29	ND	ND	ND
Selenium	50	5	ND	ND	ND
Silver	98	0.2	ND	ND	ND
Zinc	5,000	270	ND	ND	ND
Cyanide (available)	200	20	ND	ND	NE
Cyanide (free)	200	20	ND	ND	NE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pH (pH units)	NL	NL	7.43	7.48	7.42
Specific Conductivity (umhos/cm)	NL	NL	1,911	1,865	1,790
Dissolved Oxygen (ppm)	NA	7	0.28	0.77	0.61
Iron	[illegible]	NA	[illegible]	[illegible]	NE
Nitrate	10,000	NA	ND	ND	NE
Sulfate	250,000	NA	ND	ND	NE
Alkalinity (as CaCO3)	NL	NL	350,000	360,000	NE

SEE NOTES ON PAGE 38

TABLE 2
KALAMAZOO MGP
GROUNDWATER ANALYTICAL RESULTS
MONITORING WELLS
SME Project No. KE31823

NOTES:
(1) Concentrations reported in ug/L (parts per billion or ppb) unless otherwise noted.
(2) Analytical results were compared to Part 201 Generic Commercial II Cleanup Criteria and Screening Levels, Rules 744 and 750 dated November 2002.
(3) ND= Analytical result was less than target detection limit.
(4) ID = Inadequate data to develop criterion.
(5) NA= Criterion or value is not available.
(6) NL = Not listed under Part 201 Generic Commercial II Cleanup Criteria dated June 2000.
(7) NE = Chemical not evaluated by analytical laboratory.
(8) NS = Monitoring well not sampled.
(9) * = Constituents listed for PAHs and metals are limited to those constituents that indicated detectable concentrations for at least one sampling event.
(10) ** = Part 201 GSI Cleanup Criteria for Hexavalent Chromium used as a conservative comparison.
(11) -- = Field measurement not taken due to instrument error.
(12) Shading indicates which cleanup criteria are exceeded and the corresponding analytical result.
(13) The above data was compared to criteria for volatilization to indoor air, groundwater contact, water solubility, flammability/explosivity and acute inhalation and the data did not exceed these criteria.
(14) Groundwater samples were collected on different dates due to insufficient recharge.
(15) NR = Analytical results not reported. Lab reported BTEX analysis conducted after holding time and PAH results were invalid.

ATTACHMENT C
ANALYTICAL REPORT

KR059B031735

CONSUMERS ENERGY Memorandum

To: RGNeumann, P-22-520

From: GLCattell, T-254, Jackson

Date: April 16, 2003

Subject: KALAMAZOO FORMER MGP SITE
- SME Project # KE31823B-5
- Sampling Dates of March 10 – 18, 2003

File Index: 510317-410-369
510317-410-390
510317-410-409

CC: Pat Barrese
Soil & Material Engineers
43980 Plymouth Oaks Blvd.
Plymouth, MI 48170-9837

CC: GLKelterborn, P24-605A

On March 12 – 19, 2003 the Chemistry Section (CHEM) of Laboratory Services received groundwater samples collected at the KALAMAZOO FORMER MGP site.

The samples were returned to CHEM for determination of:

Aromatic Volatile Organics (BTEX)
Polynuclear Aromatic Hydrocarbons (PAHs)
Dissolved Michigan 10 Metals
Available (OIA) and Free Cyanide

Analytical Notes: (1) BTEX and/or PAH TDLs for samples MW-1, MW-101D, MW-201R, MW-301, MW-401, MW-401I, MW-403, MW-404I, MW-404D, and Duplicate 1 were raised due to required sample dilutions. (2) BTEX determinations were subcontracted to Brighton Analytical. All other determinations were performed by CHEM and analytical results are attached for your review.

ANALYTICAL METHODS

Sample Handling - Sample collection and handling was conducted in accordance with SW-846 or parameter specific recommendations. All samples were returned to the Chemistry Section (CHEM) of Laboratory Services for analysis.

Aromatic Volatile Organics (BTEX) - Method 8260, Volatile Organic Compounds By Gas Chromatography / Mass Spectrometry. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

PAH Sample Extraction and Preparation - Method 3510, Separatory Funnel Liquid-Liquid Extraction. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Polynuclear Aromatic Hydrocarbons (PAHs) - Method 8270, Gas Chromatography / Mass Spectrometry For Semivolatile Organics: Capillary Column Technique. SW-846, Test Methods For Evaluating Solid Waste - Physical / Chemical Methods, USEPA.

Cyanide, Free - Method ASTM-D4282-95, Determination Of Free Cyanide In Water And Wastewater By Micro-diffusion, ASTM.

Cyanide, Available - Method OIA-1677, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry. EPA-821-R-99-013.

Dissolved Metals Preparation (Mercury) – Method 7470, Mercury in Liquid Waste. SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

Metal Analytes

Analyte	EPA Method
Arsenic	6020
Barium	6020
Cadmium	6020
Chromium	6020
Copper	6020
Lead	6020
Mercury	7470
Selenium	6020
Silver	6020
Zinc	6020

SW-846, Test Methods For Evaluating Solid Waste – Physical / Chemical Methods, USEPA.

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	Duplicate 1
Sample Depth, ft	-
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-24-03
Analyst	<outsource>
Control Number	030369-11

BTEX, Method 8260	ug/L	TDL
Benzene	150	1
Toluene	11	1
Ethylbenzene	280	1
Xylenes, Total	290	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	120	70-130
Toluene-d8	100	70-130
Dibromofluoromethane	99	70-130

Sample Identification	Duplicate 1
Sample Depth, ft	-
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-13-03
Analysis Date	03-18-03
Analyst	qy
Control Number	030369-11

PAHs, Method 8270	ug/L	TDL
Naphthalene	1,200	25
2-Methylnaphthalene	26	25
Acenaphthylene	nd	25
Acenaphthene	36	25
Fluorene	nd	25
Phenanthrene	nd	25
Anthracene	nd	25
Fluoranthene	nd	25
Pyrene	nd	25
Benzo(a)anthracene	nd	25
Chrysene	nd	25
Benzo(b)fluoranthene	nd	25
Benzo(k)fluoranthene	nd	25
Benzo(a)pyrene	nd	25
Indeno(1,2,3-cd)pyrene	nd	25
Dibenzo(a,h)anthracene	nd	25
Benzo(g,h,i)perylene	nd	25

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	71	35-114
2-Fluorobiphenyl	73	43-116
p-Terphenyl-d14	85	33-141

KR059B031738

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-16-03

Data File	K-200
Duplicate 1	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	Duplicate 2
Sample Depth, ft	-
Sample Type	water
Sample Date	03-17-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030409-13

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	3	1
Xylenes, Total	7	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	115	70-130
Toluene-d8	99	70-130
Dibromofluoromethane	98	70-130

Sample Identification	Duplicate 2
Sample Depth, ft	-
Sample Type	water
Sample Date	03-17-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-21-03
Analysis Date	04-03-03
Analyst	qy
Control Number	030409-13

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	48	35-114
2-Fluorobiphenyl	55	43-116
p-Terphenyl-d14	115	33-141

KR059B031739

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/16/03

Data File	K-zoo
Duplicate 2	-

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	Duplicate 1	Sample Identification	Duplicate 1
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-11-03	Sample Date	03-11-03
Received Date	03-12-03	Received Date	03-12-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	no sample	-	
Preservation Type	no sample	-	
Analysis Date / Analyst (Hg)	no sample	-	
Analysis Date / Analyst (others)	no sample	-	
Control Number	030369-11	Control Number	030369-11

METALS	ug/L	TDL
Arsenic - 6020	-	5
Barium - 6020	-	100
Cadmium - 6020	-	0.5
Chromium (total) - 6020	-	5
Copper - 6020	-	25
Lead - 6020	-	3
Mercury - 7470	-	0.2
Selenium - 6020	-	5
Silver - 6020	-	0.5
Zinc - 6020	-	10
Metal Results Are Reported As	-	Dissolved

no entry	ug/L	no entry

KR059B031740

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/16/03

Data File	K-zoo
Duplicate 1	-

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	Duplicate 2	Sample Identification	Duplicate 2
Sample Depth, ft	-	Sample Depth, ft	-
Sample Type	water	Sample Type	water
Sample Date	03-17-03	Sample Date	03-17-03
Received Date	03-19-03	Received Date	03-19-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	no sample	-	
Preservation Type	no sample	-	
Analysis Date / Analyst (Hg)	no sample	-	
Analysis Date / Analyst (others)	no sample	-	
Control Number	030409-13	Control Number	030409-13

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	-	5			
Barium - 6020	-	100			
Cadmium - 6020	-	0.5			
Chromium (total) - 6020	-	5			
Copper - 6020	-	25			
Lead - 6020	-	3			
Mercury - 7470	-	0.2			
Selenium - 6020	-	5			
Silver - 6020	-	0.5			
Zinc - 6020	-	10			
Metal Results Are Reported As	-	Dissolved			

KR059B031741

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AU Date 4/16/03

Data File	K-zoo
Duplicate 2	-

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-401D	Sample Identification	MW-401D
Sample Depth, ft	67.3-72.3	Sample Depth, ft	67.3-72.3
Sample Type	water	Sample Type	water
Sample Date	03-18-03	Sample Date	03-18-03
Received Date	03-19-03	Received Date	03-19-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	04-01-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030409-14	Control Number	030409-14

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	nd	5			
Barium - 6020	200	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031742

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AH Date 4/16/03

Data File	K-zoo
MW-401D	67.3-72.3

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Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 3-12-03

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BALRASE

PHONE: SAE - ALY

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	Pb/Cd	10 Ni Metals					REMARKS
03-0369-01	3-10-03	4:05	W	~~[illegible]~~ MW403	2.8 / 7.8	4	X	X	X					
-02	" "	4:55	W	MW302I	19.8 - 24.8	4	X	X	X					
-03	" "	5:10	W	MW302	3.5 - 8.7	4	X	X	X					

KR059B031743

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3-10-03 6:30	
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	3/12/03 11:30	Crabe Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- MEOH METHANOL VOLS
- CALL PAT B. w/ QUESTIONS
* All containers present - CCS

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Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 3-12-03

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARRISE SME-PLY

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAHs	10 Al metals					REMARKS
03-0369-04	3-11-03	9:25	W	MW304	4.0-10.1	4	X	X	X					
-05		10:20		MW303	3.2-7.6		X	X	X					
-06		11:15		MW3	2.9-7.8		X	X	X					
-07		12:25		P3	2.9-7.3		X	X	X					
-08		1:30		MW403D	60.1-65.1		X	X	X					
-09		3:55		P3D	34.6-39.6		X	X	X					
-10		5:00		MW201R	1.6-6.7		X	X	X					
-11		—		DUPLICATE #1	—	3	X	X						

KR059B031744

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3-11-03 6:45	SME SAMPLE REFRIGERATOR
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
	3/12/03 11:30	Globe Sm 17
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- CALL PAT B. w/ QUESTIONS
- PLEA METHODS + MDLs
- All Container(s) Present - OCG

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CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 3-14-03

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BURKE SME-PLY

PHONE:

ANALYSIS REQUESTED

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 W METALS					REMARKS
03-0390.01	3-12-03	9:05	W	MW2	4.0 - 7.7	4	X	X	X					
-02	↓	1:00	↓	MW302D	55.3 - 60.3	4	X	X	X					
-03	↓	2:00	↓	MW404I	34.7 - 39.7	4	X	X	X					

KR059B031745

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3-12-03 2:50	SME SAMPLE REFRIGERATOR
RELINQUISHED BY: (SIGNATURE) SMG	DATE / TIME 3/14/03 330	RECEIVED BY: (SIGNATURE) Gabe Smith
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- CALL PAT B. w/ QUESTIONS
- HOLD METALS + MALE
All Containers Present

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 3-14-03

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARLESE SHE-PLY

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAs	10 M METALS					REMARKS
03-0390	3-13-03	2:00	W	MW304D	64.5-69.5	4	X	X	X					
-04		2:45		MW404D	24.8-29.8	4	X	X	X					
-05		4:10		MW104	4.4-9.4	4	X	X	X					
-06		4:55		MW404	2.9-7.9	3	X	X						
-07		6:10		MW104D	29.9-34.9	4	X	X	X					

KR059B031746

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
Van Ojala	3-13-03 7:00	SITE SAMPLE REFRIGERATOR
SMG	3/14/03 3:30	Gabe Smith

COMMENTS
- CALL PAT B. w/ QUESTIONS
- MDEQ METHODS + MDL
- All Containers present - CLS

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 3-17-03

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARRESE SME - PLU

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PAHs	10 HI METALS	~~BROMIDE CHLORIDE SULFATE~~	AMMONIA NITROGEN			REMARKS
03-0409-01	3-14-03	9:15	W	PZ	7.6-12.1	6	X	X	X		X			
-02		11:10		MW301	4.0-10.1	4	X	X	X					
-03		12:15		MW202D	55.4-60.4	4	X	X	X					
-04		2:30		PZD	35-40	4	X	X	X					
-05		3:40		MW101D	34.5-39.5	4	X	X	X					
-06		4:30		MW404	2.9-7.9	1			X					

KR059B031747

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3-14-03 6:00	SME SAMPLE REFRIGERATOR
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 3/19/03 3:00	RECEIVED BY: (SIGNATURE) Cobe
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS
- CALL PAT B. W/ QUESTIONS
- MDEQ METHODS + MDLs
- All containers Present - GCS

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 3-19-03

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 1 OF 1

SEND REPORT TO: PAT BARRESE SME-PLY

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNA	10 hr metals					REMARKS
03-0409-07	3-17-03	9:15	W	MW101	12.2-16.9	4	X	X	X					
-08		10:35		MW1	7.9-11.6	4	X	X	X					
-09		12:00		MW401	7.5-17.5	4	X	X	X					
-10		2:05		MW402D	65-70	4	X	X	X					
-11		3:00		MW402	3.6-8.6	4	X	X	X					
-12		3:50		MW40LI	37.5-42.5	4	X	X	X					
-13		—		DUPLICATE #2	—	3	X	X						

KR059B031748

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3-17-03 5:40	SME SAMPLE REFRIGERATOR
SME	3/19/03 3:00	Gabe Smith

COMMENTS
- CALL PAT B. w/ QUESTIONS
- MDEQ Methods + MDLs
- All containers present - cals

ORIGINAL TO LAB COPY TO CUSTOMER

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

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SAMPLING SITE: KALAMAZOO MGP

PROJECT NUMBER: KE31823B-5

SAMPLING TEAM: DAVIN K. OJALA

DATE SHIPPED: 3-19-03

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 1

SEND REPORT TO: PAT BARRESE SME-PLY

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX	PNAS	10 HI METALS					REMARKS
03-0409-14	3-18-03	2:30	W	MW401D	67.3-72.3	4	X	X	X					

KR059B031749

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3-18-03 4:45	SME SAMPLE REFRIGERATOR
RELINQUISHED BY: (SIGNATURE) SME	DATE / TIME 3/19/03 3:00	RECEIVED BY: (SIGNATURE) [signature]
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

- CALL PAT B. W/ QUESTIONS
- NOEQ METALS + MOLS
- All containers present - GCS

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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SAMPLING SITE: Kalamazoo Former MGP

PROJECT NUMBER: —

SAMPLING TEAM: —

DATE SHIPPED: —

SITE SKETCH ATTACHED? CIRCLE ONE: YES (NO)

PAGE 1 OF 3

SEND REPORT TO: G Cattell

PHONE: 517-788-2334

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX (8260)	REMARKS
030369-1	3/10/03	1605	Aq	MW 403		2ea.	✓	
-2		1655		302I			✓	
-3		1710		302			✓	
-4	3/11/03	0825		304			✓	
-5		1020		303			✓	
-6		1115		3			✓	
-7		1225		P3			✓	
8		1330		MW403D			✓	
9		1555		P3D			✓	
-10		1700		MW 201R			✓	
-11		—		Duplicate #1			✓	
030402-1	3/14/03	0815		P2			✓	

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3/20/03	[signature] 03/20/03 1230
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

KR059B031750

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CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

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SAMPLING SITE: Kalamazoo Former MGP

PROJECT NUMBER: —

SAMPLING TEAM: —

DATE SHIPPED: —

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 2 OF 3

SEND REPORT TO: (PSI)

PHONE:

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX (8260)							REMARKS
03-0402	3/14/03	1110	Aq.	MW301		2ea.	✓							
-3		1215		MW202D			✓							
-4		1430		P2D			✓							
-5		1540		MW10D			✓							(MW-6)
-7	3/17/03	0915		101			✓							
-8		1035		1			✓							—
-9		1200		401			✓							
-10		1405		402D			✓							
-11		1500		402			✓							
-12		1550		401E			✓							
-13		—		Duplicate #2			✓							
-14	3/18/03	1430		MW401D			✓							

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3/20/03	[signature] 03/20/03 1205

COMMENTS

KR059B031751

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CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Consumers Energy

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 • FAX (517) 788-2533

SAMPLING SITE: Kalamazoo Former MGP

PROJECT NUMBER: —

SAMPLING TEAM: —

DATE SHIPPED: —

SITE SKETCH ATTACHED? CIRCLE ONE: YES NO

PAGE 3 OF 3

SEND REPORT TO: GLCattell

PHONE: (517)788-2334

CE CONTROL #	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE DESCRIPTION / LOCATION	DEPTH	# OF CONTAINERS	BTEX (8260)							REMARKS
03-0390-1	3/12/03	0805	Aq.	MW2		2ea.	✓							
-2		1300		302D			✓							
-3		1400		404I			✓							
-4	3/13/03	1400		304D			✓							
-5		1445		404D			✓							
-6		1610		104			✓							
-7		1655		404			✓							
-8		1810		104D			✓							

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
[signature]	3/20/03	[signature] 3/20/03 1235
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)

COMMENTS

KR059B031752

ORIGINAL TO LAB COPY TO CUSTOMER

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	P-2
Sample Depth, ft	7.6-12.1
Sample Type	water
Sample Date	03-14-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-24-03
Analyst	<outsource>
Control Number	030409-01

BTEX, Method 8260	ug/L	TDL
Benzene	41	1
Toluene	15	1
Ethylbenzene	98	1
Xylenes, Total	170	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	114	70-130
Toluene-d8	98	70-130
Dibromofluoromethane	97	70-130

Sample Identification	P-2
Sample Depth, ft	7.6-12.1
Sample Type	water
Sample Date	03-14-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-20-03
Analysis Date	04-02-03
Analyst	qy
Control Number	030409-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	130	5
2-Methylnaphthalene	5	5
Acenaphthylene	nd	5
Acenaphthene	28	5
Fluorene	13	5
Phenanthrene	13	5
Anthracene	nd	5
Fluoranthene	5	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	75	35-114
2-Fluorobiphenyl	62	43-116
p-Terphenyl-d14	113	33-141

KR059B031753

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 4-16-03

Data File	K-zoo
P-2	7.6-12.1

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	P-2
Sample Depth, ft	7.6-12.1
Sample Type	water
Sample Date	03-14-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preparation Date	at collection
Preservation Type	HNO3
Analysis Date / Analyst (Hg)	04-01-03 / clh
Analysis Date / Analyst (others)	04-01-03 / eb
Control Number	030409-01

Sample Identification	P-2
Sample Depth, ft	7.6-12.1
Sample Type	water
Sample Date	03-14-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	PbCO3 / NaOH
Analysis Date, Available	03-26-03
Analyst	bek
Control Number	030409-01

METALS	ug/L	TDL
Arsenic - 6020	6	5
Barium - 6020	nd	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

INORGANICS	ug/L	TDL
Cyanide, Available - OIA1677	nd	20

KR059B031754

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/16 03

Data File	K-zoo
P-2	7.6-12.1

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	P-2D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	03-14-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030409-04

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	118	70-130
Toluene-d8	94	70-130
Dibromofluoromethane	98	70-130

Sample Identification	P-2D
Sample Depth, ft	35-40
Sample Type	water
Sample Date	03-14-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-20-03
Analysis Date	04-03-03
Analyst	qy
Control Number	030409-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	40	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	69	35-114
2-Fluorobiphenyl	60	43-116
p-Terphenyl-d14	117	33-141

KR059B031755

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 4/6/03

Data File	K-zoo
P-2D	35-40

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	P-2D	Sample Identification	P-2D
Sample Depth, ft	35-40	Sample Depth, ft	35-40
Sample Type	water	Sample Type	water
Sample Date	03-14-03	Sample Date	03-14-03
Received Date	03-19-03	Received Date	03-19-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	04-01-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030409-04	Control Number	030409-04

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	6	5			
Barium - 6020	nd	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031756

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ael Date 4/16/03

Data File	K-zoo
P-2D	35-40

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-24-03
Analyst	<outsource>
Control Number	030369-07

BTEX, Method 8260	ug/L	TDL
Benzene	50	1
Toluene	9	1
Ethylbenzene	230	1
Xylenes, Total	150	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	116	70-130
Toluene-d8	94	70-130
Dibromofluoromethane	106	70-130

Sample Identification	P-3
Sample Depth, ft	2.9-7.3
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-13-03
Analysis Date	03-18-03
Analyst	qy
Control Number	030369-07

PAHs, Method 8270	ug/L	TDL
Naphthalene	100	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	29	5
Fluorene	18	5
Phenanthrene	17	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	81	35-114
2-Fluorobiphenyl	70	43-116
p-Terphenyl-d14	120	33-141

KR059B031757

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AU Date 4-16-03

Data File	K-zoo
P-3	2.9-7.3

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	P-3	Sample Identification	P-3
Sample Depth, ft	2.9-7.3	Sample Depth, ft	2.9-7.3
Sample Type	water	Sample Type	water
Sample Date	03-11-03	Sample Date	03-11-03
Received Date	03-12-03	Received Date	03-12-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-19-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030369-07	Control Number	030369-07

METALS	ug/L	TDL
Arsenic - 6020	6	5
Barium - 6020	400	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	26	5
Silver - 6020	nd	0.5
Zinc - 6020	19	10
Metal Results Are Reported As	Dissolved	Dissolved

no entry	ug/L	no entry

KR059B031758

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By DH Date 4-16-03

Data File	K-zoo
P-3	2.9-7.3

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	P-3D
Sample Depth, ft	34.6-39.6
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-24-03
Analyst	<outsource>
Control Number	030369-09

BTEX, Method 8260	ug/L	TDL
Benzene	86	1
Toluene	5	1
Ethylbenzene	5	1
Xylenes, Total	29	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	116	70-130
Toluene-d8	99	70-130
Dibromofluoromethane	100	70-130

Sample Identification	P-3D
Sample Depth, ft	34.6-39.6
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-13-03
Analysis Date	03-18-03
Analyst	qy
Control Number	030369-09

PAHs, Method 8270	ug/L	TDL
Naphthalene	36	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	54	35-114
2-Fluorobiphenyl	50	43-116
p-Terphenyl-d14	116	33-141

KR059B031759

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By J.M Date 4-16-03

Data File	K-zoo
P-3D	34.6-39.6

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	P-3D	Sample Identification	P-3D
Sample Depth, ft	34.6-39.6	Sample Depth, ft	34.6-39.6
Sample Type	water	Sample Type	water
Sample Date	03-11-03	Sample Date	03-11-03
Received Date	03-12-03	Received Date	03-12-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-19-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030369-09	Control Number	030369-09

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	31	5			
Barium - 6020	200	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031760

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Sd Date 4/16/03

Data File	K-zoo
P-3D	34.6-39.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-1
Sample Depth, ft	7.9-11.6
Sample Type	water
Sample Date	03-17-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030409-08

BTEX, Method 8260	ug/L	TDL
Benzene	34	20
Toluene	2,900	20
Ethylbenzene	5,400	20
Xylenes, Total	8,300	60

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	111	70-130
Toluene-d8	94	70-130
Dibromofluoromethane	94	70-130

Sample Identification	MW-1
Sample Depth, ft	7.9-11.6
Sample Type	water
Sample Date	03-17-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-21-03
Analysis Date	04-03-03
Analyst	qy
Control Number	030409-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	1,000	50
2-Methylnaphthalene	19	25
Acenaphthylene	nd	25
Acenaphthene	nd	25
Fluorene	nd	25
Phenanthrene	nd	25
Anthracene	nd	25
Fluoranthene	nd	25
Pyrene	nd	25
Benzo(a)anthracene	nd	25
Chrysene	nd	25
Benzo(b)fluoranthene	nd	25
Benzo(k)fluoranthene	nd	25
Benzo(a)pyrene	nd	25
Indeno(1,2,3-cd)pyrene	nd	25
Dibenzo(a,h)anthracene	nd	25
Benzo(g,h,i)perylene	nd	25

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	70	35-114
2-Fluorobiphenyl	71	43-116
p-Terphenyl-d14	73	33-141

KR059B031761

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AU Date 4-16-03

Data File	K-zoo
MW-1	7.9-11.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-1	Sample Identification	MW-1
Sample Depth, ft	7.9-11.6	Sample Depth, ft	7.9-11.6
Sample Type	water	Sample Type	water
Sample Date	03-17-03	Sample Date	03-17-03
Received Date	03-19-03	Received Date	03-19-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	04-01-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030409-08	Control Number	030409-08

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	14	5			
Barium - 6020	230	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031762

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-16-03

Data File	K-zoo
MW-1	7.9-11.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-2
Sample Depth, ft	4.0-7.7
Sample Type	water
Sample Date	03-12-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030390-01

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	115	70-130
Toluene-d8	96	70-130
Dibromofluoromethane	99	70-130

Sample Identification	MW-2
Sample Depth, ft	4.0-7.7
Sample Type	water
Sample Date	03-12-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-18-03
Analysis Date	03-31-03
Analyst	qy
Control Number	030390-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	55	35-114
2-Fluorobiphenyl	51	43-116
p-Terphenyl-d14	104	33-141

KR059B031763

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-16-03

Data File	K-zoo
MW-2	4.0-7.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-2	Sample Identification	MW-2
Sample Depth, ft	4.0-7.7	Sample Depth, ft	4.0-7.7
Sample Type	water	Sample Type	water
Sample Date	03-12-03	Sample Date	03-12-03
Received Date	03-14-03	Received Date	03-14-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-26-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030390-01	Control Number	030390-01

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	nd	5			
Barium - 6020	nd	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	69	10			
Metal Results Are Reported As	*Dissolved*	*Dissolved*			

KR059B031764

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AU Date 4/16/03

Data File	K-zoo
MW-2	4.0-7.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-3
Sample Depth, ft	2.9-7.8
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-24-03
Analyst	<outsource>
Control Number	030369-06

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	104	70-130
Toluene-d8	92	70-130
Dibromofluoromethane	109	70-130

Sample Identification	MW-3
Sample Depth, ft	2.9-7.8
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-13-03
Analysis Date	03-18-03
Analyst	qy
Control Number	030369-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	63	35-114
2-Fluorobiphenyl	57	43-116
p-Terphenyl-d14	115	33-141

KR059B031765

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4-16-03

Data File	K-zoo
MW-3	2.9-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-3	Sample Identification	MW-3
Sample Depth, ft	2.9-7.8	Sample Depth, ft	2.9-7.8
Sample Type	water	Sample Type	water
Sample Date	03-11-03	Sample Date	03-11-03
Received Date	03-12-03	Received Date	03-12-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-19-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030369-06	Control Number	030369-06

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	150	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	11	10
Metal Results Are Reported As	Dissolved	Dissolved

no entry	ug/L	no entry

KR059B031766

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AL Date 4/16/03

Data File	K-zoo
MW-3	2.9-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-101
Sample Depth, ft	12.2-16.9
Sample Type	water
Sample Date	03-17-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030409-07

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	3	1
Xylenes, Total	7	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	118	70-130
Toluene-d8	95	70-130
Dibromofluoromethane	95	70-130

Sample Identification	MW-101
Sample Depth, ft	12.2-16.9
Sample Type	water
Sample Date	03-17-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-21-03
Analysis Date	04-02-03
Analyst	qy
Control Number	030409-07

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	68	35-114
2-Fluorobiphenyl	59	43-116
p-Terphenyl-d14	121	33-141

KR059B031767

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 4-16-03

Data File	K-zoo
MW-101	12.2-16.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-101	Sample Identification	MW-101
Sample Depth, ft	12.2-16.9	Sample Depth, ft	12.2-16.9
Sample Type	water	Sample Type	water
Sample Date	03-17-03	Sample Date	03-17-03
Received Date	03-19-03	Received Date	03-19-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	04-01-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030409-07	Control Number	030409-07

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	nd	5			
Barium - 6020	160	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031768

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Ak* Date *4-16-03*

Data File	K-zoo
MW-101	12.2-16.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	03-14-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-24-03
Analyst	<outsource>
Control Number	030409-05

BTEX, Method 8260	ug/L	TDL
Benzene	nd	20
Toluene	nd	20
Ethylbenzene	540	20
Xylenes, Total	4,900	60

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	114	70-130
Toluene-d8	95	70-130
Dibromofluoromethane	97	70-130

Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5
Sample Type	water
Sample Date	03-14-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-20-03
Analysis Date	04-03-03
Analyst	qy
Control Number	030409-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	4,400	125
2-Methylnaphthalene	430	25
Acenaphthylene	320	25
Acenaphthene	33	25
Fluorene	51	25
Phenanthrene	nd	25
Anthracene	nd	25
Fluoranthene	nd	25
Pyrene	nd	25
Benzo(a)anthracene	nd	25
Chrysene	nd	25
Benzo(b)fluoranthene	nd	25
Benzo(k)fluoranthene	nd	25
Benzo(a)pyrene	nd	25
Indeno(1,2,3-cd)pyrene	nd	25
Dibenzo(a,h)anthracene	nd	25
Benzo(g,h,i)perylene	nd	25

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	90	35-114
2-Fluorobiphenyl	92	43-116
p-Terphenyl-d14	84	33-141

KR059B031769

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 4/16/03

Data File	K-zoo
MW-101D	34.5-39.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-101D	Sample Identification	MW-101D
Sample Depth, ft	34.5-39.5	Sample Depth, ft	34.5-39.5
Sample Type	water	Sample Type	water
Sample Date	03-14-03	Sample Date	03-14-03
Received Date	03-19-03	Received Date	03-19-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	04-01-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030409-05	Control Number	030409-05

METALS	ug/L	TDL
Arsenic - 6020	22	5
Barium - 6020	470	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

no entry	ug/L	no entry

KR059B031770

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Jul Date 4/6/03

Data File	K-zoo
MW-101D	34.5-39.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-104
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	03-13-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030390-06

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	116	70-130
Toluene-d8	96	70-130
Dibromofluoromethane	97	70-130

Sample Identification	MW-104
Sample Depth, ft	4.4-9.4
Sample Type	water
Sample Date	03-13-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-19-03
Analysis Date	03-31-06
Analyst	qy
Control Number	030390-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	84	35-114
2-Fluorobiphenyl	81	43-116
p-Terphenyl-d14	102	33-141

KR059B031771

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AL Date 4-16-03

Data File	K-zoo
MW-104	4.4-9.4

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-104	Sample Identification	MW-104
Sample Depth, ft	4.4-9.4	Sample Depth, ft	4.4-9.4
Sample Type	water	Sample Type	water
Sample Date	03-13-03	Sample Date	03-13-03
Received Date	03-14-03	Received Date	03-14-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-26-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030390-06	Control Number	030390-06

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	330	100
Cadmium - 6020	0.6	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	310	10
Metal Results Are Reported As	Dissolved	Dissolved

no entry	ug/L	no entry

KR059B031772

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Jul Date 4/16/03

Data File	K-zoo
MW-104	4.4-9.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-104D
Sample Depth, ft	29.9-34.9
Sample Type	water
Sample Date	03-13-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030390-08

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	115	70-130
Toluene-d8	94	70-130
Dibromofluoromethane	96	70-130

Sample Identification	MW-104D
Sample Depth, ft	29.9-34.9
Sample Type	water
Sample Date	03-13-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-19-03
Analysis Date	03-31-06
Analyst	qy
Control Number	030390-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	82	35-114
2-Fluorobiphenyl	80	43-116
p-Terphenyl-d14	101	33-141

KR059B031773

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By SM Date 4-16-03

Data File	K-zoo
MW-104D	29.9-34.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-104D	Sample Identification	MW-104D
Sample Depth, ft	29.9-34.9	Sample Depth, ft	29.9-34.9
Sample Type	water	Sample Type	water
Sample Date	03-13-03	Sample Date	03-13-03
Received Date	03-14-03	Received Date	03-14-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-26-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030390-08	Control Number	030390-08

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	21	5			
Barium - 6020	290	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031774

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4/16/03

Data File	K-zoo
MW-104D	29.9-34.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-201R
Sample Depth, ft	1.6-6.7
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-24-03
Analyst	<outsource>
Control Number	030369-10

BTEX, Method 8260	ug/L	TDL
Benzene	150	1
Toluene	10	1
Ethylbenzene	270	1
Xylenes, Total	280	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	120	70-130
Toluene-d8	99	70-130
Dibromofluoromethane	97	70-130

Sample Identification	MW-201R
Sample Depth, ft	1.6-6.7
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-13-03
Analysis Date	03-18-03
Analyst	qy
Control Number	030369-10

PAHs, Method 8270	ug/L	TDL
Naphthalene	1,000	25
2-Methylnaphthalene	nd	25
Acenaphthylene	nd	25
Acenaphthene	32	25
Fluorene	nd	25
Phenanthrene	nd	25
Anthracene	nd	25
Fluoranthene	nd	25
Pyrene	nd	25
Benzo(a)anthracene	nd	25
Chrysene	nd	25
Benzo(b)fluoranthene	nd	25
Benzo(k)fluoranthene	nd	25
Benzo(a)pyrene	nd	25
Indeno(1,2,3-cd)pyrene	nd	25
Dibenzo(a,h)anthracene	nd	25
Benzo(g,h,i)perylene	nd	25

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	63	35-114
2-Fluorobiphenyl	66	43-116
p-Terphenyl-d14	82	33-141

KR059B031775

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AU Date 4-16-03

Data File	K-zoo
MW-201R	1.6-6.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-201R	Sample Identification	MW-201R
Sample Depth, ft	1.6-6.7	Sample Depth, ft	1.6-6.7
Sample Type	water	Sample Type	water
Sample Date	03-11-03	Sample Date	03-11-03
Received Date	03-12-03	Received Date	03-12-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-19-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030369-10	Control Number	030369-10

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	190	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

no entry	ug/L	no entry

KR059B031776

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/6/03

Data File	K-zoo
MW-201R	1.6-6.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	03-14-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030409-03

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	4	1
Xylenes, Total	10	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	113	70-130
Toluene-d8	94	70-130
Dibromofluoromethane	96	70-130

Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4
Sample Type	water
Sample Date	03-14-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-20-03
Analysis Date	04-03-03
Analyst	qy
Control Number	030409-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	60	35-114
2-Fluorobiphenyl	55	43-116
p-Terphenyl-d14	116	33-141

KR059B031777

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 4/6/03

Data File	K-zoo
MW-202D	55.4-60.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-202D	Sample Identification	MW-202D
Sample Depth, ft	55.4-60.4	Sample Depth, ft	55.4-60.4
Sample Type	water	Sample Type	water
Sample Date	03-14-03	Sample Date	03-14-03
Received Date	03-19-03	Received Date	03-19-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	04-01-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030409-03	Control Number	030409-03

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	nd	5			
Barium - 6020	180	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031778

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/16/03

Data File	K-zoo
MW-202D	55.4-60.4

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-301
Sample Depth, ft	4.0-10.1
Sample Type	water
Sample Date	03-14-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030409-02

BTEX, Method 8260	ug/L	TDL
Benzene	8,500	50
Toluene	nd	50
Ethylbenzene	2,200	50
Xylenes, Total	990	150

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	113	70-130
Toluene-d8	96	70-130
Dibromofluoromethane	92	70-130

Sample Identification	MW-301
Sample Depth, ft	4.0-10.1
Sample Type	water
Sample Date	03-14-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-20-03
Analysis Date	04-03-03
Analyst	qy
Control Number	030409-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	7,300	125
2-Methylnaphthalene	600	25
Acenaphthylene	nd	25
Acenaphthene	210	25
Fluorene	59	25
Phenanthrene	53	25
Anthracene	nd	25
Fluoranthene	nd	25
Pyrene	nd	25
Benzo(a)anthracene	nd	25
Chrysene	nd	25
Benzo(b)fluoranthene	nd	25
Benzo(k)fluoranthene	nd	25
Benzo(a)pyrene	nd	25
Indeno(1,2,3-cd)pyrene	nd	25
Dibenzo(a,h)anthracene	nd	25
Benzo(g,h,i)perylene	nd	25

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	94	35-114
2-Fluorobiphenyl	94	43-116
p-Terphenyl-d14	87	33-141

KR059B031779

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-16-03

Data File	K-zoo
MW-301	4.0-10.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-301	Sample Identification	MW-301
Sample Depth, ft	4.0-10.1	Sample Depth, ft	4.0-10.1
Sample Type	water	Sample Type	water
Sample Date	03-14-03	Sample Date	03-14-03
Received Date	03-19-03	Received Date	03-19-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	04-01-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030409-02	Control Number	030409-02

METALS	ug/L	TDL
Arsenic - 6020	43	5
Barium - 6020	200	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

no entry	ug/L	no entry

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NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date 4/16/03

Data File	K-zoo
MW-301	4.0-10.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-302
Sample Depth, ft	3.5-8.7
Sample Type	water
Sample Date	03-10-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-24-03
Analyst	<outsource>
Control Number	030369-03

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	115	70-130
Toluene-d8	85	70-130
Dibromofluoromethane	106	70-130

Sample Identification	MW-302
Sample Depth, ft	3.5-8.7
Sample Type	water
Sample Date	03-10-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-13-03
Analysis Date	03-17-03
Analyst	qy
Control Number	030369-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	74	35-114
2-Fluorobiphenyl	68	43-116
p-Terphenyl-d14	117	33-141

KR059B031781

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Sel Date 4-16-03

Data File	K-zoo
MW-302	3.5-8.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-302	Sample Identification	MW-302
Sample Depth, ft	3.5-8.7	Sample Depth, ft	3.5-8.7
Sample Type	water	Sample Type	water
Sample Date	03-10-03	Sample Date	03-10-03
Received Date	03-12-03	Received Date	03-12-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-19-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030369-03	Control Number	030369-03

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	8	5			
Barium - 6020	nd	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031782

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-16-03

Data File	K-200
MW-302	3.5-8.7

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-302I
Sample Depth, ft	19.8-24.8
Sample Type	water
Sample Date	03-10-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-24-03
Analyst	<outsource>
Control Number	030369-02

BTEX, Method 8260	ug/L	TDL
Benzene	50	1
Toluene	1	1
Ethylbenzene	2	1
Xylenes, Total	5	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	113	70-130
Toluene-d8	93	70-130
Dibromofluoromethane	93	70-130

Sample Identification	MW-302I
Sample Depth, ft	19.8-24.8
Sample Type	water
Sample Date	03-10-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-13-03
Analysis Date	03-17-03
Analyst	qy
Control Number	030369-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	49	35-114
2-Fluorobiphenyl	59	43-116
p-Terphenyl-d14	117	33-141

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NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ad Date 4-16-03

Data File	K-zoo
MW-302I	19.8-24.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-302I	Sample Identification	MW-302I
Sample Depth, ft	19.8-24.8	Sample Depth, ft	19.8-24.8
Sample Type	water	Sample Type	water
Sample Date	03-10-03	Sample Date	03-10-03
Received Date	03-12-03	Received Date	03-12-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-19-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030369-02	Control Number	030369-02

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	14	5			
Barium - 6020	330	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031784

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-16-03

Data File	K-zoo
MW-302I	19.8-24.8

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-302D
Sample Depth, ft	55.3-60.3
Sample Type	water
Sample Date	03-12-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030390-02

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	114	70-130
Toluene-d8	92	70-130
Dibromofluoromethane	100	70-130

Sample Identification	MW-302D
Sample Depth, ft	55.3-60.3
Sample Type	water
Sample Date	03-12-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-18-03
Analysis Date	03-31-03
Analyst	qy
Control Number	030390-02

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	55	35-114
2-Fluorobiphenyl	66	43-116
p-Terphenyl-d14	101	33-141

KR059B031785

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Jul Date 4-16-03

Data File	K-zoo
MW-302D	55.3-60.3

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-302D	Sample Identification	MW-302D
Sample Depth, ft	55.3-60.3	Sample Depth, ft	55.3-60.3
Sample Type	water	Sample Type	water
Sample Date	03-12-03	Sample Date	03-12-03
Received Date	03-14-03	Received Date	03-14-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-26-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030390-02	Control Number	030390-02

METALS	ug/L	TDL
Arsenic - 6020	28	5
Barium - 6020	210	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

no entry	ug/L	no entry

KR059B031786

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AH Date 4/6/03

Data File	K-zoo
MW-302D	55.3-60.3

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-303
Sample Depth, ft	3.2-7.6
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-24-03
Analyst	<outsource>
Control Number	030369-05

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	105	70-130
Toluene-d8	97	70-130
Dibromofluoromethane	102	70-130

Sample Identification	MW-303
Sample Depth, ft	3.2-7.6
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-13-03
Analysis Date	03-17-03
Analyst	qy
Control Number	030369-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	54	35-114
2-Fluorobiphenyl	65	43-116
p-Terphenyl-d14	117	33-141

KR059B031787

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Jul Date 4-16-03

Data File	K-zoo
MW-303	3.2-7.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-303	Sample Identification	MW-303
Sample Depth, ft	3.2-7.6	Sample Depth, ft	3.2-7.6
Sample Type	water	Sample Type	water
Sample Date	03-11-03	Sample Date	03-11-03
Received Date	03-12-03	Received Date	03-12-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-19-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030369-05	Control Number	030369-05

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	270	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

no entry	ug/L	no entry

KR059B031788

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By JU Date 4/16/03

Data File	K-zoo
MW-303	3.2-7.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-304
Sample Depth, ft	4.0-10.1
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-24-03
Analyst	<outsource>
Control Number	030369-04

BTEX, Method 8260	ug/L	TDL
Benzene	230	1
Toluene	19	1
Ethylbenzene	200	1
Xylenes, Total	73	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	120	70-130
Toluene-d8	95	70-130
Dibromofluoromethane	84	70-130

Sample Identification	MW-304
Sample Depth, ft	4.0-10.1
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-13-03
Analysis Date	03-17-03
Analyst	qy
Control Number	030369-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	93	5
2-Methylnaphthalene	69	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	74	35-114
2-Fluorobiphenyl	72	43-116
p-Terphenyl-d14	118	33-141

KR059B031789

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4-16-03

Data File	K-zoo
MW-304	4.0-10.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-304	Sample Identification	MW-304
Sample Depth, ft	4.0-10.1	Sample Depth, ft	4.0-10.1
Sample Type	water	Sample Type	water
Sample Date	03-11-03	Sample Date	03-11-03
Received Date	03-12-03	Received Date	03-12-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-19-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030369-04	Control Number	030369-04

METALS	ug/L	TDL
Arsenic - 6020	27	5
Barium - 6020	150	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	4	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

no entry	ug/L	no entry

KR059B031790

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/16/03

Data File	K-zoo
MW-304	4.0-10.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-304D
Sample Depth, ft	64.5-69.5
Sample Type	water
Sample Date	03-13-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-26-03
Analyst	<outsource>
Control Number	030390-04

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	118	70-130
Toluene-d8	99	70-130
Dibromofluoromethane	93	70-130

Sample Identification	MW-304D
Sample Depth, ft	64.5-69.5
Sample Type	water
Sample Date	03-13-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-18-03
Analysis Date	03-31-03
Analyst	qy
Control Number	030390-04

PAHs, Method 8270	ug/L	TDL
Naphthalene	7	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	55	35-114
2-Fluorobiphenyl	52	43-116
p-Terphenyl-d14	108	33-141

KR059B031791

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 4-16-03

Data File	K-zoo
MW-304D	64.5-69.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-304D	Sample Identification	MW-304D
Sample Depth, ft	64.5-69.5	Sample Depth, ft	64.5-69.5
Sample Type	water	Sample Type	water
Sample Date	03-13-03	Sample Date	03-13-03
Received Date	03-14-03	Received Date	03-14-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-26-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030390-04	Control Number	030390-04

METALS	ug/L	TDL
Arsenic - 6020	23	5
Barium - 6020	290	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

no entry	ug/L	no entry

KR059B031792

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) *nd* = *Parameter* Not Detected At TDL

Reviewed By Jll Date 4/6/03

Data File	*K-zoo*
MW-304D	64.5-69.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-401
Sample Depth, ft	7.5-17.5
Sample Type	water
Sample Date	03-17-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030409-09

BTEX, Method 8260	ug/L	TDL
Benzene	12,000	100
Toluene	48,000	100
Ethylbenzene	6,300	100
Xylenes, Total	23,000	300

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	113	70-130
Toluene-d8	96	70-130
Dibromofluoromethane	92	70-130

Sample Identification	MW-401
Sample Depth, ft	7.5-17.5
Sample Type	water
Sample Date	03-17-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-21-03
Analysis Date	04-03-03
Analyst	qy
Control Number	030409-09

PAHs, Method 8270	ug/L	TDL
Naphthalene	2,200	50
2-Methylnaphthalene	110	25
Acenaphthylene	70	25
Acenaphthene	nd	25
Fluorene	nd	25
Phenanthrene	nd	25
Anthracene	nd	25
Fluoranthene	nd	25
Pyrene	nd	25
Benzo(a)anthracene	nd	25
Chrysene	nd	25
Benzo(b)fluoranthene	nd	25
Benzo(k)fluoranthene	nd	25
Benzo(a)pyrene	nd	25
Indeno(1,2,3-cd)pyrene	nd	25
Dibenzo(a,h)anthracene	nd	25
Benzo(g,h,i)perylene	nd	25

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	76	35-114
2-Fluorobiphenyl	74	43-116
p-Terphenyl-d14	85	33-141

KR059B031793

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By S.M. Date 4-16-03

Data File	K-zoo
MW-401	7.5-17.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-401	Sample Identification	MW-401
Sample Depth, ft	7.5-17.5	Sample Depth, ft	7.5-17.5
Sample Type	water	Sample Type	water
Sample Date	03-17-03	Sample Date	03-17-03
Received Date	03-19-03	Received Date	03-19-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	04-01-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030409-09	Control Number	030409-09

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	16	5			
Barium - 6020	110	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031794

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/16/03

Data File	K-zoo
MW-401	7.5-17.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-401I
Sample Depth, ft	37.5-42.5
Sample Type	water
Sample Date	03-17-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030409-12

BTEX, Method 8260	ug/L	TDL
Benzene	32	1
Toluene	nd	1
Ethylbenzene	410	1
Xylenes, Total	220	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	114	70-130
Toluene-d8	99	70-130
Dibromofluoromethane	95	70-130

Sample Identification	MW-401I
Sample Depth, ft	37.5-42.5
Sample Type	water
Sample Date	03-17-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-21-03
Analysis Date	04-03-03
Analyst	qy
Control Number	030409-12

PAHs, Method 8270	ug/L	TDL
Naphthalene	590	10
2-Methylnaphthalene	25	5
Acenaphthylene	nd	5
Acenaphthene	19	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	73	35-114
2-Fluorobiphenyl	64	43-116
p-Terphenyl-d14	117	33-141

KR059B031795

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *Ale* Date *4-16-03*

Data File	K-zoo
MW-401I	37.5-42.5

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-401I	Sample Identification	MW-401I
Sample Depth, ft	37.5-42.5	Sample Depth, ft	37.5-42.5
Sample Type	water	Sample Type	water
Sample Date	03-17-03	Sample Date	03-17-03
Received Date	03-19-03	Received Date	03-19-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	04-01-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030409-12	Control Number	030409-12

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	40	5			
Barium - 6020	220	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031796

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By SM Date 4/16/03

Data File	K-zoo
MW-401I	37.5-42.5

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-401D
Sample Depth, ft	67.3-72.3
Sample Type	water
Sample Date	03-18-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030409-14

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	4	1
Ethylbenzene	14	1
Xylenes, Total	16	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	112	70-130
Toluene-d8	97	70-130
Dibromofluoromethane	98	70-130

Sample Identification	MW-401D
Sample Depth, ft	67.3-72.3
Sample Type	water
Sample Date	03-18-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-21-03
Analysis Date	04-03-03
Analyst	qy
Control Number	030409-14

PAHs, Method 8270	ug/L	TDL
Naphthalene	100	5
2-Methylnaphthalene	44	5
Acenaphthylene	44	5
Acenaphthene	29	5
Fluorene	40	5
Phenanthrene	74	5
Anthracene	14	5
Fluoranthene	8	5
Pyrene	6	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	85	35-114
2-Fluorobiphenyl	79	43-116
p-Terphenyl-d14	115	33-141

KR059B031797

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AH Date 4/16/03

Data File	K-zoo
MW-401D	67.3-72.3

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-402
Sample Depth, ft	3.6-8.6
Sample Type	water
Sample Date	03-17-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-24-03
Analyst	<outsource>
Control Number	030409-11

BTEX, Method 8260	ug/L	TDL
Benzene	3	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	119	70-130
Toluene-d8	92	70-130
Dibromofluoromethane	104	70-130

Sample Identification	MW-402
Sample Depth, ft	3.6-8.6
Sample Type	water
Sample Date	03-17-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-21-03
Analysis Date	04-02-03
Analyst	qy
Control Number	030409-11

PAHs, Method 8270	ug/L	TDL
Naphthalene	36	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	5	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	72	35-114
2-Fluorobiphenyl	62	43-116
p-Terphenyl-d14	119	33-141

KR059B031798

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4/16/03

Data File	K-zoo
MW-402	3.6-8.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-402	Sample Identification	MW-402
Sample Depth, ft	3.6-8.6	Sample Depth, ft	3.6-8.6
Sample Type	water	Sample Type	water
Sample Date	03-17-03	Sample Date	03-17-03
Received Date	03-19-03	Received Date	03-19-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	04-01-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030409-11	Control Number	030409-11

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	nd	5			
Barium - 6020	nd	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031799

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4/16/03

Data File	K-zoo
MW-402	3.6-8.6

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-402D
Sample Depth, ft	65-70
Sample Type	water
Sample Date	03-17-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030409-10

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	116	70-130
Toluene-d8	92	70-130
Dibromofluoromethane	95	70-130

Sample Identification	MW-402D
Sample Depth, ft	65-70
Sample Type	water
Sample Date	03-17-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-21-03
Analysis Date	04-02-03
Analyst	qy
Control Number	030409-10

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	63	35-114
2-Fluorobiphenyl	55	43-116
p-Terphenyl-d14	114	33-141

KR059B031800

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AL Date 4/6/03

Data File	K-zoo
MW-402D	65-70

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-402D	Sample Identification	MW-402D
Sample Depth, ft	65-70	Sample Depth, ft	65-70
Sample Type	water	Sample Type	water
Sample Date	03-17-03	Sample Date	03-17-03
Received Date	03-19-03	Received Date	03-19-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	04-01-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030409-10	Control Number	030409-10

METALS	ug/L	TDL
Arsenic - 6020	nd	5
Barium - 6020	160	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

no entry	ug/L	no entry

KR059B031801

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4/16/03

Data File	K-zoo
MW-402D	65-70

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-403
Sample Depth, ft	2.8-7.8
Sample Type	water
Sample Date	03-10-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-24-03
Analyst	<outsource>
Control Number	030369-01

BTEX, Method 8260	ug/L	TDL
Benzene	16	10
Toluene	nd	10
Ethylbenzene	960	10
Xylenes, Total	2,200	30

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	113	70-130
Toluene-d8	95	70-130
Dibromofluoromethane	93	70-130

Sample Identification	MW-403
Sample Depth, ft	2.8-7.8
Sample Type	water
Sample Date	03-10-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-13-03
Analysis Date	03-17-03
Analyst	qy
Control Number	030369-01

PAHs, Method 8270	ug/L	TDL
Naphthalene	97	5
2-Methylnaphthalene	28	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	56	35-114
2-Fluorobiphenyl	62	43-116
p-Terphenyl-d14	116	33-141

KR059B031802

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-16-03

Data File	K-zoo
MW-403	2.8-7.8

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-403	Sample Identification	MW-403
Sample Depth, ft	2.8-7.8	Sample Depth, ft	2.8-7.8
Sample Type	water	Sample Type	water
Sample Date	03-10-03	Sample Date	03-10-03
Received Date	03-12-03	Received Date	03-12-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-19-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030369-01	Control Number	030369-01

METALS	ug/L	TDL
Arsenic - 6020	80	5
Barium - 6020	100	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

no entry	ug/L	no entry

KR059B031803

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By Ad Date 4-16-03

Data File	K-zoo
MW-403	2.8-7.8

INORG

01209

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-403D
Sample Depth, ft	60.1-65.1
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-24-03
Analyst	<outsource>
Control Number	030369-08

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	119	70-130
Toluene-d8	95	70-130
Dibromofluoromethane	104	70-130

Sample Identification	MW-403D
Sample Depth, ft	60.1-65.1
Sample Type	water
Sample Date	03-11-03
Received Date	03-12-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-13-03
Analysis Date	03-18-03
Analyst	qy
Control Number	030369-08

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	62	35-114
2-Fluorobiphenyl	53	43-116
p-Terphenyl-d14	122	33-141

KR059B031804

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 4-16-03

Data File	K-zoo
MW-403D	60.1-65.1

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0121D

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-403D	Sample Identification	MW-403D
Sample Depth, ft	60.1-65.1	Sample Depth, ft	60.1-65.1
Sample Type	water	Sample Type	water
Sample Date	03-11-03	Sample Date	03-11-03
Received Date	03-12-03	Received Date	03-12-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-19-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030369-08	Control Number	030369-08

METALS	ug/L	TDL
Arsenic - 6020	12	5
Barium - 6020	240	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

no entry	ug/L	no entry

KR059B031805

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By AM Date 4/16/03

Data File	K-zoo
MW-403D	60.1-65.1

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-404	Sample Identification	MW-404
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	03-13-03	Sample Date	03-13-03
Received Date	03-14-03	Received Date	03-14-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	no sample	-	
Preservation Type	no sample	-	
Analysis Date / Analyst (Hg)	no sample	-	
Analysis Date / Analyst (others)	no sample	-	
Control Number	030390-07	Control Number	030390-07

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	-	5			
Barium - 6020	-	100			
Cadmium - 6020	-	0.5			
Chromium (total) - 6020	-	5			
Copper - 6020	-	25			
Lead - 6020	-	3			
Mercury - 7470	-	0.2			
Selenium - 6020	-	5			
Silver - 6020	-	0.5			
Zinc - 6020	-	10			
Metal Results Are Reported As	-	Dissolved			

KR059B031806

NOTES:	TDL = Target Detection Limit, ug/L (parts-per-billion) nd = Parameter Not Detected At TDL

Reviewed By JU Date 4/16/03

Data File	K-200
MW-404	2.9-7.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	03-13-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030390-07

BTEX, Method 8260	ug/L	TDL
Benzene	nd	1
Toluene	nd	1
Ethylbenzene	nd	1
Xylenes, Total	nd	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	118	70-130
Toluene-d8	96	70-130
Dibromofluoromethane	100	70-130

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	03-13-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-19-03
Analysis Date	03-31-06
Analyst	qy
Control Number	030390-07

PAHs, Method 8270	ug/L	TDL
Naphthalene	nd	5
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	83	35-114
2-Fluorobiphenyl	82	43-116
p-Terphenyl-d14	96	33-141

KR059B031807

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By *A.U* Date *4/16/03*

Data File	K-zoo
MW-404	2.9-7.9

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ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	03-14-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	no sample
Preservation Type	no sample
Analysis Date	no sample
Analyst	no sample
Control Number	030409-06

BTEX, Method 8260	ug/L	TDL
Benzene	-	1
Toluene	-	1
Ethylbenzene	-	1
Xylenes, Total	-	3

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	-	70-130
Toluene-d8	-	70-130
Dibromofluoromethane	-	70-130

Sample Identification	MW-404
Sample Depth, ft	2.9-7.9
Sample Type	water
Sample Date	03-14-03
Received Date	03-19-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	no sample
Analysis Date	no sample
Analyst	no sample
Control Number	030409-06

PAHs, Method 8270	ug/L	TDL
Naphthalene	-	5
2-Methylnaphthalene	-	5
Acenaphthylene	-	5
Acenaphthene	-	5
Fluorene	-	5
Phenanthrene	-	5
Anthracene	-	5
Fluoranthene	-	5
Pyrene	-	5
Benzo(a)anthracene	-	1
Chrysene	-	5
Benzo(b)fluoranthene	-	2
Benzo(k)fluoranthene	-	5
Benzo(a)pyrene	-	2
Indeno(1,2,3-cd)pyrene	-	2
Dibenzo(a,h)anthracene	-	2
Benzo(g,h,i)perylene	-	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	-	35-114
2-Fluorobiphenyl	-	43-116
p-Terphenyl-d14	-	33-141

KR059B031808

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By AM Date 4-16-03

Data File	K-zoo
MW-404	2.9-7.9

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-404	Sample Identification	MW-404
Sample Depth, ft	2.9-7.9	Sample Depth, ft	2.9-7.9
Sample Type	water	Sample Type	water
Sample Date	03-14-03	Sample Date	03-14-03
Received Date	03-19-03	Received Date	03-19-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	04-01-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030409-06	Control Number	030409-06

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	nd	5			
Barium - 6020	300	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	17	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031809

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By SM Date 4/16/03

Data File	K-zoo
MW-404	2.9-7.9

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-404I
Sample Depth, ft	34.7-39.7
Sample Type	water
Sample Date	03-12-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-26-03
Analyst	<outsource>
Control Number	030390-03

BTEX, Method 8260	ug/L	TDL
Benzene	18,000	100
Toluene	nd	100
Ethylbenzene	110	100
Xylenes, Total	nd	300

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	117	70-130
Toluene-d8	99	70-130
Dibromofluoromethane	94	70-130

Sample Identification	MW-404I
Sample Depth, ft	34.7-39.7
Sample Type	water
Sample Date	03-12-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-18-03
Analysis Date	04-01-03
Analyst	qy
Control Number	030390-03

PAHs, Method 8270	ug/L	TDL
Naphthalene	430	10
2-Methylnaphthalene	nd	5
Acenaphthylene	nd	5
Acenaphthene	nd	5
Fluorene	nd	5
Phenanthrene	nd	5
Anthracene	nd	5
Fluoranthene	nd	5
Pyrene	nd	5
Benzo(a)anthracene	nd	1
Chrysene	nd	5
Benzo(b)fluoranthene	nd	2
Benzo(k)fluoranthene	nd	5
Benzo(a)pyrene	nd	2
Indeno(1,2,3-cd)pyrene	nd	2
Dibenzo(a,h)anthracene	nd	2
Benzo(g,h,i)perylene	nd	5

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	56	35-114
2-Fluorobiphenyl	53	43-116
p-Terphenyl-d14	99	33-141

KR059B031810

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [signature] Date 4-16-03

Data File	K-zoo
MW-404I	34.7-39.7

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-404I	Sample Identification	MW-404I
Sample Depth, ft	34.7-39.7	Sample Depth, ft	34.7-39.7
Sample Type	water	Sample Type	water
Sample Date	03-12-03	Sample Date	03-12-03
Received Date	03-14-03	Received Date	03-14-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-26-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030390-03	Control Number	030390-03

METALS	ug/L	TDL	no entry	ug/L	no entry
Arsenic - 6020	25	5			
Barium - 6020	420	100			
Cadmium - 6020	nd	0.5			
Chromium (total) - 6020	nd	5			
Copper - 6020	nd	25			
Lead - 6020	nd	3			
Mercury - 7470	nd	0.2			
Selenium - 6020	nd	5			
Silver - 6020	nd	0.5			
Zinc - 6020	nd	10			
Metal Results Are Reported As	Dissolved	Dissolved			

KR059B031811

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By JM Date 4/16/03

Data File	K-zoo
MW-404I	34.7-39.7

INORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-404D
Sample Depth, ft	74.8-79.8
Sample Type	water
Sample Date	03-13-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Preservation Date	at collection
Preservation Type	HCl
Analysis Date	03-25-03
Analyst	<outsource>
Control Number	030390-05

BTEX, Method 8260	ug/L	TDL
Benzene	560	10
Toluene	21	10
Ethylbenzene	960	10
Xylenes, Total	440	30

Surrogate Recovery	%Recovery	Criteria
4-Bromofluorobenzene	110	70-130
Toluene-d8	94	70-130
Dibromofluoromethane	98	70-130

Sample Identification	MW-404D
Sample Depth, ft	74.8-79.8
Sample Type	water
Sample Date	03-13-03
Received Date	03-14-03
Report Date	04-16-03
Percent Solids, %w/w	-
Extraction Date	03-18-03
Analysis Date	04-01-03
Analyst	qy
Control Number	030390-05

PAHs, Method 8270	ug/L	TDL
Naphthalene	2,300	100
2-Methylnaphthalene	nd	100
Acenaphthylene	nd	25
Acenaphthene	46	25
Fluorene	nd	25
Phenanthrene	nd	25
Anthracene	nd	25
Fluoranthene	nd	25
Pyrene	nd	25
Benzo(a)anthracene	nd	25
Chrysene	nd	25
Benzo(b)fluoranthene	nd	25
Benzo(k)fluoranthene	nd	25
Benzo(a)pyrene	nd	25
Indeno(1,2,3-cd)pyrene	nd	25
Dibenzo(a,h)anthracene	nd	25
Benzo(g,h,i)perylene	nd	25

Surrogate Recovery	%Recovery	Criteria
Nitrobenzene-d5	54	35-114
2-Fluorobiphenyl	53	43-116
p-Terphenyl-d14	88	33-141

KR059B031812

NOTES: TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By [illegible] Date 4-16-03

Data File	K-zoo
MW-404D	74.8-79.8

ORG

ANALYTICAL RESULTS

CONSUMERS ENERGY COMPANY
Chemistry Section - Laboratory Services Department

PROJECT IDENTIFICATION	Kalamazoo Former MGP - SME Project Number KE31823B-5 - Sampling Dates of March 10 - 18, 2003	Project Numbers CHEM-03-0369, -0390, CHEM-03-0409

Sample Identification	MW-404D	Sample Identification	MW-404D
Sample Depth, ft	74.8-79.8	Sample Depth, ft	74.8-79.8
Sample Type	water	Sample Type	water
Sample Date	03-13-03	Sample Date	03-13-03
Received Date	03-14-03	Received Date	03-14-03
Report Date	04-16-03	Report Date	04-16-03
Percent Solids, %w/w	-	Percent Solids, %w/w	-
Preparation Date	at collection	-	
Preservation Type	HNO3	-	
Analysis Date / Analyst (Hg)	03-26-03 / clh	-	
Analysis Date / Analyst (others)	04-01-03 / eb	-	
Control Number	030390-05	Control Number	030390-05

METALS	ug/L	TDL
Arsenic - 6020	8	5
Barium - 6020	280	100
Cadmium - 6020	nd	0.5
Chromium (total) - 6020	nd	5
Copper - 6020	nd	25
Lead - 6020	nd	3
Mercury - 7470	nd	0.2
Selenium - 6020	nd	5
Silver - 6020	nd	0.5
Zinc - 6020	nd	10
Metal Results Are Reported As	Dissolved	Dissolved

no entry	ug/L	no entry

KR059B031813

NOTES:
TDL = Target Detection Limit, ug/L (parts-per-billion)
nd = Parameter Not Detected At TDL

Reviewed By _____ Date 4/16/03

Data File	K-zoo
MW-404D	74.8-79.8

INORG

EXHIBIT MGP-14

**** TSO FOREGROUND HARDCOPY ****
DSNAME=D71N.P2550.OFF

PAGE 1

ENVIRONMENTAL DEPARTMENT
MANIFESTED WASTE TRACKING SYSTEM
WASTE SHIPMENTS
FROM 010184 TO 081003
REPORT NO. 22

FACILITY / TRANSPORTER	TSDF	DESCRIPTION	WAS. NUMB	N/H	QTY	UT	MANIFEST NUMBER	DOC NUM	DATE SHIPPED
KALAMAZOO FORMER MGP SITE									
SQS,INC	MICH DISPOSAL WTP (EQ)	MISC. LIQUID,NOS	029L		200	G	MI7530767	49476	08/28/00
SQS,INC	SAUK TRAIL HILLS LANDFILL	MISC. SOLID,NOS	N/A		1	Y	MI7530768	49477	08/28/00
SQS,INC	GENERAL OIL COMPANY	MISC. LIQUID,NOS	029L		1000	G	MI7530769	49478	08/28/00
SQS,INC	MICH DISPOSAL WTP (EQ)	MISC. LIQUID,NOS	029L		550	G	MI8249185	50494	09/20/01
SQS,INC	EQ RESOURCE RECOVERY, INC	HAZARDOUS WASTE,LIQUID,NOS	D01B		55	G	MI8249229	50493	09/20/01
SQS,INC	WESTSIDE RECYCLING & DISP	MISC. SOLID,NOS	N/A		5	Y	MI8249231	50495	09/20/01
SQS,INC	GENERAL OIL COMPANY	MISC. LIQUID,NOS	029L		1250	G	MI8249232	50496	09/20/01
SQS,INC	SAUK TRAIL HILLS LANDFILL	MISC. SOLID,NOS	N/A		1	Y	MI8470894	51299	08/06/02
SQS,INC	GENERAL OIL COMPANY	MISC. LIQUID,NOS	029L		50	G	MI8470930	51300	08/06/02
K&D INDUSTRIAL SERVICE	WESTSIDE RECYCLING & DISP	MISC. SOLID,NOS	N/A		15	Y	MI8882829	51664	10/31/02
K&D INDUSTRIAL SERVICE	GENERAL OIL COMPANY	MISC. LIQUID,NOS	029L		1178	G	MI8882830	51665	10/31/02
K&D INDUSTRIAL SERVICE	DYNECOL, INC	HAZARDOUS WASTE,LIQUID,NOS	D018		330	G	MI8882831	51666	10/31/02

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01220

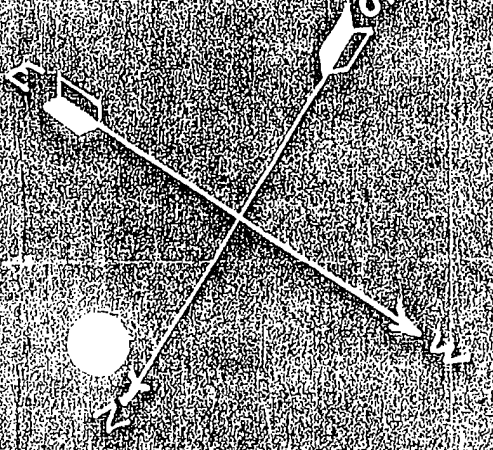
EXHIBIT MGP-15

PLAN OF GAS WORKS
CONSUMERS POWER COMPANY
KALAMAZOO MICHIGAN

SCALE 1" = 20'

CORRECT AS OF JULY 1, 1937

Small Scale Works Map	S-217
Sketch of Property of C.G. Spring Co. G.C. Wheaton 1674	A-191
Sketch of Property Purchased from C.G. Spring Co.	A-792
REFERENCES	DWG NO



ELECTRIC SERVICE

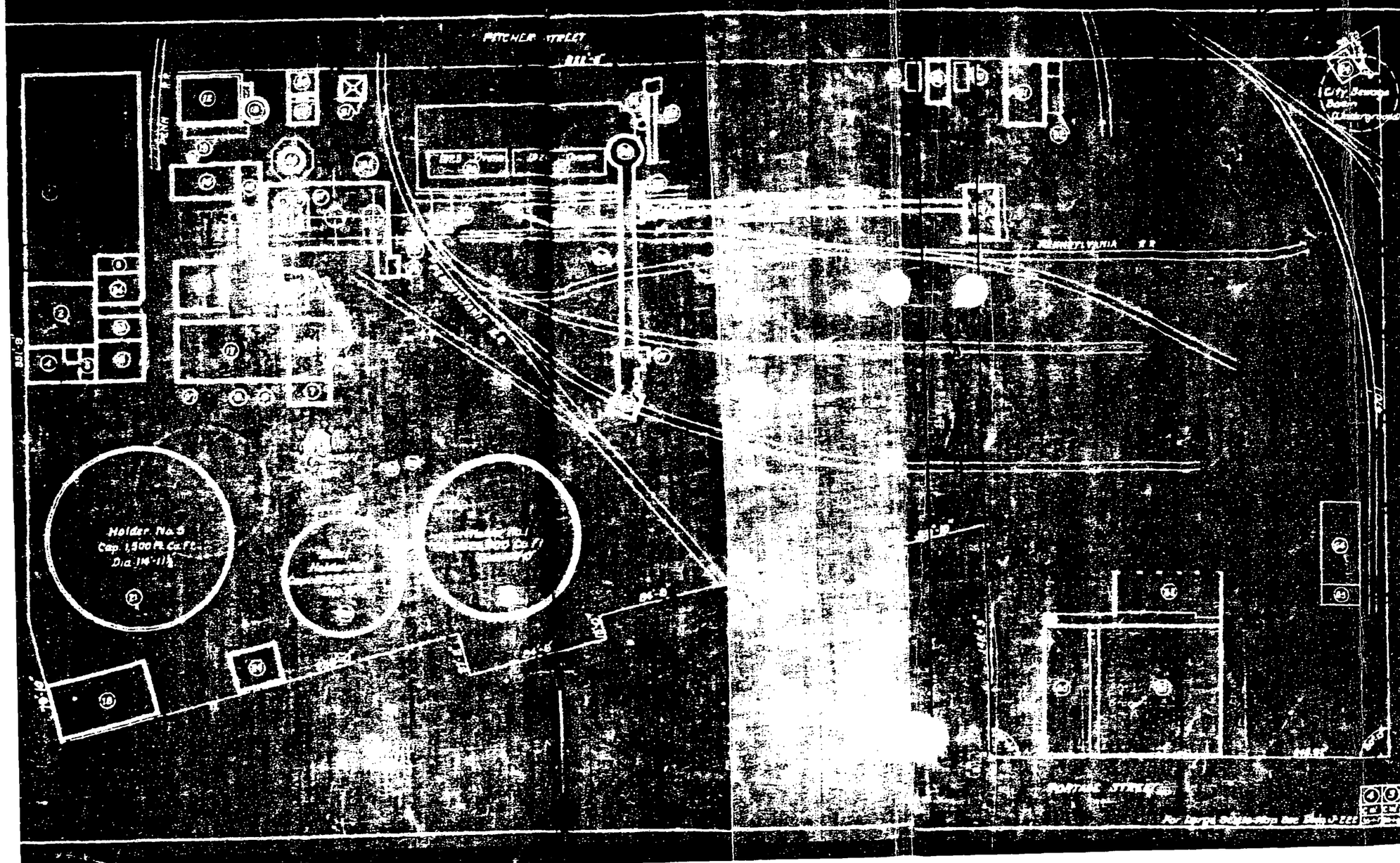
Lighting 110 Volt 60 Cycle
Power 240 Volt 3 Phase 60 Cycle

WORKING COPY

KR059B031817

00057501

EXHIBIT MGP-16



INDEX

1. Garage
2. Truck Repair Shop
3. Pipe Room
4. Locker Room
5. Wash Room
6. Stills Room
7. Liq Pur Blower & Pump Room
8. Liquid Purifier
9. Soda Solution Tank
10.
11. Tar Well
12. Storage Building
13. Oil Storage Tank - 27,000 Gal
14. Water Gas Bldg
15. Pump and Blower Room
16. Shop
17. Exhauster and Condenser Room
18. Purifier House - 1912
19. Oil Storage Tank - 19,220 Gal.
20. Holder No. 4 - 152,000 Cu Ft. (Relief)
21. Holder No. 8 - 1,500 M Cu Ft.
22. Tar Pump House
23. Holder No. 1 - 624,000 Cu Ft
24. Meter House (Governor & Booster)
25. Ash Pit
26. Tulphar for Boiler & Prod Fuel
27. Boiler and Producer House
28. Coal Stock 6'x175'
29. Laboratory
30. Superintendent's Office
31. Ash Bin
32. Dust Arrester
33. Oil Storage Room
34. Paint Room
35. Brick Chimney 5'-3"x105'-0"
36. 1-12-6 Tod Ovens Parker Russell 1923
37. 1-6 Tod Ovens Parker Russell 1926
38. Drain Coal Bins
39. Quenching Station
40. Coal Conveyor
41. Controller Room
42.
43. Track Hopper Pit
44. Quenching Station Settling Pit
45. Coke Crusher & Hoist Room
46. Coke Conveyor
47. Coke Storage & Loading Bins
48. Beetles-Wagon
49. Coke Office
50. Scales-Wagon
51. Garage
52. Transformer Installation
53.
54. City Pump House
55. Tar Displacement Tank and Dis
56. Coke Wharf
57. Water Gas Condenser
58. Ammonia Storage Tank
59. Rosin and Storage Tank
60. Compressor Room
61. Store Room
62. Service Trucks
63. Offices & Shops
64. Transformer Dock
65. Transformer Dock Oil Room
66. W.G. Circulating Tank

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00057503

CONSUMERS POWER CO.
GAS DEPT. KALAMAZOO MICH.

MAP OF GAS WORKS

Drawn By: L.C.S. Scale 1"=50'
Traced By: C.M.W.
Approved By: J. G. Brannon
Date: 1927-1

No.	Revisions	Made By	Date
6			
5			
4			
3			
2			
1			

S-217

EXHIBIT MGP-17

EP TOXICITY STUDIES AND CHEMICAL ANALYSIS

of

DRUMMED WASTE AND EXCAVATION SOILS

for

THE UPJOHN COMPANY

KR059B031821

Performed by:

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

(616) 381-9666

The Upjohn Company
7171 Portage Road
6101-41-0
Portage, MI 49002

Attn: Mr. Kevin Walsh

Date: November 14, 1986

Laboratory Code: 861350

Enclosed are the results of twenty-eight samples for EP Toxicity studies & chemical analysis.

Respectfully submitted,
KAR Laboratories, Inc.

William H. Bouma

William H. Bouma, Ph.D.
Director

WHB/mcm

EP TOXICITY STUDIES AND CHEMICAL ANALYSIS

of

DRUMMED WASTE AND EXCAVATION SOILS

for

THE UPJOHN COMPANY

KAR Project No.: 861350
November 14, 1986

Performed by:

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

INTRODUCTION

This project involved examination of drummed waste and excavation soil samples from the Upjohn Company as provided by MAECORP Inc. All samples were analyzed for total cyanide and phenols (EPA Acid Extractable Priority Pollutants) and selected samples were analyzed for PCB (polychlorinated biphenyls). In addition, all samples were evaluated for the characteristic of EP Toxicity as defined by the United States Environmental Protection Agency in the Federal Register (40 CFR Part 261) and as applied in Michigan by the Department of Natural Resources.

DESCRIPTION OF SAMPLES

The samples were received in four lots delivered by MAECORP Inc. according to the following schedule:

KAR ID #	MAECORP #	DATE	TIME
861350 (1- 9)	MI 150 (C1-C7, CS1, W1)	10/25/86	19:10
861350 (10-18)	MI 150 (C8-C14, CS2, CS3)	10/26/86	16:50
861350 (19-24)	MI 150 (C15-C18, W2, CS4)	10/27/86	18:22
861350 (25-28)	MI 150 (C19, C20, CS5, CS6)	10/28/86	16:20

Each sample was received in a one liter glass bottle labelled with MAECORP ID numbers. KAR ID numbers were added immediately upon receipt of the samples. Many bottles were only partially filled with sample. Individual sample descriptions are included in the tables of results section of this report.

PROCEDURES

The Extraction Procedure (EP) followed "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods", SW-846, 2nd edition, USEPA. Each extract was analyzed for the various metals utilizing "Methods for Analysis of Water and Wastewater", USEPA.

Cyanide was analyzed utilizing EPA Method 335.2 (Digestion-Spectrophotometric). Phenols (EPA Acid Extractable Priority Pollutants) were analyzed utilizing EPA Method 8270 (GC/MS, capillary column) following separation and extraction by EPA Method 3510 (liquid-liquid) or 3550 (sonication extraction). PCB was analyzed utilizing EPA Method 8080 (GC-EC).

The analytical results are listed in the following tables of results. Each sample has a table for EP Toxicity results and a separate table with sample description, chemical analysis results and an EP Toxicity statement.

TABLE 1

KAR ID # 861350-1

MAECORP ID # MI 150-C1

SAMPLE DESCRIPTION: Solids Composite -

The sample was a mixture of yellow, tan and red-orange semi solids in a darker solid, semi-solid material.

	Concentration (% of sample)
Total Solids	56.7
Volatile Solids	15.7
Non-Combustible Solids	41.0

	Concentration (mg/kg of sample)
Total Cyanide	4500
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 2 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Cadmium, chromium and cyanide exceeded the limits.

TABLE 2

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-1 & MAECORP ID # MI 150-C1
SOLIDS COMPOSITE

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.06	5.0 mg/L
Barium	0.5	100.0 mg/L
Cadmium	2.68	1.0 mg/L
Chromium	28.5	5.0 mg/L
Copper	98.4	100.0 mg/L
Cyanide**	225	5.0 mg/L
Lead	3.80	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	<0.01	1.0 mg/L
Silver	0.02	5.0 mg/L
Zinc	11.9	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

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TABLE 3

KAR ID # 861350-2

MAECORP ID # MI 150-C2

SAMPLE DESCRIPTION: Organic Solids -

The sample was gray to dark brown semi-solids with a solvent type odor.

	Concentration (% of sample)
Total Solids	61.6
Volatile Solids	16.1
Non-Combustible Solids	45.5

	Concentration (mg/kg of sample)
Total Cyanide	45
Polychlorinated Biphenyl (PCB)	1.1 (as Arochlor 1260)

USEPA Acid Extractable Priority Pollutants (Phenols)

(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	29
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 4 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did pass the EP Toxicity test.

TABLE 4

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-2 & MAECORP ID # MI 150-C2
ORGANIC SOLIDS

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	<0.01	5.0 mg/L
Barium	<0.5	100.0 mg/L
Cadmium	<0.01	1.0 mg/L
Chromium	0.06	5.0 mg/L
Copper	0.25	100.0 mg/L
Cyanide**	2.2	5.0 mg/L
Lead	3.09	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	<0.01	1.0 mg/L
Silver	<0.01	5.0 mg/L
Zinc	5.5	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 5

KAR ID # 861350-3

MAECORP ID # MI 150-C3

SAMPLE DESCRIPTION: Organic Liquid -

The sample was a dark brown-black oily material.

	Concentration (% of sample)
Total Solids	34.8
Volatile Solids	34.6
Non-Combustible Solids	0.2

	Concentration (mg/kg of sample)
Total Cyanide	<20
Polychlorinated Biphenyl (PCB)	<1

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<50	2-nitrophenol	<50
2-chlorophenol	<50	4-nitrophenol	<50
2,4-dichlorophenol	<50	Pentachlorophenol	<50
2,4-dimethylphenol	<50	Phenol	<50
2,4-dinitrophenol	<500	2,4,6-trichlorophenol	<50
2-methyl-4,6-dinitrophenol	<250		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 6 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Lead exceeded the limits.

TABLE 6

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-3 & MAECORP ID # MI 150-C3
ORGANIC LIQUID

from

Upjohn Drummed Waste
(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	<0.2	5.0 mg/L
Barium	<20	100.0 mg/L
Cadmium	<0.2	1.0 mg/L
Chromium	3.2	5.0 mg/L
Copper	3.0	100.0 mg/L
Cyanide**	<2.0	5.0 mg/L
Lead	137	5.0 mg/L
Mercury	<0.04	0.2 mg/L
Selenium	0.2	1.0 mg/L
Silver	<0.3	5.0 mg/L
Zinc	165	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 7

KAR ID # 861350-4

MAECORP ID # MI 150-C4

SAMPLE DESCRIPTION: Cyanide Solids -

The sample was a mixture of solid materials ranging from white to gray to brown and black.

	Concentration (% of sample)
Total Solids	56.6
Volatile Solids	32.3
Non-Combustible Solids	24.2

	Concentration (mg/kg of sample)
Total Cyanide	10,000
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 8 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Arsenic, copper and cyanide exceeded the limits.

TABLE 8

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-8 & MAECORP ID # MI 150-C4
CYANIDE SOLIDS

from

Upjohn Drummed Waste
(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	2.45	5.0 mg/L
Barium	0.8	100.0 mg/L
Cadmium	0.26	1.0 mg/L
Chromium	3.53	5.0 mg/L
Copper	144	100.0 mg/L
Cyanide**	505	5.0 mg/L
Lead	2.42	5.0 mg/L
Mercury	0.04	0.2 mg/L
Selenium	0.02	1.0 mg/L
Silver	0.10	5.0 mg/L
Zinc	4.3	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 9

KAR ID # 861350-5

MAECORP ID # MI 150-C5

SAMPLE DESCRIPTION: Corrosive Liquid -

The sample was a clear slightly yellow liquid with gray settled solids.

	Concentration (% of sample)
Total Solids	17.4
Volatile Solids	4.4
Non-Combustible Solids	13.0

	Concentration (mg/kg of sample)
Total Cyanide	<20
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 10 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did pass the EP Toxicity test.

TABLE 10

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-5 & MAECORP ID # MI 150-C5
CORROSIVE LIQUID

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.94	5.0 mg/L
Barium	0.6	100.0 mg/L
Cadmium	<0.01	1.0 mg/L
Chromium	0.23	5.0 mg/L
Copper	0.22	100.0 mg/L
Cyanide**	<1.0	5.0 mg/L
Lead	1.12	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	0.01	1.0 mg/L
Silver	<0.01	5.0 mg/L
Zinc	12.6	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 11

KAR ID # 861350-6

MAECORP ID # MI 150-C6

SAMPLE DESCRIPTION: Cyanide Liquid -

The sample was a red-orange liquid with yellow settled solids.

	Concentration (% of sample)
Total Solids	19.9
Volatile Solids	6.2
Non-Combustible Solids	13.7

	Concentration (mg/kg of sample)
Total Cyanide	6,000
Polychlorinated Biphenyl (PCB)	<1

USEPA Acid Extractable Priority Pollutants (Phenols)

(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 12 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Chromium, cyanide and lead exceeded the limits.

TABLE 12

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-6 & MAECORP ID # MI 150-C6
CYANIDE LIQUID

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.46	5.0 mg/L
Barium	6.3	100.0 mg/L
Cadmium	<0.04	1.0 mg/L
Chromium	11.5	5.0 mg/L
Copper	59.6	100.0 mg/L
Cyanide**	6,000	5.0 mg/L
Lead	15.2	5.0 mg/L
Mercury	0.01	0.2 mg/L
Selenium	0.22	1.0 mg/L
Silver	0.33	5.0 mg/L
Zinc	41.3	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 13

KAR ID # 861350-7

MAECORP ID # MI 150-C7

SAMPLE DESCRIPTION: B/N Liquid -

The sample was a gray liquid with gray-tan settled solids.

	Concentration (% of sample)
Total Solids	32.3
Volatile Solids	2.2
Non-Combustible Solids	30.0

	Concentration (mg/kg of sample)
Total Cyanide	<20
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 14 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Lead exceeded the limits.

TABLE 14

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-7 & MAECORP ID # MI 150-C7
B/N LIQUID

from

Upjohn Drummed Waste
(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.73	5.0 mg/L
Barium	<0.5	100.0 mg/L
Cadmium	0.14	1.0 mg/L
Chromium	2.95	5.0 mg/L
Copper	3.12	100.0 mg/L
Cyanide**	<1.0	5.0 mg/L
Lead	5.17	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	<0.01	1.0 mg/L
Silver	0.03	5.0 mg/L
Zinc	127	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 15

KAR ID # 861350-8

MAECORP ID # MI 150-CS1

SAMPLE DESCRIPTION: Excavation Soil -

The sample was a brown sandy soil with areas of gray green semi-solid material and small chunks of red-orange solid.

	Concentration (% of sample)
Total Solids	86.1
Volatile Solids	1.2
Non-Combustible Solids	84.9

	Concentration (mg/kg of sample)
Total Cyanide	580
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 16 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Cyanide exceeded the limits.

TABLE 16

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-8 & MAECORP ID # MI 150-CS1
EXCAVATION SOIL

from

Upjohn Drummed Waste
(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.02	5.0 mg/L
Barium	1.6	100.0 mg/L
Cadmium	0.02	1.0 mg/L
Chromium	0.27	5.0 mg/L
Copper	0.76	100.0 mg/L
Cyanide**	29	5.0 mg/L
Lead	2.58	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	0.01	1.0 mg/L
Silver	<0.01	5.0 mg/L
Zinc	3.19	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

Table 16 pg 1
45-48 pg 2
53-56 pg 3

TABLE 17

KAR ID # 861350-9

MAECORP ID # MI 150-W1

SAMPLE DESCRIPTION: Pit Water -

The sample was a grayish liquid with a large amount of fine settled solids (gray-green in color).

	Concentration (% of sample)
Total Solids	54.0
Volatile Solids	49.4
Non-Combustible Solids	4.6

	Concentration (mg/kg of sample)
Total Cyanide	940
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 18 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Cyanide and lead exceeded the limits.

TABLE 18

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-9 & MAECORP ID # MI 150-w1
PIT WATER

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.22	5.0 mg/L
Barium	2.1	100.0 mg/L
Cadmium	0.09	1.0 mg/L
Chromium	1.74	5.0 mg/L
Copper	53.6	100.0 mg/L
Cyanide**	47	5.0 mg/L
Lead	6.47	5.0 mg/L
Mercury	0.01	0.2 mg/L
Selenium	0.01	1.0 mg/L
Silver	0.07	5.0 mg/L
Zinc	8.4	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

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TABLE 19

KAR ID # 861350-10

MAECORP ID # MI 150-C8

SAMPLE DESCRIPTION: Solids -

The sample was a mixture of thick, moist dark solids with areas of yellow and brown-purple.

	Concentration (% of sample)
Total Solids	49.0
Volatile Solids	13.4
Non-Combustible Solids	35.7

	Concentration (mg/kg of sample)
Total Cyanide	3,200
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 20 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Cadmium, copper and cyanide exceeded the limits.

TABLE 20

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-10 & MAECORP ID # MI 150-C8
SOLIDS

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.03	5.0 mg/L
Barium	2.2	100.0 mg/L
Cadmium	5.47	1.0 mg/L
Chromium	0.94	5.0 mg/L
Copper	316	100.0 mg/L
Cyanide**	160	5.0 mg/L
Lead	1.96	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	<0.01	1.0 mg/L
Silver	<0.01	5.0 mg/L
Zinc	9.2	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 21

KAR ID # 861350-11

MAECORP ID # MI 150-C9

SAMPLE DESCRIPTION: Cyanide Solids -

The sample was a mixture of varied solids, including white granular, brown & tan, purple, and black-brown.

	Concentration (% of sample)
Total Solids	62.4
Volatile Solids	9.4
Non-Combustible Solids	53.0

	Concentration (mg/kg of sample)
Total Cyanide	21,400
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)

(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 22 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Copper and cyanide exceeded the limits.

TABLE 22

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-11 & MAECORP ID # MI 150-C9
CYANIDE SOLIDS

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.02	5.0 mg/L
Barium	1.7	100.0 mg/L
Cadmium	0.22	1.0 mg/L
Chromium	0.82	5.0 mg/L
Copper	586	100.0 mg/L
Cyanide**	1,070	5.0 mg/L
Lead	0.01	5.0 mg/L
Mercury	0.01	0.2 mg/L
Selenium	0.01	1.0 mg/L
Silver	0.06	5.0 mg/L
Zinc	2.6	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 23

KAR ID # 861350-12

MAECORP ID # MI 150-C10

SAMPLE DESCRIPTION: Cyanide Liquids -

The sample was a dark liquid with dark settled solids and oil.

	Concentration (% of sample)
Total Solids	22.7
Volatile Solids	7.3
Non-Combustible Solids	15.4

	Concentration (mg/kg of sample)
Total Cyanide	8,600
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 24 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Arsenic, cadmium, chromium, copper, cyanide and lead exceeded the limits.

TABLE 24

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-12 & MAECORP ID # MI 150-C10
CYANIDE LIQUIDS

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	21.2	5.0 mg/L
Barium	63.5	100.0 mg/L
Cadmium	322	1.0 mg/L
Chromium	109	5.0 mg/L
Copper	6,134	100.0 mg/L
Cyanide**	8,600	5.0 mg/L
Lead	17.1	5.0 mg/L
Mercury	0.05	0.2 mg/L
Selenium	0.39	1.0 mg/L
Silver	0.88	5.0 mg/L
Zinc	263	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 25

KAR ID # 861350-13

MAECORP ID # MI 150-C11

SAMPLE DESCRIPTION: Organic Solids -

The sample was a grayish slurry of solids similar to thickened paint and solvent type odor.

	Concentration (% of sample)
Total Solids	53.1
Volatile Solids	23.0
Non-Combustible Solids	30.2

	Concentration (mg/kg of sample)
Total Cyanide	42
Polychlorinated Biphenyl (PCB)	<1

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 26 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did pass the EP Toxicity test.

TABLE 26

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-13 & MAECORP ID # MI 150-C11
ORGANIC SOLIDS

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.02	5.0 mg/L
Barium	<0.5	100.0 mg/L
Cadmium	<0.01	1.0 mg/L
Chromium	<0.02	5.0 mg/L
Copper	0.02	100.0 mg/L
Cyanide**	2.1	5.0 mg/L
Lead	3.21	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	<0.01	1.0 mg/L
Silver	<0.01	5.0 mg/L
Zinc	9.4	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 27

KAR ID # 861350-14

MAECORP ID # MI 150-C12

SAMPLE DESCRIPTION: B/N Liquids -

The sample was a brown liquid with yellow-tan settled solids.

	Concentration (% of sample)
Total Solids	12.8
Volatile Solids	4.1
Non-Combustible Solids	8.7

	Concentration (mg/kg of sample)
Total Cyanide	3,000
Polychlorinated Biphenyl (PCB)	<1

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 28 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Chromium and cyanide exceeded the limits.

TABLE 28

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-14 & MAECORP ID # MI 150-C12
B/N LIQUIDS

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.26	5.0 mg/L
Barium	<7	100.0 mg/L
Cadmium	0.62	1.0 mg/L
Chromium	29.5	5.0 mg/L
Copper	10.4	100.0 mg/L
Cyanide**	3,000	5.0 mg/L
Lead	3.94	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	0.15	1.0 mg/L
Silver	0.26	5.0 mg/L
Zinc	111	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 29

KAR ID # 861350-15

MAECORP ID # MI 150-C13

SAMPLE DESCRIPTION: Organic Liquid -

The sample was brownish liquid with a large amount of fine solids suspended throughout.

	Concentration (% of sample)
Total Solids	31.3
Volatile Solids	29.7
Non-Combustible Solids	1.6

	Concentration (mg/kg of sample)
Total Cyanide	<20
Polychlorinated Biphenyl (PCB)	<1

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 30 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Chromium and lead exceeded the limits.

TABLE 30

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-15 & MAECORP ID # MI 150-C13
ORGANIC LIQUID

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	<0.08	5.0 mg/L
Barium	<10	100.0 mg/L
Cadmium	<0.08	1.0 mg/L
Chromium	57.4	5.0 mg/L
Copper	3.18	100.0 mg/L
Cyanide**	<2.0	5.0 mg/L
Lead	160	5.0 mg/L
Mercury	<0.06	0.2 mg/L
Selenium	<0.08	1.0 mg/L
Silver	<0.20	5.0 mg/L
Zinc	27.8	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 31

KAR ID # 861350-16

MAECORP ID # MI 150-C14

SAMPLE DESCRIPTION: Corrosive Liquid -

The sample was a cream colored liquid with pungent odor.

	Concentration (% of sample)
Total Solids	20.7
Volatile Solids	17.0
Non-Combustible Solids	3.7

	Concentration (mg/kg of sample)
Total Cyanide	<20
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 32 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Arsenic exceeded the limits.

TABLE 33

KAR ID # 861350-17

MAECORP ID # MI 150-CS2

SAMPLE DESCRIPTION: Composite Solids, Dumpster -

The sample was mainly sandy soil with discolored areas of yellow, gray and brown.

	Concentration (% of sample)
Total Solids	86.5
Volatile Solids	4.0
Non-Combustible Solids	82.5

	Concentration (mg/kg of sample)
Total Cyanide	5,100
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 34 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Cyanide exceeded the limits.

TABLE 34

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-17 & MAECORP ID # MI 150-CS2
COMPOSITE SOLIDS, DUMPSTER

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	<0.01	5.0 mg/L
Barium	1.0	100.0 mg/L
Cadmium	0.15	1.0 mg/L
Chromium	0.37	5.0 mg/L
Copper	14.7	100.0 mg/L
Cyanide**	255	5.0 mg/L
Lead	0.14	5.0 mg/L
Mercury	0.02	0.2 mg/L
Selenium	0.01	1.0 mg/L
Silver	<0.01	5.0 mg/L
Zinc	2.5	500.0 mg/L/

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 35

KAR ID # 861350-18

MAECORP ID # MI 150-CS3

SAMPLE DESCRIPTION: Composite Backfill Solids -

The sample consisted of a sandy soil.

	Concentration (% of sample)
Total Solids	91.9
Volatile Solids	1.2
Non-Combustible Solids	90.6

	Concentration (mg/kg of sample)
Total Cyanide	<20
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 36 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did pass the EP Toxicity test.

TABLE 36

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-18 & MAECORP ID # MI 150-CS3
COMPOSITE BACKFILL SOLIDS

from

Upjohn Drummed Waste
(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	<0.01	5.0 mg/L
Barium	1.2	100.0 mg/L
Cadmium	0.01	1.0 mg/L
Chromium	0.18	5.0 mg/L
Copper	0.97	100.0 mg/L
Cyanide**	<1.0	5.0 mg/L
Lead	0.20	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	<0.01	1.0 mg/L
Silver	<0.01	5.0 mg/L
Zinc	2.9	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 37

KAR ID # 861350-19

MAECORP ID # MI 150-C15

SAMPLE DESCRIPTION: Cyanide Solids -

The sample consisted of a wide variety of solids. Black material dominated, but areas of yellow, tan, purpose, white and gray were present.

	Concentration (% of sample)
Total Solids	69.6
Volatile Solids	22.1
Non-Combustible Solids	47.5

	Concentration (mg/kg of sample)
Total Cyanide	23,000
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 38 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Cyanide exceeded the limits.

TABLE 38

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-19 & MAECORP ID # MI 150-C15
CYANIDE SOLIDS

from

Upjohn Drummed Waste
(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.49	5.0 mg/L
Barium	2.0	100.0 mg/L
Cadmium	0.04	1.0 mg/L
Chromium	3.16	5.0 mg/L
Copper	61.5	100.0 mg/L
Cyanide**	1,150	5.0 mg/L
Lead	1.58	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	0.01	1.0 mg/L
Silver	0.05	5.0 mg/L
Zinc	2.7	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 39

KAR ID # 861350-20

MAECORP ID # MI 150-C16

SAMPLE DESCRIPTION: Solids -

The sample was a mixture of varied solids, ranging from fine yellow & orange to gray green clumps. Several pieces of chain were also present.

	Concentration (% of sample)
Total Solids	58.1
Volatile Solids	9.7
Non-Combustible Solids	48.4

	Concentration (mg/kg of sample)
Total Cyanide	6,500
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)

(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 40 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Chromium and cyanide exceeded the limits.

TABLE 40

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-20 & MAECORP ID # MI 150-C16

SOLIDS

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.01	5.0 mg/L
Barium	<0.5	100.0 mg/L
Cadmium	0.43	1.0 mg/L
Chromium	141	5.0 mg/L
Copper	52.0	100.0 mg/L
Cyanide**	325	5.0 mg/L
Lead	0.09	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	0.01	1.0 mg/L
Silver	0.04	5.0 mg/L
Zinc	62.0	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 41

KAR ID # 861350-21

MAECORP ID # MI 150-C17

SAMPLE DESCRIPTION: Organic Solids -

The sample was a white semi-solid with some tan solids and a solvent type odor.

	Concentration (% of sample)
Total Solids	61.8
Volatile Solids	28.7
Non-Combustible Solids	33.1

	Concentration (mg/kg of sample)
Total Cyanide	<20
Polychlorinated Biphenyl (PCB)	<1

USEPA Acid Extractable Priority Pollutants (Phenols)

(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 42 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did pass the EP Toxicity test.

TABLE 42

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-21 & MAECORP ID # MI 150-C17
ORGANIC SOLIDS

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	<0.01	5.0 mg/L
Barium	<0.5	100.0 mg/L
Cadmium	<0.01	1.0 mg/L
Chromium	<0.02	5.0 mg/L
Copper	0.76	100.0 mg/L
Cyanide**	<1.0	5.0 mg/L
Lead	0.50	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	<0.01	1.0 mg/L
Silver	<0.01	5.0 mg/L
Zinc	5.43	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 43

KAR ID # 861350-22

MAECORP ID # MI 150-C18

SAMPLE DESCRIPTION: Corrosive Liquids -

The sample was liquid with fine black and gray solids.

	Concentration (% of sample)
Total Solids	47.9
Volatile Solids	31.0
Non-Combustible Solids	16.9

	Concentration (mg/kg of sample)
Total Cyanide	<20
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 44 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Arsenic exceeded the limits.

TABLE 44

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-22 & MAECORP ID # MI 150-C18
CORROSIVE LIQUIDS

from

Upjohn Drummed Waste
(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	16.3	5.0 mg/L
Barium	1.6	100.0 mg/L
Cadmium	<0.01	1.0 mg/L
Chromium	0.49	5.0 mg/L
Copper	0.45	100.0 mg/L
Cyanide**	<1.0	5.0 mg/L
Lead	2.46	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	0.03	1.0 mg/L
Silver	0.02	5.0 mg/L
Zinc	15.3	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 45

KAR ID # 861350-23

MAECORP ID # MI 150- W2

SAMPLE DESCRIPTION: Pit #2 Water -

The sample was a green liquid with small amount of settled solids.

	Concentration (% of sample)
Total Solids	1.60
Volatile Solids	0.29
Non-Combustible Solids	1.31

	Concentration (mg/kg of sample)
Total Cyanide	520
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)

(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 46 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Chromium and cyanide exceeded the limits.

TABLE 46

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-23 & MAECORP ID # MI 150-W2
PIT #2 WATER

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.35	5.0 mg/L
Barium	<2.0	100.0 mg/L
Cadmium	0.08	1.0 mg/L
Chromium	770	5.0 mg/L
Copper	99.1	100.0 mg/L
Cyanide**	520	5.0 mg/L
Lead	0.52	5.0 mg/L
Mercury	<0.02	0.2 mg/L
Selenium	0.06	1.0 mg/L
Silver	0.07	5.0 mg/L
Zinc	21.4	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 47

KAR ID # 861350-24

MAECORP ID # MI 150-CS4

SAMPLE DESCRIPTION: Pit #2 Soil -

The sample was a gritty soil with pebbles and pieces of orange or brown clumps.

	Concentration (% of sample)
Total Solids	84.8
Volatile Solids	4.0
Non-Combustible Solids	80.8

	Concentration (mg/kg of sample)
Total Cyanide	4,000
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)

(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 48 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Cadmium, cyanide and lead exceeded the limits.

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TABLE 48

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-24 & MAECORP ID # MI 150-CS4
PIT #2 SOIL

from

Upjohn Drummed Waste
(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.01	5.0 mg/L
Barium	3.0	100.0 mg/L
Cadmium	1.81	1.0 mg/L
Chromium	4.72	5.0 mg/L
Copper	4.64	100.0 mg/L
Cyanide**	200	5.0 mg/L
Lead	6.59	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	0.01	1.0 mg/L
Silver	0.02	5.0 mg/L
Zinc	16.4	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 49

KAR ID # 861350-25

MAECORP ID # MI 150-C19

SAMPLE DESCRIPTION: Solids Composite -

The sample was a mixture of solid materials mostly a greenish brown-gray, but including white, yellow and green particles.

	Concentration (% of sample)
Total Solids	60.7
Volatile Solids	13.3
Non-Combustible Solids	47.4

	Concentration (mg/kg of sample)
Total Cyanide	10,000
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)

(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 50 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Cadmium, chromium and cyanide exceeded the limits.

TABLE 50

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-25 & MAECORP ID # MI 150-C19
SOLIDS COMPOSITE

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.01	5.0 mg/L
Barium	<0.5	100.0 mg/L
Cadmium	1.02	1.0 mg/L
Chromium	140	5.0 mg/L
Copper	70.9	100.0 mg/L
Cyanide**	500	5.0 mg/L
Lead	<0.01	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	<0.01	1.0 mg/L
Silver	0.03	5.0 mg/L
Zinc	138	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 51

KAR ID # 861350-26

MAECORP ID # MI 150-C20

SAMPLE DESCRIPTION: Cyanide Solids -

The sample was a mixture of solids, including fine grayish, white, brown and black materials.

	Concentration (% of sample)
Total Solids	75.6
Volatile Solids	19.0
Non-Combustible Solids	56.6

	Concentration (mg/kg of sample)
Total Cyanide	6,900
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 52 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Copper and cyanide exceeded the limits.

TABLE 52

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-26 & MAECORP ID # MI 150-C20
CYANIDE SOLIDS

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.01	5.0 mg/L
Barium	0.7	100.0 mg/L
Cadmium	0.64	1.0 mg/L
Chromium	0.48	5.0 mg/L
Copper	149	100.0 mg/L
Cyanide**	345	5.0 mg/L
Lead	<0.01	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	0.01	1.0 mg/L
Silver	0.03	5.0 mg/L
Zinc	40.0	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 53

KAR ID # 861350-27

MAECORP ID # MI 150-CS5

SAMPLE DESCRIPTION: Pit #3 Soil -

The sample was a wet sandy soil with chunks of solids, predominantly orangish-red.

	Concentration (% of sample)
Total Solids	77.9
Volatile Solids	3.3
Non-Combustible Solids	74.6

	Concentration (mg/kg of sample)
Total Cyanide	1,100
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)

(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 54 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Cyanide exceeded the limits.

TABLE 54

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-27 & MAECORP ID # MI 150-CS5
PIT #3 SOIL

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.02	5.0 mg/L
Barium	2.0	100.0 mg/L
Cadmium	0.09	1.0 mg/L
Chromium	1.05	5.0 mg/L
Copper	0.03	100.0 mg/L
Cyanide**	55	5.0 mg/L
Lead	3.17	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	<0.01	1.0 mg/L
Silver	0.02	5.0 mg/L
Zinc	10.1	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

TABLE 55

KAR ID # 861350-28

MAECORP ID # MI 150-CS6

SAMPLE DESCRIPTION: Pit #4 Soil -

The sample was a tan sandy soil with a small number of colored pieces.

	Concentration (% of sample)
Total Solids	94.7
Volatile Solids	0.4
Non-Combustible Solids	94.3

	Concentration (mg/kg of sample)
Total Cyanide	<20
Polychlorinated Biphenyl (PCB)	Not Requested

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 56 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did pass the EP Toxicity test.

TABLE 56

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-28 & MAECORP ID # MI 150-CS6
PIT #4 SOIL

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	<0.01	5.0 mg/L
Barium	<0.5	100.0 mg/L
Cadmium	<0.01	1.0 mg/L
Chromium	0.03	5.0 mg/L
Copper	4.57	100.0 mg/L
Cyanide**	<1.0	5.0 mg/L
Lead	0.87	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	<0.01	1.0 mg/L
Silver	<0.01	5.0 mg/L
Zinc	2.5	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis.

EXHIBIT MGP-18

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

(616) 381-9666

Rooney

The Upjohn Company
7171 Portage Road
6101-41-0
Portage, MI 49002

Attn: Mr. Kevin Walsh

Date: June 6, 1986

Laboratory Code: 86570

Enclosed are the results of the EP Toxicity Studies and other evaluations of waste materials submitted May 14, 1986.

Respectfully submitted,
KAR Laboratories, Inc.

William H. Bouma

William H. Bouma, Ph.D.
Director

WHB/mcm

KR059B031883

14793

BX 0028503

EP TOXICITY STUDIES AND OTHER EVALUATIONS

of

WASTE MATERIALS

for

THE UPJOHN COMPANY

KAR Project No. 86570

June 6, 1986

Performed by:

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

BX 0028504

14794

KR059B031884

INTRODUCTION

The project involved examination of waste materials for the characteristic of EP Toxicity as defined by the United States Environmental Protection Agency in the Federal Register and as applied in Michigan by the Department of Natural Resources. Other analyses were also performed to further characterize the wastes.

DESCRIPTION OF SAMPLES

The samples were received in one quart glass containers on May 14, 1986. They were provided by Mr. Kevin Walsh of the Upjohn Company. Identifications and descriptions were as follows:

KAR 86570-1 (Upjohn Sample #01-D) was a tan liquid with about 5% settled solids resembling sand.

KAR 86570-2 (Upjohn Sample #02) was a mixture of brown sandy type material mixed with a white crystalline material.

KAR 86570-3 was a mixture of a clear slightly yellow liquid about 10% settled solids. The solids were a fine grayish white material.

Additional sample data is listed in Table A.

PROCEDURE

The Extraction Procedure followed "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, 2nd edition, USEPA. Pertinent extraction data included:

KAR # 86570	-1	-2	-3
Upjohn ID	#01-D	#02	#3
Initial pH (s.u.)	8.6	8.5	1.2
% Acid added	11	100	0
Final pH	5.0	6.9	1.4

Thus sample -2 used the maximum concentration of acid and no acid was used for -3 since the sample was highly acid.

Following the 24 hour extraction period, each mixture was filtered through a 0.45 micron filter to yield the final extract for analysis. "Methods for Analysis of Water and Wastes" by USEPA and "Standard Methods for the Examination of Water and Wastewater" by APHA-AWWA-WPCF were used for the analytical procedures.

RESULTS AND CONCLUSIONS

Analytical results for EP Toxicity are contained in Table B. KAR 86570-1 (Upjohn #01-D) did not exceed any of the Maximum Concentrations in the EP Toxicity extract. It did not exhibit any other characteristics of hazardous waste.

KAR 86570-1 (Upjohn #02) exhibits the characteristic of EP Toxicity due to the high cyanide level and would be classified as a hazardous waste.

KAR 86570-3 (Upjohn #3) did not exceed any of the Maximum Concentrations in the EP Toxicity extract. However, the sample had a pH below 1.0 which would make it a hazardous waste due to the property of Corrosivity.

TABLE A

SAMPLE CONCENTRATIONS

KAR # 86570	-1	-2	-3
Upjohn	#01-D	#02	#3
Total Solids (% of sample)	25.65	50.16	14.17
Volatile Solids (% of sample)	24.33	5.14	4.49
Noncombustible Solids (% of sample)	1.32	45.02	9.68
pH (s.u.)	8.7	N/A	<1.0
Flashpoint (degrees F)	>180	>180	>180
Total Cyanide (mg/kg)	<20	1010	<20
PCB (mg/kg)	<1	<1	<1
Solvents	See attached tables (1-3)		

TABLE B

EP TOXICITY EXTRACT CONCENTRATIONS

of

Waste Materials

for

THE UPJOHN COMPANY

KAR Projet No. 86570

(All results expressed as milligrams per liter)

Parameter	-1 #01-D	-2 #02	-3 #3	Maximum Concentration*	
Arsenic	<0.1	<0.1	<0.1	5.0	mg/L
Barium	<0.5	<0.5	<0.5	100.0	mg/L
Cadmium	<0.005	<0.005	<0.005	1.0	mg/L
Chromium	<0.05	0.21	1.33	5.0	mg/L
Copper	<0.02	0.03	1.04	100.0	mg/L
Cyanide**	<1.0	50.5	<1.0	5.0	mg/L
Lead	<0.05	<0.05	3.25	5.0	mg/L
Mercury	<0.01	<0.01	<0.01	0.2	mg/L
Selenium	<0.1	<0.1	<0.1	1.0	mg/L
Silver	<0.1	<0.1	<0.1	5.0	mg/L
Zinc	0.28	0.17	1.07	500.0	mg/L

* Maximum Allowable Concentration specified by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis of sample.

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

(616) 381-9666

TABLE 1

ANALYTICAL REPORT

To: The Upjohn Company

Date Received : May 14, 1986
Laboratory Code: 86570-1
Purchase Order #
Report Date : June 6, 1986

Re: VOLATILE HYDROCARBON ANALYSIS MICHIGAN DNR Scan 1 and Scan 2

Sample Identification: #01-D

SCAN 1 Purgeable Halocarbons

	Result		Result
Bromoform	<0.1	trans-1,2-Dichloroethene	<0.1
Bromodichloromethane	<0.1	cis-1,2-Dichloroethene	<0.1
Dibromochloromethane	<0.1	1,1,1-Trichloroethane	<0.1
Chloroform	<0.1	1,1,2-Trichloroethane	<0.1
Carbon Tetrachloride	<0.1	Trichloroethene	<0.1
Methylene Chloride	<0.1	1,1,2,2-Tetrachloroethane	<0.1
1,1-Dichloroethane	<0.1	Tetrachloroethene	<0.1
1,2-Dichloroethane	<0.1	1,3-Dichloropropene	<0.1
1,1-Dichloroethene	<0.1	Chlorobenzene	<0.1

SCAN 2 Purgeable Aromatic Hydrocarbons

	Result		Result
Benzene	<0.1	Styrene	<0.1
Ethylbenzene	<0.1	Xylenes	<0.1
Toluene	<0.1		

Other volatile solvents <0.1

KR059B031890

14800

Results are expressed as percent
< indicates not detected at the stated detection limit
--- indicates not analyzed

BX 0028510

TABLE 3

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

(616) 381-9666

ANALYTICAL REPORT

To: The Upjohn Company

Date Received : May 14, 1986
Laboratory Code: 86570-3
Purchase Order #
Report Date : June 6, 1986

Re: VOLATILE HYDROCARBON ANALYSIS MICHIGAN DNR Scan 1 and Scan 2

Sample Identification: #3

SCAN 1 Purgeable Halocarbons

	Result		Result
Bromoform	<0.1	trans-1,2-Dichloroethene	<0.1
Bromodichloromethane	<0.1	cis-1,2-Dichloroethene	<0.1
Dibromochloromethane	<0.1	1,1,1-Trichloroethane	<0.1
Chloroform	<0.1	1,1,2-Trichloroethane	<0.1
Carbon Tetrachloride	<0.1	Trichloroethene	<0.1
Methylene Chloride	<0.1	1,1,2,2-Tetrachloroethane	<0.1
1,1-Dichloroethane	<0.1	Tetrachloroethene	<0.1
1,2-Dichloroethane	<0.1	1,3-Dichloropropene	<0.1
1,1-Dichloroethene	<0.1	Chlorobenzene	<0.1

SCAN 2 Purgeable Aromatic Hydrocarbons

	Result		Result
Benzene	<0.1	Styrene	<0.1
Ethylbenzene	<0.1	Xylenes	<0.1
Toluene	<0.1		

Other volatile solvents <0.1

KR059B031891

14802

Results are expressed as percent
< indicates not detected at the stated detection limit
--- indicates not analyzed

BX 0028511

TABLE 2

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

(616) 381-9666

ANALYTICAL REPORT

To: The Upjohn Company

Date Received : May 14, 1986
Laboratory Code: 86570-2
Purchase Order #
Report Date : June 6, 1986

Re: VOLATILE HYDROCARBON ANALYSIS MICHIGAN DNR Scan 1 and Scan 2

Sample Identification: #02

SCAN 1 Purgeable Halocarbons

	Result		Result
Bromoform	<0.1	trans-1,2-Dichloroethene	<0.1
Bromodichloromethane	<0.1	cis-1,2-Dichloroethene	<0.1
Dibromochloromethane	<0.1	1,1,1-Trichloroethane	<0.1
Chloroform	<0.1	1,1,2-Trichloroethane	<0.1
Carbon Tetrachloride	<0.1	Trichloroethene	<0.1
Methylene Chloride	<0.1	1,1,2,2-Tetrachloroethane	<0.1
1,1-Dichloroethane	<0.1	Tetrachloroethene	<0.1
1,2-Dichloroethane	<0.1	1,3-Dichloropropene	<0.1
1,1-Dichloroethene	<0.1	Chlorobenzene	<0.1

SCAN 2 Purgeable Aromatic Hydrocarbons

	Result		Result
Benzene	<0.1	Styrene	<0.1
Ethylbenzene	<0.1	Xylenes	<0.1
Toluene	<0.1		

Other volatile solvents <0.1

KR059B031892

14801

Results are expressed as percent
< indicates not detected at the stated detection limit
--- indicates not analyzed

BX 0028512

EXHIBIT MGP-19

EPA IDENTIFICATION #MID098011992

Nelson INDUSTRIAL SERVICES, INC.

CHEMICAL TREATMENT SPECIALISTS

12331 Schaefer Highway / Detroit, Michigan 48227 / (313) 933-1850 or 933-1329

WASTE STREAM CHARACTERIZATION RECORD

I. GENERATOR INFORMATION

DATE: December 17, 1986

A. Name The Upjohn Company

B. Address 7171 Portage Road, Kalamazoo, MI 49001

C. Billing address 7171 Portage Road, Kalamazoo, MI 49001

D. U.S. EPA Identification Number: MID 981101173

E. Person to contact

1. Name Randal S. Senger

2. Title Environmental Engineer 3. Phone (616) 323-5341

II. WASTE INFORMATION

A. Common Name Buried Wastes

B. Process or source of waste Remedial Action

C. Proper D.O.T. shipping name Waste Flammable Liquid N.O.S.

D. UN/NA Number UN 1993 D.O.T. Hazard Class Flammable liqui

E. Approximate amount of waste produced annually one time accumulation

F. Waste properties: amount of waste on hand

1. Circle physical state at 70°F:

SOLID SEMI-SOLID POWDER SLUDGE /LIQUID/

OTHER (explain)

2. Specific gravity N/A 3. Flash point (closed cup) if any <20°C 4. pH 8.6

5. Do you anticipate any difficulty pumping this waste? Yes ☐ No ☒

6. CHEMICAL COMPOSITION E.P. Extraction Procedure

Component	% or ppm	Component	% or ppm	Component	% or ppm
Arsenic	0.26	Zinc	111	Silver	0.26
Copper	10.4	Phenols	N.D.	Selenium	0.15
Lead	3.94	Oil, Grease		Other	
Nickel		Cadmium	0.62	"	
Chromium (+6)		Cyanide	3000	"	
Chromium (Total)	29.5	Mercury	< 0.01	"	

BX 0091391

G. Does this waste contain any substance on the list of EPA Priority Pollutants or the Michigan Critical Materials Register? Yes ☒ No ☐

If yes, please list: See attached report for sample #. C-12

00001591

KR059B031894

CONTINUED ON REVERSE SIDE

H. Does this waste contain the following?

1. Biological materials..... Yes ☐ No ☒
2. Pathogens ..... Yes ☐ No ☒
3. Etiological agents..... Yes ☐ No ☒
4. Pesticides ..... Yes ☐ No ☒
5. PCB's or PBB's..... Yes ☐ No ☒
6. Radioactive materials..... Yes ☐ No ☒

I. For incinerable materials

1. BTU/LB _____
2. Ash content at 650°C 8.7
3. Percent halogen _____
4. Percent sulfur _____

J. Is this waste a "Hazardous Material" as defined by the E.P.A. under the Resource Conservation and Recovery Act? Yes ☒ No ☐

If yes, then:

1. If the waste is a listed hazardous waste, state the listed description of the waste _____

Hazardous Waste Number ☐☐☐☐

2. If the waste is not listed, circle the characteristic for which it is hazardous:

/ IGNITABLE / / REACTIVE / CORROSIVE / TOXIC /

III. SHIPPING INFORMATION

A. This waste will be transported by:

☐ Nelson Industrial Services, Inc. ☒ Generator

☐ Other _____

U.S. E.P.A. Identification Number MID000820381

B. This waste to be shipped by:

☐ DRUM Size of drum _____ gallons Weight of drum _____ pounds

☐ BULK

☐ OTHER _____

C. TRANSPORTATION EQUIPMENT REQUIREMENTS (REQUIRED TANKER SPECIFICATIONS FOR BULK LIQUIDS) Rolloff boxes

D. SERVICE AND SCHEDULING SPECIAL INSTRUCTIONS _____

E. SCHEDULING CONTACT: Randal S. Senger

TELEPHONE: (616) 323-5341

F. HAULER CONTACT: Randal S. Senger

TELEPHONE: (616) 323-5341

NOTE: Any significant changes or deviations from the information on this form requires the submission of a revised form and updated sample.

KR059B031895

BX 0091392

IV. CERTIFICATION

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents, and I believe that the submitted information is true and accurate.

12-18-86	Environmental Engineer	Randal S. Senger
DATE	TITLE	SIGNATURE

TABLE 27

KAR ID # 861350-14

MAECORP ID # MI 150-C12

SAMPLE DESCRIPTION: B/N Liquids -

The sample was a brown liquid with yellow-tan settled solids.

	Concentration (% of sample)
Total Solids	12.8
Volatile Solids	4.1
Non-Combustible Solids	8.7

	Concentration (mg/kg of sample)
Total Cyanide	3,000
Polychlorinated Biphenyl (PCB)	<1

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 28 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did not pass the EP Toxicity test.

Chromium exceeded the limits.

TABLE 28

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-14 & MAECORP ID # MI 150-C12
B/N LIQUIDS

from

Upjohn Drummed Waste
(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.26	5.0 mg/L
Barium	<7	100.0 mg/L
Cadmium	0.62	1.0 mg/L
Chromium	29.5	5.0 mg/L
Copper	10.4	100.0 mg/L
Lead	3.94	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	0.15	1.0 mg/L
Silver	0.26	5.0 mg/L
Zinc	111	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

EXHIBIT MGP-20

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002
TELEPHONE (616) 381-9666

The Upjohn Company
7171 Portage Road
6101-41-0
Portage, MI 49002

Attn: Mr. Randy Senger

FOR PROFESSIONAL SERVICES 3-23-87

Analysis of one soil boring sample
(Dumpster D-01) submitted 2-25-87
by MAECORP, Inc.

1 EP Toxicity Evaluation	$250.00
1 DNR Scan 1 & 2	150.00
1 Miscellaneous Analyses	120.00
TOTAL.....	$520.00

Please indicate Lab. code on
check stub or voucher.

Laboratory Code: 87283

I.D. #38-2476290

A FINANCE CHARGE OF 1½% PER MONTH (18% PER YEAR)
WILL BE ADDED TO BALANCES AFTER 30 DAYS

KR059B031899

BX 0023229

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

(616) 381-9666

To: The Upjohn Company
7171 Portage Road
6101-41-0
Portage, MI 49002

Attn: Mr. Randy Senger

Date: 3-23-87

Laboratory Code: 87283

Re: Analysis of one soil boring sample submitted 2-25-87 by MAECORP, Inc.

	Dumpster D-01
PCB's (mg/kg)	0.43*
pH (s.u.)	9.1
Flash Point (°F)	>200
Cyanide (mg/kg)	298
DNR Scan 1 & 2	**
EP Toxicity Evaluation	**

*PCB 1254; sample as received.

**Refer to analytical reports attached.

Respectfully submitted,
KAR Laboratories, Inc.

William H. Bouma

William H. Bouma, Ph.D.
Director

WHB/mcm

KR059B031900

BX 0023230

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

(616) 381-9666

ANALYTICAL REPORT

To: The Upjohn Company

Date Received : 2-26-87
Laboratory Code: 87283
Purchase Order #
Report Date : 3-23-87

Re: VOLATILE HYDROCARBON ANALYSIS MICHIGAN DNR Scan 1 and Scan 2

Sample Identification: Soil boring, Dumpster D-01

SCAN 1 Purgeable Halocarbons

	Result		Result
Bromoform	<10	trans-1,2-Dichloroethene	<10
Bromodichloromethane	<10	cis-1,2-Dichloroethene	<10
Dibromochloromethane	<10	1,1,1-Trichloroethane	<10
Chloroform	<10	1,1,2-Trichloroethane	<10
Carbon Tetrachloride	<10	Trichloroethene	<10
Methylene Chloride	<10	1,1,2,2-Tetrachloroethane	<10
1,1-Dichloroethane	<10	Tetrachloroethene	<10
1,2-Dichloroethane	<10	1,3-Dichloropropene	<10
1,1-Dichloroethene	<10	Chlorobenzene	<10

SCAN 2 Purgeable Aromatic Hydrocarbons

	Result		Result
Benzene	<10	Styrene	<10
Ethylbenzene	<10	Xylenes	46
Toluene	<10		

KR059B031901

Results are expressed as ug/kg (dry weight)
< indicates not detected at the stated detection limit
--- indicates not analyzed

EP TOXICITY EVALUATION
of
ONE SOIL BORING (DUMPSTER D-01)
for
THE UPJOHN COMPANY

KAR Project No.: 87283
March 23, 1987

Performed by:

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49001

KR059B031902

BX 0023232

INTRODUCTION

This project involved examination of one soil boring sample for the characteristics of EP Toxicity as defined by the United States Environmental Protection Agency in the Federal Register (40 CFR Part 261.4) and as applied in Michigan by the Department of Natural Resources.

The sample was received in a one-quart glass jar on February 26, 1987.

PROCEDURE

The Extraction Procedure (EP) followed "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods", SW-846, 2nd Edition, United States EPA.

The solid portion of the sample and 16 times the original sample weight of distilled water were placed into a two liter container. During the extraction period, the pH was adjusted to 5.0 ± 0.2 by the addition of 0.5N Acetic Acid. At the end of the 24 hour extraction period the solid portion was separated from the liquid by filtration through a 0.45 micron filter to yield the final extract for analysis.

"Methods for Chemical Analysis of Water and Wastes", by USEPA and "Standard Methods for the Examination of Water and Wastewater" were used for the analytical procedures. The resulting data is shown in the following tables.

TABLE 1

EXTRACTION PROCEDURE DATA

KAR I.D. NO. : 87283

UPJOHN I.D. : Dumpster D-01

SAMPLE DESCRIPTION: The sample consisted of brown soil with several large chunks of broken clay pots and a few rocks.

Sample Weight (g)	50.02
Initial Water (mL)	800
Initial pH (s.u.)	9.78
Total Acid (mL)	120
Final pH (s.u.)	5.04
Final Water (mL)	80

It should be noted that the maximum amount of acid (200 mL of 0.5 N Acetic Acid was not consumed.

Total Solids	= 85.45 % of sample
Volatile Solids	= 7.62 % of sample
Non-combustible Solids	= 77.83 % of sample

TABLE 2

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

of

ONE SOIL BORING SAMPLE
(Dumpster D-01)

for

THE UPJOHN COMPANY

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.01	5.0 mg/L
Barium	3.91	100.0 mg/L
Cadmium	0.54	1.0 mg/L
Chromium	4.83	5.0 mg/L
Copper	30.7	100.0 mg/L
Lead	0.22	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	<0.01	1.0 mg/L
Silver	0.03	5.0 mg/L
Zinc	28.1	500.0 mg/L

*As designated by the Michigan DNR in accordance with or in addition to the USEPA.

CONCLUSION

All results are below the Maximum Allowable Concentration levels as designated by the Michigan DNR and USEPA. Therefore, this sample is not considered EP Toxic.

KAR Laboratories, Inc.

4425 Manchester Road
Kalamazoo, MI 49002

PROJECT RECORD

To: Upjohn

Date Received: 2-26-87

Laboratory code: 87283

P.O. Number:

Contact: Randy Singer

Telephone: 323-5341

SUBJECT: Soil boring sample submitted 2-25-87 by MAECORP.

Dumpster D-01

PCB's (mg/kg)	0.43 *
pH (s.u.)	9.1
Flash Point (°F)	>200
Cyanide (mg/kg)	298
DWR Scan 1-2	See attached table
EP Tox	- See attached report

1 EP Tox @ 250	= 250
1 DWR Scan 1+2 @ 150	= 150
1 Miscellaneous Analyses @ 120	= 120
	$520

* PCB-1254; sample as received

KR059B031906

LAB. CODE:

COMPANY NAME

BX 0023236

MEMO

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

To: Kevin Walsh

From: Upjohn

Subject:

Date:

Soil Borings - no rush
21+ samples T&F
Sat 30 more
Possible Sat pickup
6:30
DNR Scan 1+2
Thurs 6-6:30

PCB pH FP CN
EP Tox, VOC (Scan 1+2)

KR059B031907

EP TOXICITY EVALUATION

of

ONE SOIL BORING (DUMPSTER D-01)

for

THE UPJOHN COMPANY

KAR Project No.: 87283

Date: March 23, 1987

Performed by:

KAR Laboratories, Inc
4425 Manchester Road
Kalamazoo, MI 49002

KR059B031908

BX 0023238

INTRODUCTION

This project involved examination of one oil boring sample for the characteristics of EP Toxicity as defined by the United States Environmental Protection Agency in the Federal Register (40 CFR Part 261.4) and as applied in Michigan by the Department of Natural Resources.

The sample was received in a one quart glass jar on February 26, 1987

PROCEDURE

The Extraction Procedure (EP) followed "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods", SW-846, 2nd Edition, United States EPA.

The solid portion of the sample and 16 times the original sample weight of distilled water were placed into a two liter container. During the extraction period, the pH was adjusted to 5.0 ± 0.2 by the addition of 0.5N Acetic Acid. At the end of the 24 hour extraction period the solid portion was separated from the liquid by filtration through a 0.45 micron filter to yield the final extract for analysis.

"Methods for Chemical Analysis of Water and Wastes", by USEPA and "Standard Methods for the Examination of Water and Wastewater" were used for the analytical procedures. The resulting data is shown in the following tables.

TABLE 1

EXTRACTION PROCEDURE DATA

KAR I.D. NO. : 87283 Upjohn ID: Dumpster D-0

SAMPLE DESCRIPTION: The sample consisted of brown soil with several large chunks of broken clay pots and a few rocks.

Sample Weight (g)	50.02
Initial Water (mL)	800
Initial pH (s.u.)	9.78
Total Acid (mL)	120
Final pH (s.u.)	5.04
Final Water (mL)	80

It should be noted that the maximum amount of acid (200 mL of 0.5 N Acetic Acid) was not consumed.

Total Solids	=	85.45 % of sample
Volatile Solids	=	7.62 % of sample
Non-combustible Solids	=	77.83 % of sample

KR059B031910

BX 0023240

TABLE 2

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

of

One Soil Boring Sample

for

The UpJohn Company

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.01	5.0 mg/L
Barium	3.91	100.0 mg/L
Cadmium	0.54	1.0 mg/L
Chromium	4.83	5.0 mg/L
Copper	30.7	100.0 mg/L
Lead	0.22	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	<0.01	1.0 mg/L
Silver	0.03	5.0 mg/L
Zinc	28.1	500.0 mg/L

*As designated by the Michigan DNR in accordance with or in addition to the USEPA.

CONCLUSION

All results are below the Maximum Allowable Concentration levels as designated by the Michigan DNR and USEPA. Therefore, this sample is not considered EP Toxic.

KR059B031911

BY 00-

TABLE ___

EP TOXICITY EXTRACT CONCENTRATIONS

KAR Project No. 87283 for UPJOHN

All results expressed as milligrams per liter

KAR I.D. #:	87283				
Sample Description:	DUMPSTER D-01				Maximum Concentration*
Parameter					
Arsenic	0.01				5.0 mg/L
Barium	3.91				100.0 mg/L
Cadmium	0.54				1.0 mg/L
Chromium	4.83				5.0 mg/L
Copper	30.7				100.0 mg/L
~~Cyanide**~~					5.0 mg/L
Lead	0.22				5.0 mg/L
Mercury	<0.01				0.2 mg/L
Selenium	<0.01				1.0 mg/L
Silver	0.03				5.0 mg/L
Zinc	28.1				500.0 mg/L

* Maximum Allowable Concentration specified by the Michigan DNR in accordance with or in addition to the USEPA.

** Based upon total cyanide analysis of sample.

Extraction Procedure Data

KAR I.D. #:				
Sample Description:				
Sample Weight (g)				
Initial Water Added (mL)				
Initial pH (s.u.)				
Total Acid Added (mL)				
Final pH (s.u.)				
Final Water Added (mL)				
Total Solids (% of sample)	85.45			
Volatile Solids (% of ~~total solids~~ sample)	7.62			
Ash (% of ~~total solids~~ sample)	77.83			

KR059B031912

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

(616) 381-9666

ANALYTICAL REPORT

To: Upjohn

Date Received :
Laboratory Code: 87283
Purchase Order #
Report Date :

Re: VOLATILE HYDROCARBON ANALYSIS MICHIGAN DNR Scan 1 and Scan 2

Sample Identification:

SCAN 1 Purgeable Halocarbons

	Result		Result
Bromoform		trans-1,2-Dichloroethene	
Bromodichloromethane		cis-1,2-Dichloroethene	
Dibromochloromethane		1,1,1-Trichloroethane	
Chloroform		1,1,2-Trichloroethane	
Carbon Tetrachloride		Trichloroethene	
Methylene Chloride		1,1,2,2-Tetrachloroethane	
1,1-Dichloroethane		Tetrachloroethene	
1,2-Dichloroethane		1,3-Dichloropropene	
1,1-Dichloroethene		Chlorobenzene	

SCAN 2 Purgeable Aromatic Hydrocarbons

	Result		Result
Benzene		Styrene	
Ethylbenzene		Xylenes	46
Toluene			

all others <10

KR059B031913

Results are expressed as ug/Kg (dry weight)
< indicates not detected at the stated detection limit
--- indicates not analyzed

Copies
CEB
SJK
MJV

THE UPJOHN COMPANY

KALAMAZOO, MICHIGAN 49001, U.S.A.
TELEPHONE (616) 323-4000

April 10, 1987

Mr. William Spirka
Wayne Disposal, Inc.
P. O. Box 5187
Dearborn, Michigan 48128

Dear Mr. Spirka:

Enclosed is a laboratory analysis dated March 23, 1987 of a waste material identified as "dumpster D-01" which we are requesting approval at Wayne Disposal, Inc.

This waste was generated from the same activity and same location as our previously described material which was approved for Wayne Disposal, Inc. under number 2988. The dumpster is of 20 cubic yard capacity containing soils, building debris and empty crushed drums.

My February 3, 1987 letter to you describing the origin of the waste would be applicable to this material.

Please do not hesitate to contact me at (616) 323-5341, should you have any questions.

Sincerely,

Randal S. Senger

Randal S. Senger, Engineer
Environmental Affairs
THE UPJOHN COMPANY

dl

KR059B031914

BX 0036644

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

(616) 381-9666

To: The Upjohn Company
7171 Portage Road
6101-41-0
Portage, MI 49002

Attn: Mr. Randy Senger

Date: 3-23-87

Laboratory Code: 87283

Re: Analysis of one soil boring sample submitted 2-25-87 by MAECORP, Inc.

	Dumpster D-01
PCB's (mg/kg)	0.43*
pH (s.u.)	9.1
Flash Point (°F)	>200
Cyanide (mg/kg)	298
DNR Scan 1 & 2	**
EP Toxicity Evaluation	**

*PCB 1254; sample as received.

**Refer to analytical reports attached.

Respectfully submitted,
KAR Laboratories, Inc.

William H. Bouma

William H. Bouma, Ph.D.
Director

WHB/mcm

BX 0036645

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

(616) 381-9666

ANALYTICAL REPORT

To: The Upjohn Company

Date Received : 2-26-87
Laboratory Code: 87283
Purchase Order #
Report Date : 3-23-87

Re: VOLATILE HYDROCARBON ANALYSIS MICHIGAN DNR Scan 1 and Scan 2

Sample Identification: Soil boring, Dumpster D-01

SCAN 1 Purgeable Halocarbons

	Result		Result
Bromoform	<10	trans-1,2-Dichloroethene	<10
Bromodichloromethane	<10	cis-1,2-Dichloroethene	<10
Dibromochloromethane	<10	1,1,1-Trichloroethane	<10
Chloroform	<10	1,1,2-Trichloroethane	<10
Carbon Tetrachloride	<10	Trichloroethene	<10
Methylene Chloride	<10	1,1,2,2-Tetrachloroethane	<10
1,1-Dichloroethane	<10	Tetrachloroethene	<10
1,2-Dichloroethane	<10	1,3-Dichloropropene	<10
1,1-Dichloroethene	<10	Chlorobenzene	<10

SCAN 2 Purgeable Aromatic Hydrocarbons

	Result		Result
Benzene	<10	Styrene	<10
Ethylbenzene	<10	Xylenes	46
Toluene	<10		

KR059B031916

BX 0036646

Results are expressed as ug/kg (dry weight)
< indicates not detected at the stated detection limit
--- indicates not analyzed

EP TOXICITY EVALUATION
of
ONE SOIL BORING (DUMPSTER D-01)
for
THE UPJOHN COMPANY

KAR Project No.: 87283
March 23, 1987

Performed by:

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49001

KR059B031917

BX 0036647

INTRODUCTION

This project involved examination of one soil boring sample for the characteristics of EP Toxicity as defined by the United States Environmental Protection Agency in the Federal Register (40 CFR Part 261.4) and as applied in Michigan by the Department of Natural Resources.

The sample was received in a one-quart glass jar on February 26, 1987.

PROCEDURE

The Extraction Procedure (EP) followed "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods", SW-846, 2nd Edition, United States EPA.

The solid portion of the sample and 16 times the original sample weight of distilled water were placed into a two liter container. During the extraction period, the pH was adjusted to 5.0 ± 0.2 by the addition of 0.5N Acetic Acid. At the end of the 24 hour extraction period the solid portion was separated from the liquid by filtration through a 0.45 micron filter to yield the final extract for analysis.

"Methods for Chemical Analysis of Water and Wastes", by USEPA and "Standard Methods for the Examination of Water and Wastewater" were used for the analytical procedures. The resulting data is shown in the following tables.

TABLE 1

EXTRACTION PROCEDURE DATA

KAR I.D. NO. : 87233

UPJOHN I.D. : Dumpster D-01

SAMPLE DESCRIPTION: The sample consisted of brown soil with several large chunks of broken clay pots and a few rocks.

Sample Weight (g)	50.02
Initial Water (mL)	800
Initial pH (s.u.)	9.78
Total Acid (mL)	120
Final pH (s.u.)	5.04
Final Water (mL)	80

It should be noted that the maximum amount of acid (200 mL of 0.5 N Acetic Acid was not consumed.

Total Solids	= 85.45 % of sample
Volatile Solids	= 7.62 % of sample
Non-combustible Solids	= 77.83 % of sample

BX 0036649

TABLE 2

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

of

ONE SOIL BORING SAMPLE
(Dumpster D-01)

for

THE UPJOHN COMPANY

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.01	5.0 mg/L
Barium	3.91	100.0 mg/L
Cadmium	0.54	1.0 mg/L
Chromium	4.83	5.0 mg/L
Copper	30.7	100.0 mg/L
Lead	0.22	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	<0.01	1.0 mg/L
Silver	0.03	5.0 mg/L
Zinc	28.1	500.0 mg/L

*As designated by the Michigan DNR in accordance with or in addition to the USEPA.

CONCLUSION

All results are below the Maximum Allowable Concentration levels as designated by the Michigan DNR and USEPA. Therefore, this sample is not considered EP Toxic.

BX 0036650

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

(616) 381-9666

To: The Upjohn Company
7171 Portage Road
6101-41-0
Portage, MI 49002

Attn: Mr. Randy Senger

Date: 3-23-87

Laboratory Code: 87283

Re: Analysis of one soil boring sample submitted 2-25-87 by MAECORP, Inc.

	Dumpster D-01
PCB's (mg/kg)	0.43*
pH (s.u.)	9.1
Flash Point (°F)	>200
Cyanide (mg/kg)	298
DNR Scan 1 & 2	**
EP Toxicity Evaluation	**

*PCB 1254; sample as received.

**Refer to analytical reports attached.

Respectfully submitted,
KAR Laboratories, Inc.

William H. Bouma

William H. Bouma, Ph.D.
Director

WHB/mcm

BX 0036651

KR059B031921

735

EXHIBIT MGP-21

c:
CEBell
SJKnox
RJPool
MJVisser

THE UPJOHN COMPANY

KALAMAZOO, MICHIGAN 49001, U.S.A.
TELEPHONE (616) 323-4000

February 13, 1987

Ms. Mary H. Gerding
Manager of Sales Support
Ross Generator Services, Inc.
Grafton, OH 44044

Dear Ms. Gerding:

This is in response to your request for additional information pertaining to Waste Product Surveys #29795 through 29798 as submitted by The Upjohn Company.

The waste product survey forms have been amended as per your instructions and are enclosed.

Materials resulting from the drum excavation project as described by WPS#29797 and #29798 will be placed into 85 gallon salvage drums prior to shipment.

Please hold any action on WPS#39796 until further correspondence.

I am currently in possession of and have reviewed the EPA document entitled "Design & Development of Hazardous Waste Reactivity Testing Protocol". Reactivity Group numbers have been assigned to our waste materials in accordance with the guidance document.

Please do not hesitate to contact me at (616) 323-5341 should you have further questions concerning these waste materials. Your timely response on this matter is very much appreciated.

Sincerely,

Randal S. Senger

Randal S. Senger, Engineer
Environmental Affairs
THE UPJOHN COMPANY

RSS:dl
Enclosure

BX 0028903

Ross Incineration Services, Inc.
394 Giles Rd.
Grafton, OH 44044
(216) 748-2171

USEPA Facility ID# OHDO48415665

WASTE PRODUCT SURVEY

1. # 29797

C-2

REFER TO INSTRUCTIONS PRINTED ON THE REVERSE SIDE OF THIS FORM FOR PROPER COMPLETION.

DO NOT LEAVE BLANK SPACES. PLEASE SUBMIT THIS FORM TYPE-WRITTEN.

I. GENERATOR INFORMATION

2. Generator: The Upjohn Company 3. USEPA ID#: MID 981101073

4. Mailing Address: 7171 Portage Road, Kalamazoo, MI 49001

5. Plant Address:

6. Business Contact: Randal Senger Phone: 616-323-5341

7. Technical Contact: Randal Senger Phone: 616-323-5341

The following information is being required to comply with RCRA 40 CFR Part 264.13/265.13 (O.A.C. 3745-65-13) General Waste Analysis.

II. GENERAL WASTE INFORMATION

8. Waste Material Name: Buried drums 9. Generator Code (Optional):

10. Describe process that generates waste: drum excavation 11. SIC Code:

12. Is your company the original generator of the waste? ☒ No ☐ Yes If no, provide the name of the original generator: unknown

13. If this waste is a still bottom, are you the original generator of the feed stock? ☐ No ☐ Yes

14. Rate of Generation: one time only Current Accumulation: Drums: 3 Bulk (Gal.):

15. Check all types of containerization for which you request quotation.

- ___ 55 Gallon Steel Drum
- ___ 30 Gallon Steel Drum
- ___ 85 Gallon Steel Drum (Without inside container)
- X 85 Gallon Salvage Drum (With fiber or steel drums inside)
- ___ 55 Gallon Fiber Drum
- ___ 5 Gallon Pail
- ___ Bulk (For bulk shipments, waste viscosity must be < 5000 cps)
- ___ Other (specify)
- ___ Palletized Small Containers

Overall Dimensions of Material on Pallet ___ x ___ x ___ (High)

Dimensions of Pallet Only ___ x ___ x ___ (High)

What are the small containers on the pallet? ___ (1 Qt. Bottles, 8 oz. Aerosol Cans, Etc.)

III. WASTE STREAM CHEMICAL COMPOSITION

16. COMPONENTS INCLUDING CONTAMINANTS	CONCENTRATION RANGE WT%	AVERAGE WT% MUST TOTAL 100%	TLV (IF PUBLISHED) ACGIH	OSHA
Ethyl benzene	to	3.0		
toluene	to	2.3		
trichloroethylene	to	0.2		
xylenes	to	16.		
paint solids	to	88		
	to			
	to			
	to			
	to			
	to			
Water	to			

KR059B031924

BX 0028904

00001641

* If applicable, this waste stream was previously described by W.P.S. ___

*If applicable, this Waste Product Survey is a new revision of a previously submitted Waste Product Survey dated ___

Attach to this Form any additional information which must be known to treat, store or dispose of the waste in accordance with RCRA Part 264.13/265.13 (Ohio Administrative Code 3745-65-13), including but not limited to data developed under RCRA Part 261 (OAC 3645-51), Laboratory Analysis Technical Publications or Safety Data sheets.

Revised 7/18/8

WASTE PRODUCT SURVEY

29797

IV. SPECIFIC ANALYSIS OF WASTE

17. Method used to obtain a representative sample of the analyzed waste (i.e., grab, composite, etc.) Sampling methods are described in RCRA 40 CFR 261 Appendix I.
composite
trowel

In completing the next two items, do not leave blanks. If the specific element is not present, indicate "None".

18.

Organic Bound	CONCENTRATION RANGE WT%	AVERAGE WT%
Sulfur *	____ to ____	None
Chlorine *	____ to ____	0.15
Fluorine *	____ to ____	None
Bromine *	____ to ____	"
Iodine *	____ to ____	"
Nitrogen	____ to ____	"
Phosphorous	____ to ____	"

(Base % WT on Molecular Structure)

19. Metals (Actual Content) E.P. toxicity

Arsenic	<0.01 PPM	Lead*	3.09 PPM
Barium	<0.5 PPM	Mercury*	<.01 PPM
Cadmium	<0.01 PPM	Selenium	<0.01 PPM
Chromium	0.06 PPM	Silver	<0.01 PPM
Aluminum	N/A %	Silicon	N/A %
Magnesium	N/A %	Sodium	N/A %

20. Does this waste contain PCBs?

☐ No ☒ Yes. If yes, give the concentration regardless of amount and attach supporting documentation.

1.1 PPM

21. Does this waste contain insecticides, pesticides, herbicides or rodenticides?

☒ No ☐ Yes. If yes, identify each in the the space below and the concentrations.

____ PPM

____ PPM

(Include Safety Data Sheets for each)

22. Does this waste contain Dioxin? ☒ No ☐ Yes

23. Does this waste contain total cyanide > 250 PPM?
☒ No ☐ Yes 45ppm

24. Does this waste contain total sulfide > 500 PPM?
☒ No ☐ Yes

V. TOXICITY

25. Check Applicable Data

X	Eye	Explain Organic solvent
X	Inhalation	Explain "
X	Dermal	Explain "
X	Ingestion	Explain "
	Other	Explain

____ Carcinogen (suspected or known) Explain

VI. PHYSICAL PROPERTIES

26. Physical State at 70° F (Circle)

Liquid / Semisolid / Solid
Slurry Sludge Gas

Viscosity at 70° F ____ CPS

27. Is material pumpable? ☒ No ☐ Yes

Varies (Explain) ____

28. Is waste multi layered? ☒ No ☐ Yes

If yes, please describe and quantify each layer:

1. (Top) ____ %
2. ____ %
3. ____ %

29. Dissolved Solids N/A % WT
30. Suspended Solids N/A % WT
31. BTU Value/Lbs. * <5000 BTU/lb
32. Ash Content (% by WT) 45.5
33. Flash Point < 68 ° F
34. Vapor Pressure at 70° F N/A
35. Specific Gravity 1.2
36. pH 6.59
37. Corrosivity N/A mpy
38. Color gray

VII. REACTIVITY & STABILITY

39. What is the Reactivity Group Number(s) for this waste?
16, 17, 101

In accordance with **"Design and Development of Hazardous Waste Reactivity Testing Protocol."** EPA Document No. EPA-600/2-84-057, February 1984.

40. Is this material stable? ☐ No ☒ Yes

If no, explain ____

41. Is this material shock sensitive? ☒ No ☐ Yes

If yes, explain ____

KR059B031925

00001642

* These items are specifically required by RCRA Part 264/265 Subpart 0 (O.A.C. 3745-68-40 through 3745-68-471.

BX 0028905

Revised 7/18/86

WASTE PRODUCT SURVEY

29797

VIII. EPA INFORMATION

42. Is this waste hazardous as defined by RCRA Part 261 (O.A.C. 3745-51)? ☐ No ☒ Yes

If yes, list the applicable EPA Hazardous Waste Number(s) and explain why you have assigned the number(s). For example, if you assign D001 the reason for selection is that the flash point is less than 140°F. If you assign F002, the reason for selection may be that the waste is the still bottom from the recovery of methylene chloride.

43. If applicable, list CERCLA reportable quantities, found in Table 302.4 of 40 CFR Part 302

EPA Hazardous Waste Number(s)	Reason for Selection	
D001	Flash point of the solid <20°C	

44. If the waste is not hazardous as defined by federal regulations but is hazardous as defined by state regulations in which the waste was generated, please provide the state hazardous waste number(s). Also provide any state hazardous numbers that are not included in the federal regulations.

State Hazardous Waste Number(s)	Reason for Selection

X. DOT INFORMATION

In accordance with the Department of Transportation 49CFR Parts 171 through 177.

45. DOT Proper Shipping Name Waste flammable solid No.s

46. DOT Hazard Class Flammable solid

47. DOT UN or NA Number UN 1325

KR059B031926

48. Container Label(s) Flammable solid
(For containers of 110 gallons or less)

49. Placards Flammable solid

For assistance call Department of Transportation Regulations Division. Phone (202) 755-1011

Generators of hazardous waste shipments must also comply with the labeling requirements of RCRA 40 CFR Part 262 (O.A.C. 3734-52).

X. ACCOUNTABILITY STATEMENT

50. I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

BX 0028906

00001643

Randal Kroon
Authorized Signature

Environmental Engineer
Title

January 19, 19
Date
2-13-87 R.

Revised 7/18/86

2979

[illegible] Report

Sample

Identification: C-2

Appearance Thick, gray sludge (looks like paint)

pH 6.59

Flash Point <20° C.

Volatile Organics

Acetone	
n-Butanol	
t-Butanol	
n-Butyl acetate	
trans-1,2-Dichloroethylene	
Ethyl Acetate	
Ethyl Benzene	3.0%
Hexane	
Methyl Ethyl Ketone	
Methylene Chloride	
Tetrahydrofuran	
Toluene	2.3%
Trichloroethylene	0.2%
Xylenes	16%

KR059B031927

BX 0028907

00001644

TABLE 3

KAR ID # 861350-2

MAECORP ID # MI 150-C2

SAMPLE DESCRIPTION: Organic Solids -

The sample was gray to dark brown semi-solids with a solvent type odor.

	Concentration (% of sample)
Total Solids	61.6
Volatile Solids	16.1
Non-Combustible Solids	45.5

	Concentration (mg/kg of sample)
Total Cyanide	45
Polychlorinated Biphenyl (PCB)	1.1 (as Arochlor 1260)

USEPA Acid Extractable Priority Pollutants (Phenols)

(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	29
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 4 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did pass the EP Toxicity test.

TABLE 4

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-2 & MAECORP ID # MI 150-C2
ORGANIC SOLIDS

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	<0.01	5.0 mg/L
Barium	<0.5	100.0 mg/L
Cadmium	<0.01	1.0 mg/L
Chromium	0.06	5.0 mg/L
Copper	0.25	100.0 mg/L
Lead	3.09	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	<0.01	1.0 mg/L
Silver	<0.01	5.0 mg/L
Zinc	5.5	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

Ross Incineration Services, Inc.
394 Giles Rd.
Grafton, OH 44044
(216) 748-2171

WASTE PRODUCT SURVEY

1. # 29795

USEPA Facility ID# OHDO48415665

REFER TO INSTRUCTIONS PRINTED ON THE REVERSE SIDE OF THIS FORM FOR PROPER COMPLETION.

DO NOT LEAVE BLANK SPACES. PLEASE SUBMIT THIS FORM TYPE-WRITTEN.

I. GENERATOR INFORMATION

2. Generator: The Upjohn Company 3. USEPA ID#: MID000820381

4. Mailing Address: 7171 Portage Road, Kalamazoo, MI 49001

5. Plant Address: 7171 Portage Road, Kalamazoo, MI 49001

6. Business Contact: Randal S. Senger Phone: 616-323-5341

7. Technical Contact: _____ Phone: _____

The following information is being required to comply with RCRA 40 CFR Part 264.13/265.13 (O.A.C. 3745-65-13) General Waste Analysis.

II. GENERAL WASTE INFORMATION

8. Waste Material Name: O.U. 1510 Aqueous Waste 9. Generator Code (Optional): _____

10. Describe process that generates waste: Speciality Chemical Research 11. SIC Code: _____

12. Is your company the original generator of the waste? ☐ No ☒ Yes If no, provide the name of the original generator _____

13. If this waste is a still bottom, are you the original generator of the feed stock? ☐ No ☐ Yes

14. Rate of Generation: Unknown, depends on production forecast. Presently 130 gallons inventoried. Current Accumulation: Drums 3 Bulk (Gal.) _____

15. Check all types of containerization for which you request quotation.

- X 55 Gallon Steel Drum Plastic line
- _____ 30 Gallon Steel Drum
- _____ 85 Gallon Steel Drum (Without inside container)
- _____ 85 Gallon Salvage Drum (With fiber or steel drums inside)
- _____ 55 Gallon Fiber Drum
- _____ 5 Gallon Pail
- _____ Bulk (For bulk shipments, waste viscosity must be < 5000 cps)
- _____ Other (specify)
- _____ Palletized Small Containers

Overall Dimensions of Material on Pallet _____ x _____ x _____ (High)

Dimensions of Pallet Only _____ x _____ x _____ (High)

What are the small containers on the pallet? _____ (1 Qt. Bottles, 8 oz. Aerosol Cans, Etc.)

III. WASTE STREAM CHEMICAL COMPOSITION

16. COMPONENTS INCLUDING CONTAMINANTS	CONCENTRATION RANGE WT%	AVERAGE WT% MUST TOTAL 100%	TLV (IF PUBLISHED) ACGIH	OSHA
Water	62 to 68	64.9		
Dimethylacetamide	30 to 37	32.1		
Ethyl acetate	trace to 1%	0.9		
Sodium Azide	to	1.0		
Polyethylene Glycol	to	1.1		
	to			
	to			
	to			
	to			
	to			
Water	to			

KR059B031930

BX 0028910

* If applicable, this waste stream was previously described by W.P.S. _____

*If applicable, this Waste Product Survey is a new revision of a previously submitted Waste Product Survey dated 00001647

Attach to this Form any additional information which must be known to treat, store or dispose of the waste in accordance with RCRA Part 264.13/265.13 (Ohio Administrative Code 3745-65-13), including but not limited to data developed under RCRA Part 261 (OAC 3645-51), Laboratory Analysis Technical Publications or Safety Data sheets.

Revised 7/18/86

WASTE PRODUCT SURVEY

29795

IV. SPECIFIC ANALYSIS OF WASTE

17. Method used to obtain a representative sample of the analyzed waste (i.e., grab, composite, etc.) Sampling methods are described in RCRA 40 CFR 261 Appendix I.
Grab

In completing the next two items, do not leave blanks. If the specific element is not present, indicate "None".

18.

Organic Bound	CONCENTRATION RANGE WT%	AVERAGE WT%
Sulfur *	____ to ____	None
Chlorine *	____ to ____	None
Fluorine *	____ to ____	None
Bromine *	____ to ____	None
Iodine *	____ to ____	None
Nitrogen	____ to ____	None
Phosphorous	____ to ____	None

(Base % WT on Molecular Structure)

19. Metals (Actual Content) None

Arsenic	____ PPM	Lead*	____ PPM
Barium	____ PPM	Mercury*	____ PPM
Cadmium	____ PPM	Selenium	____ PPM
Chromium	____ PPM	Silver	____ PPM
Aluminum	____ %	Silicon	____ %
Magnesium	____ %	Sodium	____ %

20. Does this waste contain PCBs?
☒ No ☐ Yes. If yes, give the concentration regardless of amount and attach supporting documentation.
____ PPM

21. Does this waste contain insecticides, pesticides, herbicides or rodenticides?
☒ No ☐ Yes. If yes, identify each in the the space below and the concentrations.
____ PPM
____ PPM
(Include Safety Data Sheets for each)

22. Does this waste contain Dioxin? ☒ No ☐ Yes

23. Does this waste contain total cyanide > 250 PPM?
☒ No ☐ Yes

24. Does this waste contain total sulfide > 500 PPM?
☒ No ☐ Yes

V. TOXICITY

25. Check Applicable Data

____ Eye Explain ____
____ Inhalation Explain ____
____ Dermal Explain ____
____ Ingestion Explain ____
____ Other Explain ____
____ Carcinogen (suspected or known) ~~XXXXX~~
MSDS attached for Sodium Azide

VI. PHYSICAL PROPERTIES

26. Physical State at 70° F (Circle)

/Liquid/	Semisolid	Solid
Slurry	Sludge	Gas

Viscosity at 70° F ____ CPS

27. Is material pumpable? ☐ No ☒ Yes
Varies (Explain) ____

28. Is waste multi layered? ☒ No ☐ Yes
If yes, please describe and quantify each layer:
1. (Top) ____ %
2. ____ %
3. ____ %

29. Dissolved Solids ____ % WT

30. Suspended Solids ____ % WT

31. BTU Value/Lbs.* <6000 BTU's/lb

32. Ash Content (% by WT) <5

33. Flash Point <77 ° F

34. Vapor Pressure at 70° F 1.3mm

35. Specific Gravity ~ .98

36. pH 7.7

37. Corrosivity ~ neutral mpy

38. Color colorless

VII. REACTIVITY & STABILITY

39. What is the Reactivity Group Number(s) for this waste? 1(
No exothermic reaction when heated to

In accordance with "**Design and Development of Hazardous Waste Reactivity Testing Protocol,**" EPA Document No. EPA-600/2-84-057, February 1984.

40. Is this material stable? ☐ No ☒ Yes
If no, explain ____

41. Is this material shock sensitive? ☒ No ☐ Yes
If yes, explain ____

KR059B031931

BX 0028911

* These items are specifically required by RCRA Part 264/265 Subpart O (O.A.C. 3745-68-40 through 3745-68-47).

Revised 7/18/86

WASTE PRODUCT SURVEY

29795

VIII. EPA INFORMATION

42. Is this waste hazardous as defined by RCRA Part 261 (O.A.C. 3745-51)? ☐ No ☐ Yes

If yes, list the applicable EPA Hazardous Waste Number(s) and explain why you have assigned the number(s). For example, if you assign D001 the reason for selection is that the flash point is less than 140°F. If you assign F002, the reason for selection may be that the waste is the still bottom from the recovery of methylene chloride.

43. If applicable, list CERCLA reportable quantities. found in Table 302.4 of 40 CFR Part 302

EPA Hazardous Waste Number(s)	Reason for Selection	
D0001	Flash Point	

44. **If the waste is not hazardous as defined by federal regulations but is hazardous as defined by state regulations in which the waste was generated, please provide the state hazardous waste number(s). Also provide any state hazardous numbers that are not included in the federal regulations.**

State Hazardous Waste Number(s)	Reason for Selection

X. DOT INFORMATION

In accordance with the Department of Transportation 49CFR Parts 171 through 177.

45. DOT Proper Shipping Name Waste Flammable Liquid, n.o.s.

46. DOT Hazard Class Flammable Liquid

47. DOT UN or NA Number UN 1993 **BX 0028912**

48. Container Label(s) Flammable Liquid, Hazardous Waste
(For containers of 110 gallons or less)

49. Placards

For assistance call Department of Transportation Regulations Division. Phone (202) 755-1011

Generators of hazardous waste shipments must also comply with the labeling requirements of RCRA 40 CFR Part 262 (O.A.C 3734-52).

X. ACCOUNTABILITY STATEMENT

50. I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true accurate and complete and all known and suspected hazards have been disclosed.

KR059B031932 00001649

Randal L. Singer
Authorized Signature

Engineer, Environmental Affairs
Title

1-27
Date

evised 7/18/8

® Ross Incineration Services, Inc.
394 Giles Rd.
Grafton, OH 44044
(216) 748-2171

USEPA Facility ID# OHDO48415665

WASTE PRODUCT SURVEY

1. # ~~29798~~ C-11

REFER TO INSTRUCTIONS PRINTED ON THE REVERSE SIDE OF THIS FORM FOR PROPER COMPLETION.

DO NOT LEAVE BLANK SPACES. PLEASE SUBMIT THIS FORM TYPE-WRITTEN.

I. GENERATOR INFORMATION

2. Generator: The Upjohn Company — 3. USEPA ID#: MID 981101073

4. Mailing Address: 7171 Portage Road, Kalamazoo, MI 49001

5. Plant Address:

6. Business Contact: Randal Senger — Phone: 616-323-5341

7. Technical Contact: Randal Senger — Phone: 616-323-5341

The following information is being required to comply with RCRA 40 CFR Part 264.13/265.13 (O.A.C. 3745-65-13) General Waste Analysis.

II. GENERAL WASTE INFORMATION

8. Waste Material Name: Buried drums — 9. Generator Code (Optional):

10. Describe process that generates waste: drum excavation — 11. SIC Code:

12. Is your company the original generator of the waste? ☒ No ☐ Yes If no, provide the name of the original generator: unknown

13. If this waste is a still bottom, are you the original generator of the feed stock? ☐ No ☐ Yes

14. Rate of Generation: one time only — Current Accumulation: Drums: 11 — Bulk (Gal.):

15. Check all types of containerization for which you request quotation.

- ___ 55 Gallon Steel Drum
- ___ 30 Gallon Steel Drum
- ___ 85 Gallon Steel Drum (Without inside container)
- X 85 Gallon Salvage Drum (With fiber or steel drums inside)
- ___ 55 Gallon Fiber Drum
- ___ 5 Gallon Pail
- ___ Bulk (For bulk shipments, waste viscosity must be < 5000 cps)
- ___ Other (specify)
- ___ Palletized Small Containers

Overall Dimensions of Material on Pallet ___ x ___ x ___ (High)

Dimensions of Pallet Only ___ x ___ x ___ (High)

What are the small containers on the pallet? ___ (1 Qt. Bottles, 8 oz. Aerosol Cans, Etc.)

III. WASTE STREAM CHEMICAL COMPOSITION

16. COMPONENTS INCLUDING CONTAMINANTS	CONCENTRATION RANGE WT%	AVERAGE WT% MUST TOTAL 100%	TLV (IF PUBLISHED) ACGIH	OSHA
Acetone	to	0.5		
ethyl acetate	to	0.1		
ethyl benzene	to	1.8		
hexane	to	0.1		
toluene	to	2.1		
xylenes	to	9.0		
paint solids	to	86		
	to			
	to			
	to			
Water	to			

KR059B031933

BX 0028913

00001652

* If applicable, this waste stream was previously described by W.P.S. ___

*If applicable, this Waste Product Survey is a new revision of a previously submitted Waste Product Survey dated ___

Attach to this Form any additional information which must be known to treat, store or dispose of the waste in accordance with RCRA Part 264.13/265.13 (Ohio Administrative Code 3745-65-13), including but not limited to data developed under RCRA Part 261 (OAC 3645-51), Laboratory Analysis Technical Publications or Safety Data sheets.

Revised 7/18/86

WASTE PRODUCT SURVEY

29798

IV. SPECIFIC ANALYSIS OF WASTE

17. Method used to obtain a representative sample of the analyzed waste (i.e., grab, composite, etc.) Sampling methods are described in RCRA 40 CFR 261 Appendix I.
composite
trowel

In completing the next two items, do not leave blanks. If the specific element is not present, indicate "None".

18. Organic Bound	CONCENTRATION RANGE WT%	AVERAGE WT%
Sulfur *	____ to ____	None
Chlorine *	____ to ____	"
Fluorine *	____ to ____	"
Bromine *	____ to ____	"
Iodine *	____ to ____	"
Nitrogen	____ to ____	"
Phosphorous	____ to ____	"

(Base % WT on Molecular Structure)

19. Metals (Actual Content) E.P. toxicity

Arsenic	0.02 PPM	Lead*	3.21 PPM
Barium	<0.5 PPM	Mercury*	<0.01 PPM
Cadmium	<0.01 PPM	Selenium	<0.01 PPM
Chromium	<0.02 PPM	Silver	<0.01 PPM
Aluminum	N/A %	Silicon	N/A %
Magnesium	N/A %	Sodium	N/A %

20. Does this waste contain PCBs?

☒ No ☐ Yes. If yes, give the concentration regardless of amount and attach supporting documentation.

____ PPM

21. Does this waste contain insecticides, pesticides, herbicides or rodenticides?

☒ No ☐ Yes. If yes, identify each in the the space below and the concentrations.

____ PPM

____ PPM

(Include Safety Data Sheets for each)

22. Does this waste contain Dioxin? ☒ No ☐ Yes

23. Does this waste contain total cyanide > 250 PPM?
☒ No ☐ Yes 42 ppm

24. Does this waste contain total sulfide > 500 PPM?
☒ No ☐ Yes

V. TOXICITY

25. Check Applicable Data

X	Eye	Explain Organic solvents
X	Inhalation	Explain "
X	Dermal	Explain "
X	Ingestion	Explain "
	Other	Explain

____ Carcinogen (suspected or known) Explain

VI. PHYSICAL PROPERTIES

26. Physical State at 70° F (Circle)

Liquid	Semisolid	Solid
Slurry	/ Sludge /	Gas

Viscosity at 70° F ____ CPS

27. Is material pumpable? ☒ No ☐ Yes

Varies (Explain) ____

28. Is waste multi layered? ☒ No ☐ Yes

If yes, please describe and quantify each layer:

1. (Top) ____ %
2. ____ %
3. ____ %

29. Dissolved Solids N/A % WT
30. Suspended Solids N/A % WT
31. BTU Value/Lbs. * <5000
32. Ash Content (% by WT) 30.2
33. Flash Point <68° ° F
34. Vapor Pressure at 70° F N/A
35. Specific Gravity 1.2
36. pH 5.64
37. Corrosivity N/A mpy
38. Color dark gray

VII. REACTIVITY & STABILITY

39. What is the Reactivity Group Number(s) for this waste?
16, 19, 28, 101

In accordance with "Design and Development of Hazardous Waste Reactivity Testing Protocol," EPA Document No. EPA-600/2-84-057, February 1984.

40. Is this material stable? ☐ No ☒ Yes

If no, explain ____

41. Is this material shock sensitive? ☒ No ☐ Yes

If yes, explain ____

KR059B031934

BX 0028914

* These items are specifically required by RCRA Part 264/265 Subpart 0 (O.A.C. 3745-68-40 through 3745-68-47).

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Revised 7/18/86

WASTE PRODUCT SURVEY

29798

VIII. EPA INFORMATION

42. Is this waste hazardous as defined by RCRA Part 261 (O.A.C. 3745-51)? ☐ No ☐ Yes

If yes, list the applicable EPA Hazardous Waste Number(s) and explain why you have assigned the number(s). For example, if you assign D001 the reason for selection is that the flash point is less than 140°F. If you assign F002, the reason for selection may be that the waste is the still bottom from the recovery of methylene chloride.

43. If applicable, list CERCLA reportable quantities, found in Table 302.4 of 40 CFR Part 302

EPA Hazardous Waste Number(s)	Reason for Selection	
D001	Flash point <60°C	

44. If the waste is not hazardous as defined by federal regulations but is hazardous as defined by state regulations in which the waste was generated, please provide the state hazardous waste number(s). Also provide any state hazardous numbers that are not included in the federal regulations.

State Hazardous Waste Number(s)	Reason for Selection

X. DOT INFORMATION

In accordance with the Department of Transportation 49CFR Parts 171 through 177.

45. DOT Proper Shipping Name Waste Flammable Solid No.s

46. DOT Hazard Class Flammable Solid

KR059B031935

47. DOT UN or NA Number UN 1325

48. Container Label(s) Flammable solid
(For containers of 110 gallons or less)

49. Placards

For assistance call Department of Transportation Regulations Division. Phone (202) 755-1011

Generators of hazardous waste shipments must also comply with the labeling requirements of RCRA 40 CFR Part 262 (O.A.C 3734-52).

X. ACCOUNTABILITY STATEMENT

50. I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true accurate and complete and all known and suspected hazards have been disclosed.

BX 0028915

Authorized Signature

Environmental Engineer
Title

January 19, 1
Date

2-13-87

00001654

Revised 7/18/8

Analytical Report

Sample

Identification: C-11

Appearance Thick, dark-gray sludge.

pH 5.64

Flash Point <20° C.

Volatile Organics

Acetone	0.5%
n-Butanol	
t-Butanol	
n-Butyl acetate	
trans-1,2-Dichloroethylene	
Ethyl Acetate	0.1%
Ethyl Benzene	1.8%
Hexane	0.1%
Methyl Ethyl Ketone	
Methylene Chloride	
Tetrahydrofuran	
Toluene	2.1%
Trichloroethylene	
Xylenes	0.0%

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BX 0028916

TABLE 25

KAR ID # 861350-13

MAECORP ID # MI 150-C11

SAMPLE DESCRIPTION: Organic Solids -

The sample was a grayish slurry of solids similar to thickened paint and solvent type odor.

	Concentration (% of sample)
Total Solids	53.1
Volatile Solids	23.0
Non-Combustible Solids	30.2

	Concentration (mg/kg of sample)
Total Cyanide	42
Polychlorinated Biphenyl (PCB)	<1

USEPA Acid Extractable Priority Pollutants (Phenols)
(All concentrations in mg/kg of sample)

	Result		Result
4-chloro-3-methylphenol	<5	2-nitrophenol	<5
2-chlorophenol	<5	4-nitrophenol	<5
2,4-dichlorophenol	<5	Pentachlorophenol	<5
2,4-dimethylphenol	<5	Phenol	<5
2,4-dinitrophenol	<50	2,4,6-trichlorophenol	<5
2-methyl-4,6-dinitrophenol	<25		

EP TOXICITY EVALUATION

The results of the EP Toxicity evaluation are shown in Table 26 and compared to the Maximum Concentrations designated by USEPA and/or Michigan DNR. The sample did pass the EP Toxicity test.

TABLE 26

Comparison of Analytical Results
with Maximum EP Toxicity Concentrations*

for

KAR ID # 861350-13 & MAECORP ID # MI 150-C11
ORGANIC SOLIDS

from

Upjohn Drummed Waste

(Results are expressed as mg/L)

Parameter	Sample Extract Concentration	Maximum Concentration*
Arsenic	0.02	5.0 mg/L
Barium	<0.5	100.0 mg/L
Cadmium	<0.01	1.0 mg/L
Chromium	<0.02	5.0 mg/L
Copper	0.02	100.0 mg/L
Lead	3.21	5.0 mg/L
Mercury	<0.01	0.2 mg/L
Selenium	<0.01	1.0 mg/L
Silver	<0.01	5.0 mg/L
Zinc	9.4	500.0 mg/L

* As designated by the Michigan DNR in accordance with or in addition to the USEPA.

Analytical Report

Sample Identification: C-1

Appearance	Thick, black sludge
pH	8.61
Flash Point	Would not support combustion.

Volatile Organics

Acetone	
n-Butanol	
t-Butanol	
n-Butyl acetate	
trans-1,2-Dichloroethylene	
Ethyl Acetate	
Ethyl Benzene	0.05%
Hexane	
Methyl Ethyl Ketone	
Methylene Chloride	
Tetrahydrofuran	
Toluene	0.12%
Trichloroethylene	
Xylenes	0.20%

EXHIBIT MGP-22

KAR Laboratories, Inc.
4425 Manchester Road
Kalamazoo, MI 49002

(616) 381-9666

ANALYTICAL REPORT

To: Upjohn Company
7171 Portage Road, 6101-91-1
Kalamazoo, MI 49001

Attn: Mr. Russ Downey

Proj. No.: 931064
Client No.: 0505
Date Activated: 5/17/93
Date Promised: 6/01/93
Date Reported:
PO#:

Project Desc.: Analysis of one aqueous and four soil samples from Chiller #9.

Dear Client:

Attached you will find test results for Project No. 931064. Please refer to this Project No. if you have any questions regarding this work.

Respectfully submitted,
KAR Laboratories, Inc.

Michael J. Jaeger
Director of Laboratories

KAR Laboratories, Inc.

ANALYTICAL RESULTS

To: Upjohn Company

Project No: 931064
Report Date:

Project Desc.: Analysis of one aqueous and four soil samples from Chiller #9.

Sample No.:931064-01 Type:aqueous Rec'd: 5/17/93
Sampled: 5/14/93 By:GB of SME.
ID: "B-1"

Arsenic, total, low level	0.278	mg/L
Barium, total	1.05	mg/L
Cadmium, total, low level	0.021	mg/L
Chromium, total	0.30	mg/L
Copper, total	0.30	mg/L
Lead, total	0.292	mg/L
Mercury, total, low level	0.0009	mg/L
Selenium, total	<0.05	mg/L
Silver, total, low level	0.0023	mg/L
Zinc, total	0.77	mg/L
MDNR Scan 1 & 2	See attached	
MDNR Scan 7	See attached	
PCB Aroclor 1016	<0.2	ug/L
PCB Aroclor 1221	<0.2	ug/L
PCB Aroclor 1232	<0.4	ug/L
PCB Aroclor 1242	<0.2	ug/L
PCB Aroclor 1248	<0.2	ug/L
PCB Aroclor 1254	<0.2	ug/L
PCB Aroclor 1260	<0.2	ug/L
PCB Aroclors, total	NA	ug/L

Elevated detectio limit due to sample matrix interference.

Sample No.:931064-02 Type:soil Rec'd: 5/17/93
Sampled: 5/14/93 By:GB of SME.
ID: "B-1, S-1, 1'-2.5'"

Arsenic, total, low level	13.1	mg/kg
Barium, total, low level	30	mg/kg
Cadmium, total, low level	0.15	mg/kg
Chromium, total	5.8	mg/kg
Copper, total	43	mg/kg
Lead, total	66	mg/kg
Mercury, total, low level	<0.1	mg/kg
Selenium, total	<0.5	mg/kg
Silver, total	<0.5	mg/kg
Zinc, total	75	mg/kg
MDNR Scan 1 & 2	See attached	
MDNR Scan 7	See attached	
PCB Aroclor 1016	<330	ug/kg
PCB Aroclor 1221	<330	ug/kg

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KAR Laboratories, Inc.

ANALYTICAL RESULTS

To: Upjohn Company

Project No: 931064
Report Date:

Project Desc.: Analysis of one aqueous and four soil samples from Chiller #9.

PCB Aroclor 1232	<330	ug/kg
PCB Aroclor 1242	<330	ug/kg
PCB Aroclor 1248	<330	ug/kg
PCB Aroclor 1254	<330	ug/kg
PCB Aroclor 1260	<330	ug/kg
PCB Aroclors, total	NA	ug/kg

Sample No.:931064-03 Type:soil Rec'd: 5/17/93
Sampled: 5/14/93 By:GB of SME.
ID: "B-1, S-2, 3.5'-5'"

Arsenic, total, low level	9.6	mg/kg	
Barium, total, low level	46	mg/kg	
Cadmium, total, low level	0.05	mg/kg	
Chromium, total	10	mg/kg	
Copper, total	10	mg/kg	
Lead, total	8	mg/kg	
Mercury, total, low level	<0.1	mg/kg	
Selenium, total	<2	mg/kg	Elevated detection limit due to sample matrix interference.
Silver, total	<0.5	mg/kg	
Zinc, total	25	mg/kg	
MDNR Scan 1 & 2	See attached		
MDNR Scan 7	See attached		
PCB Aroclor 1016	<330	ug/kg	
PCB Aroclor 1221	<330	ug/kg	
PCB Aroclor 1232	<330	ug/kg	
PCB Aroclor 1242	<330	ug/kg	
PCB Aroclor 1248	<330	ug/kg	
PCB Aroclor 1254	<330	ug/kg	
PCB Aroclor 1260	<330	ug/kg	
PCB Aroclors, total	NA	ug/kg	

Sample No.:931064-04 Type:soil Rec'd: 5/17/93
Sampled: 5/14/93 By:GB of SME.
ID: "B-1, S-3, 8.5'-10'"

Arsenic, total, low level	9.2	mg/kg
Barium, total, low level	33	mg/kg
Cadmium, total, low level	0.09	mg/kg
Chromium, total	9	mg/kg
Copper, total	8	mg/kg
Lead, total	10	mg/kg
Mercury, total, low level	<0.1	mg/kg

KR059B031943

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BX 0092645

KAR Laboratories, Inc.

ANALYTICAL RESULTS

To: Upjohn Company

Project No: 931064
Report Date:

Project Desc.: Analysis of one aqueous and four soil samples from Chiller #9.

Selenium, total	<2 mg/kg	Elevated detectio limit due to sample matrix interference.
Silver, total	<0.5 mg/kg	
Zinc, total	21 mg/kg	
MDNR Scan 1 & 2	See attached	
MDNR Scan 7	See attached	
PCB Aroclor 1016	<330 ug/kg	
PCB Aroclor 1221	<330 ug/kg	
PCB Aroclor 1232	<330 ug/kg	
PCB Aroclor 1242	<330 ug/kg	
PCB Aroclor 1248	<330 ug/kg	
PCB Aroclor 1254	<330 ug/kg	
PCB Aroclor 1260	<330 ug/kg	
PCB Aroclors, total	NA ug/kg	

Sample No.:931064-05 Type:soil Rec'd: 5/17/93
Sampled: 5/14/93 By:GB of SME.
ID: "B-1, S-4, 13.5'-15'"

Arsenic, total, low level	2.6 mg/kg	
Barium, total, low level	11 mg/kg	
Cadmium, total, low level	<0.05 mg/kg	
Chromium, total	10 mg/kg	
Copper, total	4 mg/kg	
Lead, total	2 mg/kg	
Mercury, total, low level	<0.1 mg/kg	
Selenium, total	<2 mg/kg	Elevated detection limit due to sample matrix interference.
Silver, total	<0.5 mg/kg	
Zinc, total	13 mg/kg	
MDNR Scan 1 & 2	See attached	
MDNR Scan 7	See attached	
PCB Aroclor 1016	<330 ug/kg	
PCB Aroclor 1221	<330 ug/kg	
PCB Aroclor 1232	<330 ug/kg	
PCB Aroclor 1242	<330 ug/kg	
PCB Aroclor 1248	<330 ug/kg	
PCB Aroclor 1254	<330 ug/kg	
PCB Aroclor 1260	<330 ug/kg	
PCB Aroclors, total	NA ug/kg	

KAR Laboratories, Inc.

ANALYTICAL RESULTS

To: Upjohn Company

Project No: 931064
Report Date:

Project Desc.: Analysis of one aqueous and four soil samples from Chiller #9.

Unless otherwise noted, test results represent the sample(s) as they were received.