HERST & ASSOCIATES, INC.®

Global Presence
Personal Attention

Mr. Dan Wall
Remedial Project Manager
Superfund Division
USEPA
901 North 5th Street
Kansas City, Kansas 66101

September 16, 2005

Dear Mr. Wall:

Responses to Comments, West Lake Landfill Operable Unit 2
Remedial Investigation Report & Baseline Risk Assessment

On April 4, 2005, Herst & Associates, Inc. received USEPA comments on the West Lake Landfill Operable Unit 2 Remedial Investigation Report and Baseline Risk Assessment. The comments are reiterated verbatim below, followed by detailed responses.

GENERAL COMMENTS

Comment No. 1: The purpose and scope should be more explicit on the limits of the investigation and what constitutes the "site". Section 1.2.2 of the RI describes OU-2 as encompassing the remainder of the West Lake site not included in OU-1, which could be construed to include areas not associated with the landfill areas, e.g., the leaking underground storage tank at the asphalt plant.

Response: In response to Comment No. 1, the text has been revised to alter the definition of Site in order to exclude the concrete plant, asphalt plant, and automotive repair facility. The Site will refer to areas where landfill activities have been or are being conducted at the West Lake Landfill, with the exception of Operable Unit 1 Area 1 and Operable Unit 1 Area 2. This language is contained in the December 19, 1994 Administrative Order on Consent, Docket No. Vii-94-0025.

Comment No. 2: Some of the inferred hydrogeological pathways for contaminant migration are not made clear. Specifically, the petroleum impacts near monitoring well MW-F2 and the volatile organic compounds in PZ-114-AS are attributed to sources outside the scope of OU 2, but it is not clear from the information provided where the respective sources are located and that they are upgradient from the impacted wells. It would be helpful to show on one of the figures the approximate location of the groundwater divide that is maintained by the active landfill leachate collection system. To what extent do any of the closed landfill areas fall outside the capture zone?

Response:

MW-F2 and Inactive Landfill

As described in the Work Plan, page 2-10, "*The currently active sanitary landfill includes a leachate collection system (Section 2.5.2) which maintains an inflow of bedrock groundwater toward the landfill. The inflow creates a local water table depression around the landfill.*" The December 1997

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Site Characterization Summary Report, page 7, states that *"...leachate collection from the active landfill is the major hydrogeologic feature at the site. Leachate collection has maintained an inward hydraulic gradient from the adjacent Salem, St. Louis/Upper Salem, and alluvial hydrogeologic units that was developed when the limestone quarry created a local hydraulic sink by excavating below the water table."* The RI Report dated June 2000, page 38, states *that "An alluvial groundwater divide apparently exists west of the active landfill, as would be expected based on regional data. East of the divide, groundwater flow is towards the active landfill. West of the divide, alluvial groundwater flow is west/northwest towards the Missouri River."*

Consistent with comments provided in various submittals associated with Operable Unit 1, there are only minor differences in water levels in the western portion of the site. For example, Figure 3-33 of the June 2000 RI Report indicates an April 3, 1996 water level of about 429.85 feet (ft) above mean sea level (msl) in alluvial well S-88 located near the asphalt plan, compared to slightly lower water levels of 429.85 ft msl in well MW-104 and 429.77 ft msl in well PZ-303-AS, each of which monitors the alluvium near MW-F2, approximately 1,200 feet southwest of S-88. The difference in water levels is therefore 0.08 feet or less over approximately 1,200 feet, indicating a slight gradient from the asphalt plant area toward the MW-F2 area. Figure 3-35 indicates a July 12, 1996 water level of 434.24 ft msl in well S-88 compared to 434.06 ft msl in well MW-104, 434.06 ft msl in MW-F2, and 434.23 ft msl in PZ-303-AS. The difference in water levels ranges from 0.01 to 0.18 feet using these data, indicating a slight gradient from the asphalt plant area toward the MW-F2 area. On other occasions the water levels indicate a slight gradient from the MW-F2 area toward the asphalt plant area (see Figures 3-32 and 3-34 of the RI Report, for example).

Given the variation in water levels across the alluvium at the site, it is not possible to develop a consistent approximation of the groundwater divide. However, the leachate levels maintained in the active landfill are substantially lower than the alluvial water levels, and groundwater seeps were observed throughout the walls of the former mine excavation during landfill operations, indicating groundwater flow into the former excavation and accordingly a groundwater divide at some distance away from the landfill.

With regard to the closed landfill areas and their relationship to the groundwater divide, the extent to which the inactive landfill is within or outside of the groundwater divide can be estimated using the existing data. For example, Figure 3-31 of the RI Report indicates a water level of 432.07 ft msl in well S-82 located at the western edge of the inactive landfill, compared to a water level of 432.04 ft msl in well S-88 and 431.27 ft msl in well I-73 located adjacent to the active landfill. These data would suggest that the inactive landfill is contained within the capture zone of the active landfill. Similar relationships hold for Figures 3-33 through 3-36. Using these data points, one could conclude that the majority of the inactive landfill area is contained within the capture zone of the active landfill.

In summary, the data indicate the potential for the MW-F2 area to be hydraulically downgradient of the asphalt plant area at least occasionally. The data further indicate that the majority of the inactive landfill is contained within the capture zone of the active landfill. However, the conclusions are based on water level differences of tenths or hundreths of feet over horizontal distances of over 1,000 feet. Appropriate discretion should be applied to the conclusions based on the low gradients. Please refer to response to Comment No. 5 for additional details regarding the leaking underground storage tank investigation near the asphalt plant.

PZ-114-AS

Subsequent to submittal of the RI Report in 2000, additional data have been obtained regarding potential upgradient sources to PZ-114-AS. Available data include March 2003 water level from the PM Resources, Inc. property and May 2003 water level data from the Bridgeton Landfill. Attachment 1 includes March 2003 water level data for the PM Resources, Inc. property. Figure 1 illustrates the general direction of groundwater flow. Figure 2 focuses on the PZ-114-AS area and indicates that the direction of flow is from the PM Resources property toward PZ-114-AS. Additional discussion is provided in response to Comment No. 7 below.

Comment No. 3: As written the exposure assessment in the Baseline Risk Assessment (BRA) limits the plausible receptor scenarios based on the existence of the restrictive covenants that prohibit residential development and groundwater use. It is appropriate for the BRA to rule out exposure scenarios based on reasonably anticipated land use but not based on the existence of use restrictions. That is because the use restrictions are a de facto remedy and the baseline risks are those that would exist if the remedy was not maintained. The Human Health Assessment should be revised accordingly.

Response: The Baseline Risk Assessment Report has been revised to indicate that exposure scenarios are based on reasonably anticipated land use.

REMEDIAL INVESTIGATION REPORT

Comment No. 4: 2.4.2 Regional Wells, pg. 12. What is meant by the nearest drinking water well is "reportedly" located one mile north? Describe the sources of information used to determine what wells exist and update with respect to any nearby wells as appropriate. Provide more specific information about the locations of the nearest wells.

Response: Various submittals made as part of OU-1 and OU-2 have relied on a previous evaluation of nearby wells, as described in Foth and Van Dyke, 1989. Section 2.4.2 of the OU-2 Remedial Investigation Report also provides the Foth and Van Dyke reference. Foth and Van Dyke, 1989 provided details regarding a field evaluation of nearby wells. Because the field evaluation post-dated State of Missouri requirements for well registration that took effect in 1986, the results have been considered comprehensive and reliable and have therefore been referenced in various submittals associated with Operable Units 1 and 2 of the West Lake Landfill.

In response to the Comment, the State of Missouri was contacted and provided a listing of registered wells in the area of the Bridgeton Landfill. The State of Missouri information is presented in Attachment 2 to this response letter. The State of Missouri provided a list of registered wells in T46N, R5E and T47N, R5E, which encompasses approximately 5 miles in all directions from the Bridgeton Landfill. The locations of the registered wells are illustrated on Figure 3. Note that the closest registered well is approximately 1 mile northeast of the landfill. This particular well is drilled 245 feet deep. Given the geology of the area, the depth indicates a bedrock completion. The closest well that appears to be completed in alluvium is approximately 2.5 miles south of the landfill. Areas south of the landfill are upgradient of the landfill. There are no registered wells located between the Bridgeton Landfill and the Missouri River in the direction of regional groundwater flow.

Additional information is presented in response to Comment No. 10 below.

Comment No. 5: 4.2.6 Petroleum Impacts near MW-F2, page 51. This is not clear on the implied relationship between the impacts near MW-F2 and the LUST. Is the LUST located west of the groundwater divide as would be necessary for it to be upgradient? Some description of the ongoing investigation or corrective action associated with the LUST would be appropriate.

Response: In response to the Comment, Freedom of Information Act (FOIA) requests were made to various regulatory agencies in Missouri. The response information is presented in Attachment 3. A summary of the response information is included in Attachment 3. Based on the available information, the Leaking Underground Storage Tank (LUST) investigation at the asphalt plant began in 1993. Soil sampling conducted during removal of a 10,000 gallon underground storage tank that had been used to contain diesel fuel yielded Total Petroleum Hydrocarbon (TPH) concentrations as high as 13,270 mg/kg, with benzene, toluene, ethylbenzene, and xylenes also present. Soil concentrations were in excess of soil cleanup levels. By the end of 1993, groundwater monitoring wells had been installed in the asphalt plant area, and some of the wells exhibited floating free product on top of the groundwater. Groundwater TPH concentrations were as high as 748,593 mg/l. Measured floating product thickness has exceeded 3.7 feet. Between 1994 and 2001 some product recovery occurred; however, various letters from the MDNR noted that the extent of groundwater contamination had not been completely defined, and more aggressive product recovery was needed. Letters of Warning were issued from the MDNR to the asphalt facility owner. As of March 29, 2005, the MDNR issued a denial letter to a February 1, 2005 Work Plan for additional site characterization activities, noting that the Work Plan was incomplete and did not provide basic information required for a review of the Plan.

Given that the asphalt plant LUST investigation has been ongoing for approximately 12 years, with leakage beginning at some unknown time prior to tank removal in 1993, that floating product thickness as high as 3.7 feet has been observed, that corrective actions have moved at a pace slower than satisfactory to the MDNR, and that the asphalt plant area is apparently upgradient of the MW-F2 area at least occasionally (see Response to Comment No. 2 above), it is reasonable to conclude that the asphalt plant area is a potential source for some or all of the petroleum impacts in the MW-F2 area.

Comment No. 6: Table 4-7 & 4-8. We assume GW-S-80, GW-I-50, and GW-300-AS, for example, are shown on the map as S-80, I-50, and PZ-300-AS. In Table 4-7, the unfiltered Gross Alpha and Gross Beta values are 5.61 $\pm$ 9.5 and 53.1 $\pm$ 6.2 respectively. In Table 2.4 of BRA, the values are 56.1 $\pm$ 9.5 and 53.1 $\pm$ 6.2 respectively. Based on a check with other tables it appears that the table in the RI may be in error. These levels appear to exceed alluvial background levels in other wells by an order of magnitude and do not appear to be supported by the isotope results. Some rationale should be provided to account for this.

Response: The groundwater sample designations utilized in the Remedial Investigation Report are consistent with the EPA-approved RI/FS Work Plan, Appendix A, Field Sampling Plan, Section 5, Sample Designation. As noted in the Field Sampling Plan, groundwater samples would be indicated with a prefix "GW-". Page 5-1 of the Field Sampling Plan provides an example. Page 5-1 indicates that GW-201-SS would refer to a groundwater sample collected from PZ-201-SS. Similar designations have been used in prior Operable Unit 2 report submittals.

As clarification, EPA Comment No. 6 refers to results for monitoring well S-80 from a December 1995 sampling event conducted by Golder Associates Inc. as part of OU-2 characterization activities. Well S-80 is located approximately 1,000 feet upgradient of the West Lake Landfill. The value of 5.61 $\pm$ 9.5 on Table 4-7 of the Remedial Investigation Report appears to contain a typographical error. As noted in the EPA comment, the correct value should be 56.1 $\pm$ 9.5. Other relatively high gross alpha and

gross beta values have been reported in groundwater samples collected near the landfill, including other samples collected from well S-80 by other investigators. As described in the November 1996 "Groundwater Conditions Report for Areas 1 and 2" prepared by McLaren Hart Environmental Engineering Corporation (McLaren Hart) on behalf of Operable Unit 1, a groundwater sample collected by McLaren Hart personnel from well S-80 yielded a gross alpha activity of 285 $\pm$ 46 pCi/l. Other background wells with relatively high gross alpha activities include a value of 101 pCi/l for monitoring well MW-106 (August 1994 RI/FS Work Plan for Operable Unit 1) and 202 pCi/l for MW-107 (June 26, 1990 Phase II Investigation Final Report, Ford Financial Services; Attachment 4 to this response letter), both of which are located near monitoring well S-80 and are greater than 1,000 feet upgradient of the Bridgeton Landfill. Similarly, relatively high gross beta values greater than 50 pCi/l have been reported in a number of wells near the landfill. For additional information, please refer to the August 1994 RI/FS Work Plan for Operable Unit 1.

As stated on page 50 of the Operable Unit 2 Remedial Investigation Report, "No source of radioactivity in OU-2 has been identified or is suspected. Based on the radiological data collected as part of the OU-2 RI, groundwater quality appears to reflect natural radioactivity."

Supplemental Sampling

Comment No. 7: The Monthly Progress Reports for July and February 2004 describe the results of the supplemental sampling. The reports describe an off-site facility that may be the source of volatile organic compounds found in PZ-114-AS. It would be useful to provide the specific location of the facility and the former catchment system. Its "upgradient" position is presumably dependant on it being location inside the capture zone of the landfill pumping wells, but this relationship is not presented.

Response: Subsequent to submittal of the RI Report in 2000, additional information has been obtained regarding the upgradient potential source of VOCs at PZ-114-AS. Following is a more complete description of the facility in question.

PM Resources, Inc. is located across St. Charles Rock Road to the north of Bridgeton Landfill and more importantly, across the street from well 114-AS. A document titled "RCRA Operation & Maintenance Groundwater Monitoring Field Audit Report" compiled by the Missouri Department of Natural Resources (MDNR), Air and Land Protection Division, Environmental Services Program and submitted on March 12, 2003 to the MDNR-Air and Land Protection Division-Hazardous Waste Program (a copy of which is included as Attachment B to this response letter) provides relevant details. According to the March 12, 2003 document, the Environmental Services Program performed a field audit at the PM Resources site in support of MDNR's agreement with the U.S. Environmental Protection Agency to conduct Groundwater Compliance Monitoring Program inspections Resource Conservation and Recovery Act facilities in Missouri. According to the Report mentioned above, PM Resources is a facility that produces a wide variety of animal health care products including pharmaceuticals, medical feeds, rodenticides, sanitizers, cleaners, and pesticide products. The facility has been producing these types of products since 1970. The 2003 report states that a catchment system was utilized as part of the production process. The 2003 report does not discuss specific details regarding the catchment system. The 2003 report states that in September 1994 the owner removed the catchment system. Upon removal of the system, it was revealed that a release of hazardous chemicals had occurred. The chemicals released from the catchment system included petroleum products such as benzene, toluene, ethylbenzene, and xylenes (BTEX) along with some of their volatile breakdown components. Contaminants of concern at the PM Resources, Inc. site are BTEX and

volatile by-products involved with the removal of the catchment system and pesticides and herbicides that may have been released during the facility's production history. As described in a May 2005 report titled "Selection of Chemicals of Concern in Groundwater, PM Resources, Inc.", a copy of which is included as Attachment 5, volatile organic chemicals of concern in groundwater at the PM Resources facility include the following, along with their maximum detected concentrations:

- 1,2,3-trimethylbenzene (60.4 ug/l)
- 1,2,4-trimethylbenzene (370 ug/l)
- 1,3,5-trimethylbenzene (3.7 ug/l)
- acetone (4,000 ug/l)
- benzene (13 ug/l)
- carbon disulfide (489 ug/l)
- chlorobenzene (11,000 ug/l)
- ethylbenzene (560 ug/l)
- methyl tert-butyl ether (5,650 ug/l)
- nitrobenzene (25 ug/l)
- tetrahydrofuran (3,750 ug/l)

The following table summarizes the VOC detections at PZ-114-AS:

Summary of VOC Detections at PZ-114-AS

Sampling Date	Benzene (ug/L)	Chlorobenzene (ug/L)	1,4-Dichlorobenzene (ug/L)
8/25/1997	<5	7	<5
11/10/1997	<5	5.1	<5
2/16/1998	<5	<5	<5
5/27/1998	<5	<5	<5
11/12/1998	<5	7.2	<5
5/19/1999	<5	<5	<5
11/19/1999	<5	<5	<5
5/23/2000	<5	<5	<5
11/13/2000	<5	<5	<5
5/15/2001	<5	7.7	<5
11/7/2001	<5	5	<5
5/21/2002	<5	130	<5
7/24/2002	NA	150*	NA
11/19/2002	<5	120	5.5
5/28/2003	<5	110	6.2
11/20/2003	6.1	120	14
5/11/2004	5.4	130	18
11/17/2004	<5	96	11
05/25/05	<5	102	12.2

**Denotes Confirmation Sampling*

Methane gas was monitored in the headspace of PZ-114-AS and adjacent deeper well PZ-115-SS during the November 2003 and May 2004 routine groundwater compliance monitoring events for the

Bridgeton Landfill. Methane was detected in PZ-114-AS during the November 2003 sampling event, but methane was non-detect in the PZ-114-AS headspace during the May 2004 sampling event.

A map showing the location of the PM Resources facility in relationship to the Bridgeton Landfill is included as Figure 1 to this response letter. Figure 1 also includes potentiometric surface contours using water level data collected in wells at the PM Resources facility and the Bridgeton Landfill. As shown on Figure 1, groundwater flows from the PM Resources facility toward the Bridgeton Landfill and the PZ-114-AS location.

Given that benzene and chlorobenzene were detected in groundwater at both the PM Resources facility and PZ-114-AS, with concentrations much higher at the PM Resources facility than at PZ-114-AS, the PM Resources facility appears to be the source of benzene and chlorobenzene detected at PZ-114-AS. The identified direction of groundwater flow from the PM Resources facility toward the Bridgeton Landfill and PZ-114-AS provides support for this conclusion.

1,4-dichlorobenzene has been detected sporadically at PZ-114-AS, but is not detected in groundwater at the PM Resources facility. 1,4-dichlorobenzene is a daughter product of 1,2,3-trichlorobenzene and 1,2,4-trichlorobenzene, neither of which has been detected at the PM Resources facility. 1,4-dichlorobenzene is also a daughter product of 1,2,3,4-tetrachlorobenzene, which has not been analyzed at the PM Resources facility. It appears that 1,4-dichlorobenzene at PZ-114-AS could be related to the PM Resources facility or to landfill gas. It should be noted that the Maximum Contaminant Level for 1,4-dichlorobenzene (AKA paradichlorobenzene or p-dichlorobenzene) is 75 ug/l, and the maximum detected concentration in PZ-114-AS is 18 ug/l. The maximum detected concentration of 1,4-dichlorobenzene in PZ-114-AS is therefore about 4 times lower than the MCL.

Comment No. 8: The reports refer to two supplemental alluvial wells identified as PZ-303-AI and PZ-303-AS. We don't find PZ-303-AI on the maps. Perhaps the intent was to refer to PZ-304-AI and PZ-304-AS?

Response: The intent was to refer to PZ-302-AS and PZ-302-AI. The tables included in the referenced monthly reports are accurate. The text contained the inappropriate summary reference. The corrected sentence in each of the two referenced monthly reports should read, "Of the five supplemental alluvial wells that could be sampled, two (PZ-302-AI and PZ-302-AS) were not included in 1997 sampling.

BASELINE RISK ASSESSMENT

Comment No. 9: Section 2.2.1, pg 2.2. Figure 3 is cited here but it doesn't seem illustrative of any of any of the discussion points.

Response: The figure reference has been modified to illustrate the discussion points.

Comment No. 10: Section 2.7.5 Water Supply Wells, pg. 2-6. More detailed information on nearby wells is should be provided. See comments 3 above.

Response: Two water supply well investigations have been completed subsequent to submittal of the Remedial Investigation Report and Baseline Risk Assessment in 2000 and 2001, respectively. A May 2005 report titled "Evaluation of Groundwater Use Pathway" was prepared for the PM Resources facility by Risk Assessment Management Group, Inc. The "Evaluation of Groundwater Use Pathway" report includes an evaluation of public water supply wells near the PM Resources site (and therefore

near the adjacent Bridgeton Landfill). A copy of the May 2005 report is included as Attachment 5 to this response letter. As discussed in the "Evaluation of Groundwater Use Pathway" report, the nearest public water supply wells are in the alluvium across the Missouri River, more than four miles from the site. The location of private wells was also evaluated, and the "Evaluation of Groundwater Use Pathway" report concluded that the closest private well installed after 1986 is more than 3 miles from the PM Resources site. The date of 1986 represents the Water Well Drillers Law, which required submittal of well drilling logs to a centralized State of Missouri database. The "Evaluation of Groundwater Use Pathway" report identifies nine older wells within approximately 1 mile of the site. The reported date of well installation for these nine wells ranges from 1924 to 1957. These nine wells are installed at depths ranging from 197 feet below ground surface to 915 feet below ground surface, all within bedrock rather than alluvium

Herst & Associates, Inc. also obtained information regarding private wells near the landfill. Please refer to response to Comment No. 4.

Comment No. 11: Section 2.7.7.1 Current Land Use, pg. 2-7. Here and elsewhere the wording appears, change "precluded" to "prohibited".

Response: Agreed.

Comment No. 12: Section 4.1.5 Potential Human Receptors, pg. 4-5, top of the page. Should this reference be to the conceptual model in Figure 6?

Response: Yes, the reference should be to Figure 6.

Comment No. 13: Section 4.1.5 Potential Human Receptors, pg. 4-5 through 4-6. Several subsections with the same name and covering similar material are repeated. Clarify the reasoning or consolidate this information.

Response: The information has been consolidated.

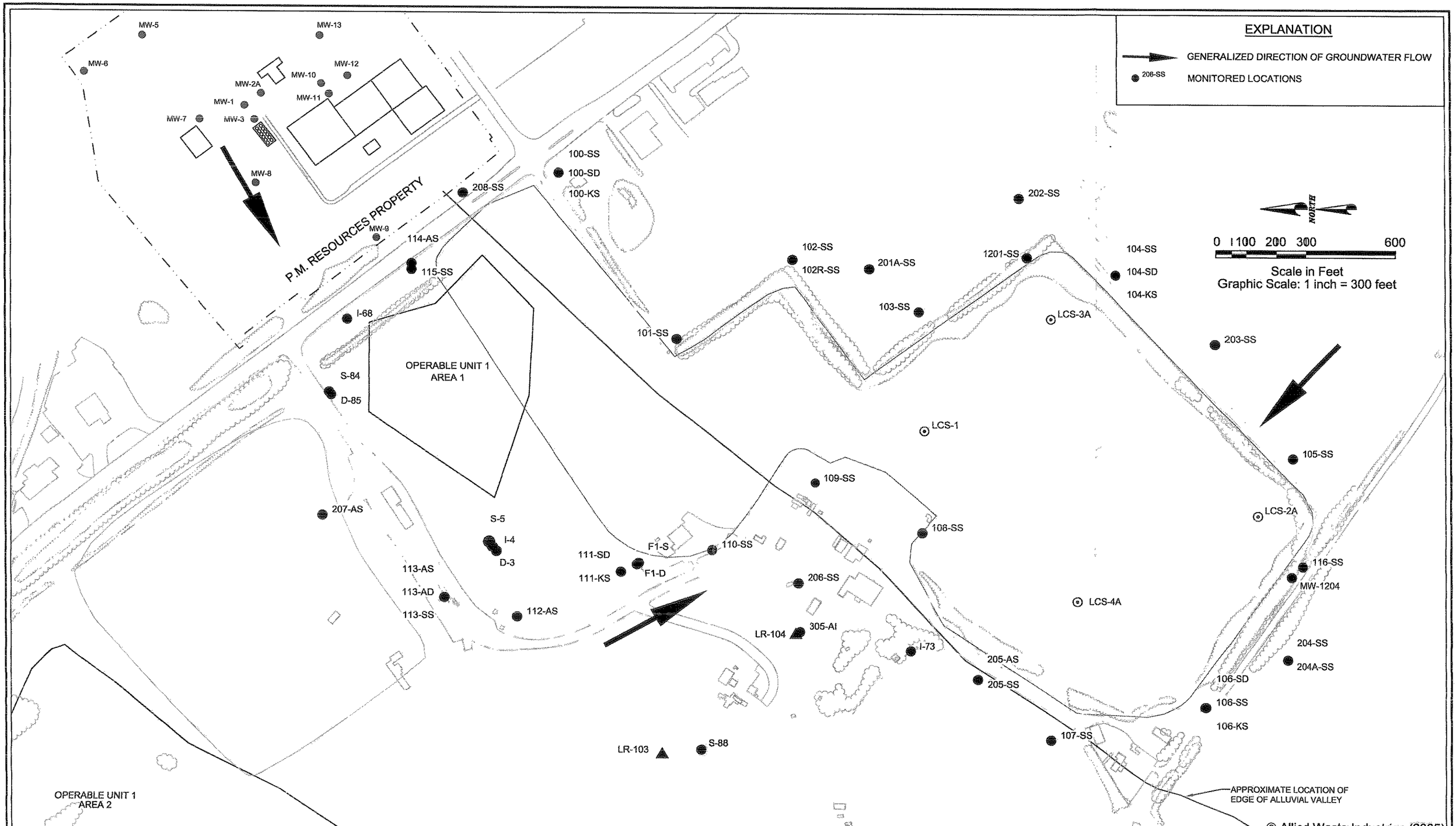
Sincerely,

Herst & Associates, Inc.

Ward Herst, PG
Managing Director

Cc: Victoria Warren – AWIN
Mike Hockley – Spencer, Fane, Britt & Browne
Rod Bloese – Allied
Jill Bruss - Missouri Department of Natural Resources
Rick Walker – Bridgeton Landfill, LLC.
Paul Rosasco - Engineering Management Support, Inc.

Figures



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Bridgeton Landfill, LLC
Bridgeton, Missouri

Figure 1
PM Resources Property
Adjacent to Bridgeton Landfill

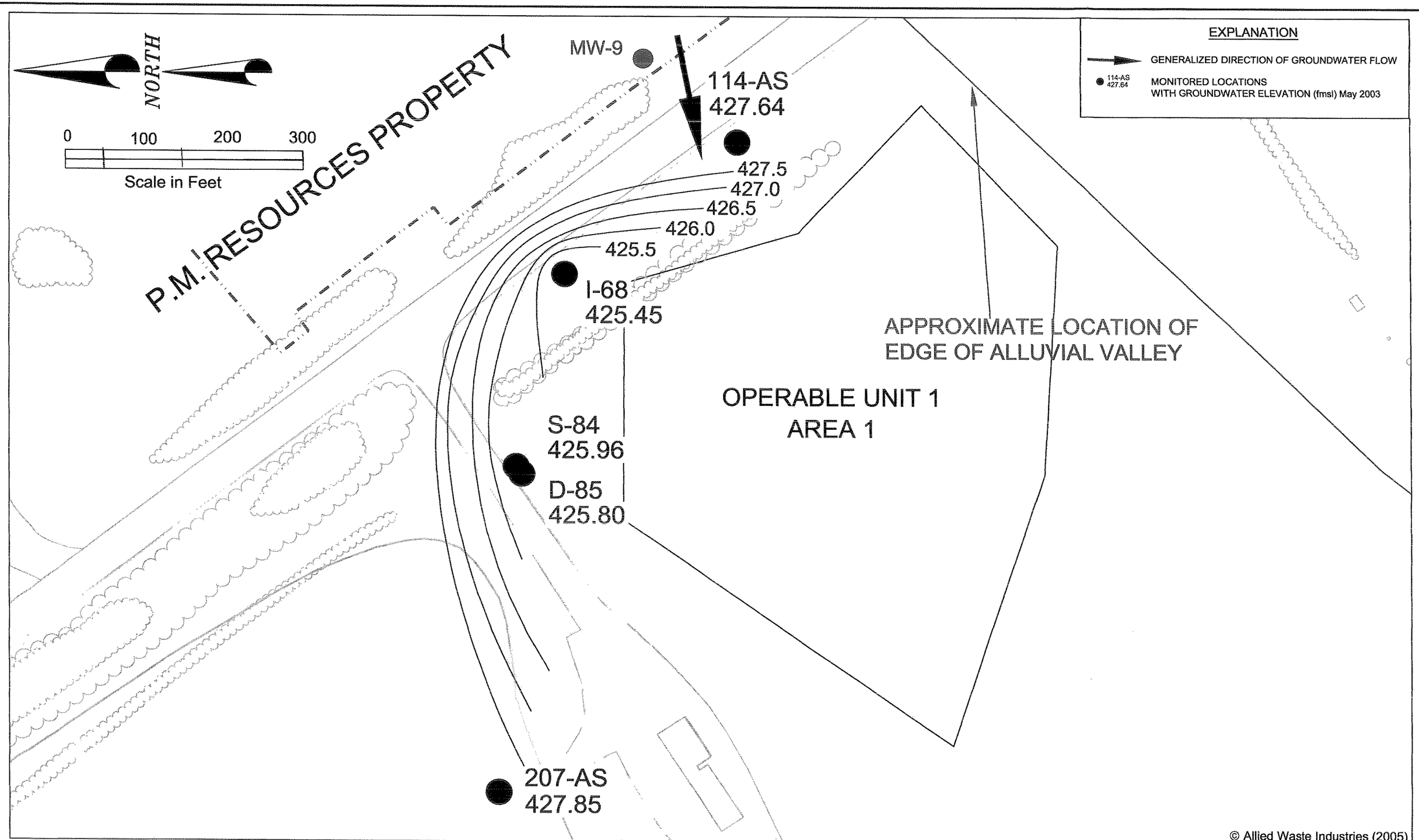

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Figure 2: May 2003, Alluvial Potentiometric Surface Map Vicinity of PZ-114-AS

Private Off Site Well Locations REVISED 052605dj

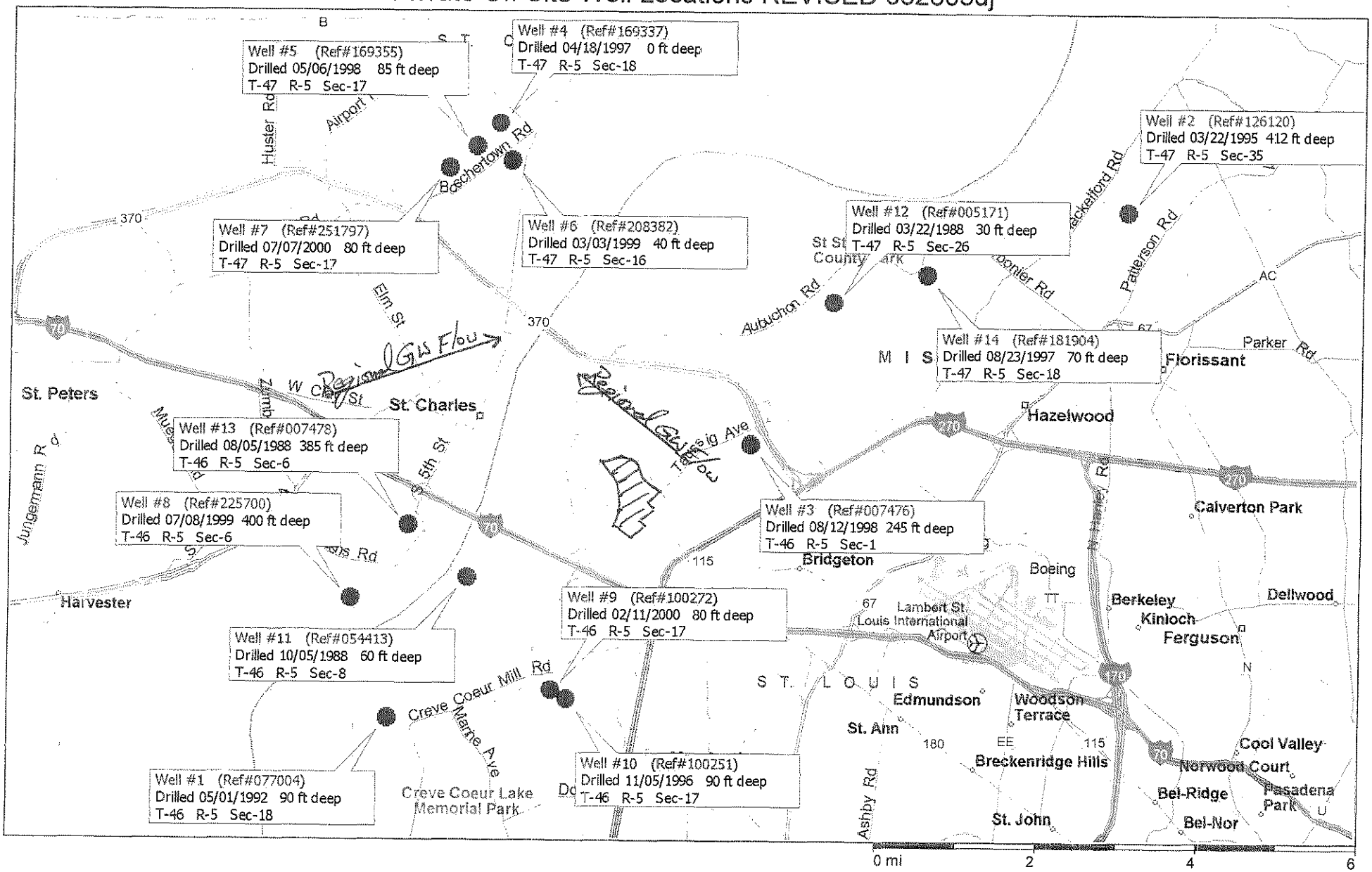

Figure 3
Registered wells Near Bridgeton Landfill

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Appendices

Attachment 1

March 2003 PM Resources Documentation

RCRA OPERATION & MAINTENANCE (O & M) GROUNDWATER MONITORING FIELD AUDIT REPORT

PM Resources Incorporated
13001 St. Charles Rock Road
St. Louis, Missouri

March 12, 2003

Prepared For:

Missouri Department of Natural Resources
Air and Land Protection Division
Hazardous Waste Program

Prepared By:

Missouri Department of Natural Resources
Air and Land Protection Division
Environmental Services Program

Table of Contents

1.0 Introduction 1
2.0 Site Description and History 1
  2.1 Site Location 1
  2.2 Site Description 1
  2.3 Site History/Contaminants of Concern 2
3.0 Methods 2
  3.1 Field Procedures 2
  3.2 Chain-of-Custody 3
  3.3 Analyses Requested 3
  3.4 Quality Assurance/Quality Control (QA/QC) 3
4.0 Investigation Derived Wastes 4
5.0 Observations 4
6.0 Data Reporting 5

Attachments ..... Located at end of report

Appendix A – Sampling and Analysis Procedures Worksheet
Appendix B – Analytical Results

1.0 Introduction

The Missouri Department of Natural Resources (MDNR), Hazardous Waste Program (HWP) requested the MDNR, Environmental Services Program (ESP) to conduct a groundwater monitoring field audit at the PM Resources, Incorporated (hereinafter referred to as PM Resources) site located in St. Louis, Missouri. The field audit was done in support of the MDNR's agreement with the U.S. Environmental Protection Agency (EPA) to conduct Groundwater Compliance Monitoring Program inspections at Resource Conservation and Recovery Act (RCRA) regulated facilities. The field audit was conducted on March 12, 2003.

PM Resources contracted with Sitex Environment, Inc. (Sitex) to conduct the groundwater monitoring activities. The equipment and methods used by the Sitex sampling team were observed and critiqued by Ken Hannon, Environmental Specialist with the ESP (see Appendix A – Sampling and Analysis Procedures Worksheet). In addition, the ESP representative collected split groundwater samples for independent analysis conducted at the ESP State Environmental Laboratory. Sitex had three field staff on-site, Tonya Krebel and Craig Cox made up the primary sampling team with Justin Rhyneer on-site as the overall project manager/site liaison for the Sitex team that the ESP representatives worked with while on-site. Kurt Hollman, geologist with the MDNR's Geological Survey and Resource Assessment Division (GSRAD), was on-site to evaluate monitoring well conditions, record well depth measurements, photograph each monitoring well, and observe well evacuation procedures. HWP project managers Darleen Groner and Steve Sandifer were also present during the sampling event.

2.0 Site Description and History

2.1 Site Location

PM Resources is located at 13001 St. Charles Rock Road, St. Louis, Missouri. This location corresponds to the S ½ NW ¼ SE ¼ sec. 34, T. 47 N., R. 5 E. of the St. Charles Quadrangle topographic map.

2.2 Site Description

The facility is comprised of one 37-acre tract of land situated on the corners of St. Charles Rock Road and Taussig Road in St. Louis, Missouri. Currently the main working area consists of one 150,000-ft. building. The remainder of the 37 acres is undeveloped property. A former catchment tank system was located approximately 130-ft. east/northeast of the main building and 20-ft. north of a railroad spur used to ship products in and out of the facility. There is also a large tank farm that stores raw chemicals used in the company's production processes. The tank farm is located approximately 70-ft. northwest of the former catchment system. The surrounding area is comprised primarily of light industrial properties.

2.3 Site History/Contaminants of Concern

PM Resources is a facility that produces a wide variety of animal health care products including pharmaceuticals, medical feeds, rodenticides, sanitizers, cleaners, and pesticide products. The facility has been producing these types of products since 1970.

In September of 1994 the owner removed the catchment system. Upon removal of the system, it was revealed that a release of hazardous chemicals had occurred. The chemicals released from this tank included petroleum products such as benzene, toluene, ethylbenzene, and xylenes (BTEX) along with some of their volatile breakdown components.

Contaminants of concern at this site are the BTEX and volatile petroleum by-products involved with the removal of the catchment system and pesticides and herbicides that may have been released during the facility's production history.

3.0 Methods

3.1 Field Procedures

The procedures used by the Sitex sampling team for the collection of groundwater samples were documented in a worksheet and are attached to this report as Appendix A. The field procedures are summarized below. The field audit conducted by the ESP representatives included the collection of split groundwater samples for independent analysis at the ESP state environmental laboratory. In the sampling request, the HWP requested that split samples be collected from four monitoring wells: MW-1, MW-2, MW-6, and MW-13.

All wells were evacuated and sampled using a Geotech2 bladder sampling pump run on a gasoline-powered generator. The pump had tubing attached to the mechanism that consisted of an outer polyethylene tube with an inner Teflon lining for greater chemical resistance. Samples traveled from the pump through the tubing and directly into sample containers.

The facility sampling personnel followed standard well evacuation procedures for low flow micropurging of monitoring wells. Static water levels were first measured and then used to calculate the depth of the water column. Total well depth levels were taken from existing well logs of previous sampling events. Each well had reading checks performed on their field parameters after every liter of water that was purged. Samples were collected after certain criteria were met; water parameters stabilized (pH +/- .1 and other parameters within 10% of previous reading) for three consecutive readings. Basic water quality field parameters (pH, specific conductance, dissolved oxygen, and temperature) were measured in the field during well evacuation and were evaluated for stability (generally $\pm$ 10 %) prior to sample collection. Temperature, although noted, was not recorded and evaluated under the sampling criteria. The evacuated water was collected in five-gallon buckets for storage and later disposal.

Both the Sitex sampling team and the ESP representative collected groundwater samples for the following parameters: volatile organics, base neutrals/acid extractables (BNAs), pesticides/herbicides, and total metals (As, Ag, Hg, Ba, Pb, Se, Cr, and Cd). The following table summarizes the samples that were collected by the ESP.

SAMPLE NUMBER	SAMPLE LOCATION
0300306	Trip Blank
0300307	Monitoring well MW-13
0300308	Monitoring well MW-1
0300309	Monitoring well MW-2
0300310	Monitoring well MW-2
0300311	Monitoring well MW-6

3.2 Chain-of-Custody

All samples collected by the ESP representative were given a numbered label and placed on ice in a cooler. A chain-of-custody form was then completed which recorded the label numbers assigned to each sample, the description of the location of the sample collected, the time and date collected, and the parameters to be analyzed.

The ESP representative maintained custody of the samples and hand delivered them to the state environmental laboratory within the ESP in Jefferson City where they were relinquished to laboratory personnel.

3.3 Analyses Requested

The state's samples were submitted for laboratory analyses of total metals (As, Ag, Hg, Ba, Pb, Se, Cr, and Cd), BNAs, pesticides/herbicides, and volatile organics.

3.4 Quality Assurance/Quality Control (QA/QC)

All samples were analyzed in accordance with the general requirements and standard operating procedures of the Fiscal Year 2003 Generator/TSD Quality Assurance Project Plan.

Sample 0300310 was collected as a duplicate of sample 0300309 from monitoring well MW-2.

4.0 Investigation Derived Wastes

All of the personal protective equipment and spent disposable sampling equipment generated by the ESP representative were containerized and properly disposed at the state environmental laboratory in Jefferson City.

5.0 Observations

The weather was sunny and clear with temperatures in the mid 60°F. The wind was blowing from a westerly direction at approximately 3 to 5 mph.

Overall, the sampling team performed well with respect to collecting samples using micropurge technology and standard sample handling procedures, although some deviations were noted. When micropurging from a well it is advised by EPA guidelines to place the well sampling equipment intake between one-half to two-thirds of the screened interval of the well. The primary reason for this technique is to avoid collecting settled sediment from the bottom of the well screen. The 4-ft. long bladder pump had its intake located at the bottom of the pump. The pump was lowered down to the bottom of the well and was not observed being raised off the bottom of the screened interval. Observations of the collected samples did not indicate a high degree of silting, sedimentation, or cloudiness normally associated with a sample that is taking in a large amount of settling from the bottom of a well. The only exception to this observation was the volatile organic samples and half of the BNA samples collected from well MW-6. The water was initially a cloudy-gray but cleared as the sampling continued.

A second observation of note occurred while sampling well MW-6. The Sitex crew expressed concerns about well MW-6 running dry during sampling. It had been noted that this well had run dry on previous sampling events and that the recharge was extremely slow (several hours to days). Based on this information, it was determined that if the water column in well MW-6 was less than 10-ft. deep, samples would be collected without stabilization of water quality parameters. It was also determined that the samples would not be collected in the order of volatility but in the order of priority, with volatile organics first and pesticides and herbicides before BNAs and total metals. The water column was measured at 5.7-ft. depth. Although less than 10-ft. deep, the well was able to provide water for all sample parameters to be collected. Over half (2.99-ft.) of the column had been drawn down while sampling. Not collecting water quality parameters in low yield wells is an acceptable policy but it should be noted that the well did not run dry.

Another observation was noted concerning the order in which sample parameters were collected. Sitex personnel indicated they were collecting samples in the order of volatility, with the most volatile parameters collected first. The order sample parameters were collected was volatile organics, BNAs, total metals, and pesticides/herbicides last. Pesticides and herbicides have a volatile constituent to their chemical composition (as noted in the familiar "pesticide-like" odor).

The sample order should have been volatile organics, BNAs, pesticides/herbicides, and total metals.

Sitex personnel were diligent in their monitoring of drawdown while sampling. Stated protocol for drawdown on high yield wells was a fluctuation of only .25-ft. Drawdown was monitored on all wells and recorded on each well log sheet. If drawdown was noted, the pump was slowed down to prevent a greater than .25-ft. drawdown. Purging pump rates were normally 500-ml/min. and were reduced to the less than 250-ml/min.flow rate that is advised by EPA protocol for sample collection. Well MW-2 had a .8-ft. drawdown at 500-ml/min. pump rate and when the pump rate was reduced to 125-ml/min. the water levels returned to their original levels. While collecting samples from this well, the well began to drawdown again and could not be abated by lowering the pump flow rate. Total drawdown was 5.5-ft. of the water column. Drawdown on well MW-13 was .12-ft. and MW-1 was .09-ft. As noted earlier, drawdown on well MW-6 was 2.99-ft. but this well was historically identified as a low yield well.

Other observations related to the sampling equipment and methods used by the facility sampling personnel were recorded in the field and described in detail in the Sampling and Analysis Procedures Worksheet attached as Appendix A.

6.0 Data Reporting

Please refer to Appendix B for analytical results of samples collected.

Submitted by: Kenneth Hannon

Kenneth Hannon
Environmental Specialist
Field Services Section
Environmental Services Program

Date: May 27, 2003

Approved by: Earl Pabst

Earl Pabst
Director
Environmental Services Program

KH:th

c: Rob Morrison, Acting Chief, Permits Section, Hazardous Waste Program
Jim Macy, Director, Kansas City Regional Office

APPENDIX A

Sampling and Analysis Procedures Worksheet

PM Resources, Inc.
St. Louis, Missouri

March 12, 2003

RCRA Operation and Maintenance (O & M) Field Audit

Sampling and Analysis Procedures Worksheet
Prepared by the MDNR Environmental Services Program

Facility Name and Address: PM Resources, Inc.
13001 St. Charles Rock Road
St. Louis, MO 63044

Date of Sampling: March 12, 2003

Lab Name and Address: Environmental Sciences Corporation (ESC)
12065 Lebanon Road
Mt. Juliet, TN 37122 phone: (800) 767-5859

Participants:

Name	Position	Representing
Ken Hannon	Environmental Specialist	MDNR-ESP
Kurt Hollman	Geologist	MDNR-GSRAD
Steve Sandifer	Environmental Engineer	MDNR-HWP
Darleen Groner	Environmental Engineer	MDNR-HWP
Justin Rhyneer	Environmental Manager	Sitex Environmental
Tonya Krebel	Environmental Technician	Sitex Environmental
Craig Cox	Environmental Technician	Sitex Environmental

I. Review of Sampling and Analysis Procedures

1. Prior to Well Evacuation (ESP use only if DGLS has not evaluated):
   a. Are the well numbers clearly marked on the well?
   If yes, how are they marked and where?

   Note: GSRAD evaluated all of the Section 1 elements.

   b. Were measures taken to prevent evacuation/sampling equipment from contacting potentially contaminated surfaces?
   If yes, what measures?

c. Were static water levels measured?
d. Were total well depths measured?
e. Are measurements taken to the nearest 0.01 ft.?
f. Is there a permanent depth measurement reference point at each well?
If yes, where is this point located?
g. Description of depth measuring device used (type, manufacturer, model):
h. Was depth measuring device cleaned and dried after each measurement?
If yes, describe decontamination procedure:

2. Detection/Sampling of Immiscible Layers (ESP use only if DGLS has not evaluated):
a. Are procedures used which will detect light phase immiscible layers?
If yes, describe:

Note: GSRAD evaluated all of the Section 2 elements.

b. Are procedures used which will detect dense phase immiscible layers?
If yes, describe:
c. Are any detected immiscible layers sampled separately prior to well evacuation?
If yes, describe the procedure:
d. Do the procedures used minimize mixing with the aqueous phase?

3. Well Evacuation (ESP use only if DGLS has not evaluated):
a. Are low yielding wells evacuated to dryness?

Note: GSRAD evaluated all of the Section 3 elements.

b. Are high yielding wells evacuated until the parameters of pH, temperature, and specific conductance have stabilized to ± 10% over two successive well purge volumes?
c. If no to b, are at least three well casing volumes purged from high yielding wells?
d. Describe field method used to calculate the volume of evacuated water:
e. Describe field method used to measure the volume of evacuated water:
f. Describe procedure used for collection, management, and disposal of evacuated water:
g. Does each well have dedicated evacuation equipment?
h. Describe well evacuation equipment (type, composition, manufacturer, model, etc.) including delivery lines used to lower equipment into well:
i. Describe the decontamination procedure used for non-dedicated evacuation equipment:
j. Describe the physical properties of the evacuated water:
Note: GSRAD was not present during the first well purged so ESP recorded sect. j for well MW-13 only.

Well Number	MW-13		
Color	Green		
Odor	None		
Oil/Grease	None		
Turbidity	Medium Turbidity		

4. Sample Withdrawal (ESP use only if DGLS has not evaluated):

a. In what sequence were the wells sampled?

The wells split-sampled by the ESP were sampled in the following order: MW-13, MW-1, MW-2, MW-6. From least contaminated to most contaminated.

b. Were wellbore fluid levels checked in low yield wells prior to sample collection to determine if sufficient fluid was available to sample for the parameters of concern?

Yes.

c. Were low yield wells sampled as soon as sufficient wellbore fluid volume was available?

No. Wellbore fluid volume was considered too low to collect a full sample so wells were sampled prior to purging sufficient volume.

d. For low yield wells, on average how much time elapsed between well purging and sampling?

No purging occurred. Sample was taken after a liter of water was run through the system to clean the pump line.

e. Were wellbore fluid levels checked in high yield wells prior to sample collection to determine the percent recovery of wellbore fluids?

Yes.

f. According to the facility's sampling personnel, approximately what percent fluid recovery is deemed adequate prior to sampling high yield wells?

No specific percentage was determined, although a drawdown of less than .25-ft. was the desired situation. Samples were collected after parameters stabilized (dissolved oxygen, specific conductivity within +/-10%, and pH=+/-.1).

g. Were high yield wells allowed to achieve this percent recovery prior to sample collection?

Yes. Wells were sampled with specified parameters with the exception of well MW-2. Halfway through sample collection the well began to draw down and could not be abated by decreasing the flow rate.

h. For high yield wells, on average how much time elapsed between well purging and sampling?

Wells were sampled immediately after purging.

i. Describe well sampling equipment (type, composition, manufacturer, model, etc.) including delivery lines used to lower equipment into the well:

Geotech2 bladder pump with Teflon lined polyethylene tubing.

j. Does each well have a dedicated sampling device?

No.

k. If no to j, is non-dedicated equipment decontaminated between wells?

Yes.

l. Describe the decontamination procedure used for non-dedicated sampling equipment:

Equipment was decontaminated using non-phosphate detergent and a de-ionized water rinse. The bladder pump was completely submerged in soapy water and one liter of soapy water was run through the system to purge the line. The pump was then placed in a deionized water rinse and allowed to purge one liter of water through the line. Any part of the equipment that touched the ground was washed with soapy water, rinsed, and dried.

m. Is non-dedicated sampling equipment thoroughly dried before each use?

The line was dried but the pump was not.

n. For non-dedicated sampling equipment, were equipment blanks collected to monitor for potential sample cross-contamination?

No, but wells were sampled from least to most contaminated.

o. If yes to n, how frequently were equipment blanks collected?

Sample collectors stated that they collect an equipment blank at the end of the sampling event. This is usually after sampling the hottest well.

p. Describe the procedure used to collect equipment blanks:

Although not observed, the sample collectors stated that deionized water was run though the bladder pump and collected in the same manner as a sample.

q. Were duplicate samples collected?

Not observed but stated yes.

r. If yes to q, how frequently are duplicate samples collected?

One per sampling event. Duplicates were randomly selected from the four hottest wells on-site. Only one hot well was split sampled and it was not chosen.

s. Describe the duplicate sampling procedures:

It was stated that the duplicate is collected in the same manner as the true sample with the volatile duplicate collected before the true non-volatile samples.

t. Was care taken to avoid placing clean sampling equipment on the ground or other potentially contaminated surfaces prior to use?

Yes. Plastic was placed on the ground around the well and all sample collection was done above a bucket where purge water and spillage from sample collection was received. The pump was placed on plastic on the back of a truck to avoid contact with the ground. If any portion of the pump or tubing made contact with the ground it was washed and rinsed according to stated decon procedures.

u. If bailers were used, were they lowered and raised slowly enough to prevent sample degassing or volatilization of sensitive parameters?

No bailers were used.

v. If volatile organics were sampled with a pump, was the sample collection pump rate at or below 100 ml/minute?

Yes.

w. If no to v, what was the sample collection pump rate?

x. Were samples transferred directly from the sampling device to the sample containers?

Yes.

y. Describe the sample transfer procedure:
Samples were taken directly from the sampling equipment to containers.

z. Describe the method used to obtain split samples:

The facility sampling team collected their parameter and then the ESP representative collected the same parameter.

aa. Overall, were samples collected in a manner that would minimize changes in the sample due to adsorption, aeration, agitation, volatilization, etc.?

Yes.

bb. If no to aa, describe any potential problems observed:

Not applicable.

cc. Were samples collected and containerized in the order of site-specific parameter's volatilization sensitivity (e.g., in descending order – VOA, TOX, TOC, semi-volatiles, metals and cyanide, major water quality cations and anions, radionuclides)?

No. Metals were collected before pesticides and herbicides.

dd. Were samples collected for dissolved metals?

No.

ee. If yes to dd, were the samples field filtered using a 0.45 micron filter?

Not applicable.

ff. If yes to dd, but no to ee, please explain:

gg. List any parameters measured in the field by the facility:

Specific conductivity, pH, and dissolved oxygen. Temperature was observed but not collected.

hh. Describe the equipment (type, manufacturer, model) used by the facility for taking field measurements:

pH	Horbia water checker
temperature	Horbia water checker
conductivity	Horbia water checker
dissolved oxygen	Horbia water checker

ii. List the values for any field measurements taken by the facility:

Well number	MW-1	MW-2	MW-6	MW-13
pH	7.0	7. 1	7.0	7.3
Temperature ˚C	19	24	24	13
Conductivity (µmhos)	1.5	1.4	0.71	.73
Dissolved Oxygen	1.1	1.3	2.4	1.1

jj. Describe all field equipment calibration and maintenance procedures:

Equipment was not calibrated in the field. When asked if calibrations were performed on the instrument, field personnel stated that calibrations were done by the lab company prior to the equipment going out into the field and then re-calibrated when the equipment was returned. Calibration sheets were shown to the Sitex field personnel by the rental company to indicate that calibrations were done and within allowable parameters.

kk. Are the procedures under jj performed pursuant to the manufacturer's recommendations and consistent with accepted protocol (e.g., SW-846)?

Unknown

ll. Are a field logbook and/or individual well sampling sheets maintained?

Field sheets were kept for individual wells.
Are the following items documented in either or both of the above:

Date and time of sampling?	*Yes*
Weather conditions?	*Yes*
Field sampling participants?	*Yes*
Observations and physical well integrity?	*Yes*
Field equipment descriptions?	*Yes*
Field analysis results?	*Yes*
Field equipment and calibration/maintenance information?	*No*
Any other pertinent field observations or unusual conditions?	*Decon info.*

mm. Who maintains the field log book/well sampling sheets?

Ms. Tonya Krebs or the senior field manager while in the field and notes are kept in a logbook in the office for future reference.

nn. Describe the physical properties of the groundwater samples:

Well number	MW-11	MW-2	MW-6	MW-13
Color	Clear	Clear	Gray	Green
Oil/Grease	No	No	No	No
Turbidity	None	None	Cloudy	None

5. Sample Preparation and Handling:

a. List the sample containers and preservation methods used by the facility for each parameter or group of parameters to be analyzed:

Parameter/Group	**Sample Container**	**Preservation**
Volatile Oganics	2-clear VOA vials	HCL
BNAs	2-Amber liter jars	None
Pesticides/Herbicides	3-Amber liter jars	None
Metals	500-ml plastic container	HNO_3

b. Were the sample containers utilized for specific parameters consistent with current guidance (e.g., SW-846)?

Yes.

c. Were any of the sample containers pre-cleaned prior to use (i.e., solvent-rinsed, baked, etc.)

The sample containers were obtained certified-clean from the laboratory contracted to conduct the analyses.

d. Were the samples preserved in accordance with current EPA-approved procedures?
Yes.

e. If any non-EPA preservation methods were used, list the source(s) from which these methods were derived:

Not applicable.

f. Were sample containers pre-preserved or were preservatives added in the field?

VOA sample containers were pre-preserved and metals containers were preserved in the field.

g. Were the sample containers labeled?

Yes.

h. Do the sample labels provide the following information:

Sample identification number?	*Yes*
Well number?	*Yes*
Name of collector?	*Yes*
Date and time of collection?	*Yes*
Facility name?	*Yes*
Parameter analyses requested?	*Yes*

i. Do the sample labels remain legible when wet?

Yes.

j. Is a chain-of-custody record included with each sample?

Yes.

k. Does the chain-of-custody record document the following:

Sample identification number?	*No*
Well number?	*Yes*
Signature of collector?	*Yes*
Date and time of collection?	*Yes*
Sample container and preservative type?	*No*
Number of containers?	*Yes*
Parameter analyses requested?	*Yes*
Signature of all persons involved in the chain-of-possession?	*Yes*
Inclusive dates of possession?	*Yes*

l. Was the headspace eliminated from containers used to collect samples for volatile organic analysis?

Yes

m. Is at least one trip blank prepared for each sample container type to verify sample container cleanliness and field handling methods?

No.

n. If no to m, were any trip blanks prepared?

Yes, the sampling lab provided a trip blank for volatile organics with the containers.

o. If yes to n, in what containers and how many?

One VOA container for volatile organics.

p. What type of laboratory is used for the sample analyses (e.g., on-site in-house, off-site in-house, off-site contractor)?

An off-site contractor is used for sample analyses.

q. How are the samples maintained prior to analyses (i.e., refrigerated, secured, etc.)?

The samples are kept cold and wrapped in bubble-wrap for shipment to a contract laboratory.

r. How long are the samples held prior to transport to the laboratory?

At the end of every sampling day samples are shipped to the lab via overnight Fed-Ex.

s. How are the samples transported/shipped to the laboratory (i.e., hand delivered, overnight express, etc.)?

See r.

t. If the samples are not hand delivered, are sample seals attached to the containers or coolers to ensure that the samples are not tampered with while in transit?

Samples are taped and sealed in bubble wrap.

6. Quality Assurance/Quality Control

In completing this portion of the O & M Field Audit checklist, the HWP feels that the auditor should contact the responsible laboratory directly for a response to the following questions, realizing that the resulting response must be taken as fact. This procedure is recommended since the O & M Field Audit is not intended as a laboratory audit, but the overall content of the report would not be complete without the answers to the following:

a. Are laboratory logbooks maintained to track all phases of laboratory procedure from sample receipt through analysis, reporting, and disposition?

No but ESC lab uses a LIMS database to track the information, just not every phase.

b. Do the logbooks document the following:

Client name?	*Yes*
Date and time of sample receipt?	*Yes*
Sample number and analysis to be performed?	*Yes*
Observation of damaged/irregular samples received?	*Yes*
Sample preparation methods (e.g. extraction)?	*Yes*
Date and time of sample analysis initiation and completion?	*Yes*
Name of person performing each analytical step?	*Yes*
All QA/QC sample results?	*Yes*
Instrument calibration information?	*Yes*

c. Describe all procedures used to ensure integrity of the samples in the laboratory prior to analysis:

Samples are handled by sample receiving who receives samples from client. Sample receiving transfers samples to building 1 for SVOC, metals, and wet chemistry or building 2 for volatiles or bio work. Samples are stored in temperature-controlled coolers until analysis. Both buildings are secure, requiring identity badges for entry.

d. Are all samples analyzed within EPA-specified holding times (e.g. SW-846)?

Yes.

e. If no to d, are holding time overruns reported on the final analysis result sheets?
Only if holding times are exceeded.

f. Are all samples analyzed using an EPA-approved analytical method for each parameter?
Yes.

g. Is the analytical method used for each parameter documented?

Yes.

h. If a new analytical method is used, is it documented, with split samples analyzed using the old method for comparison purposes?

NA

i. If any non-EPA analytical methods are commonly used, list the method(s) and their source document(s):

Standard methods are used.

j. For replicate analyses (e.g., TOC, TOX), describe the lab method used to obtain the individual concentration values:

An average of 4 replicates is reported with a %RSD less than 20%.

k. Are appropriate QA/QC measures used in laboratory analyses (e.g., blanks, matrix spikes, standards, etc.)?

Yes.

l. Are detection limits and percent recovery for matrix spikes or controls reported for each sample parameter?

Yes.

APPENDIX B

Analytical Results

PM Resources, Inc.
St. Louis, Missouri

March 12, 2003

Missouri Department of Natural Resources

Environmental Services Program

Order ID: 030313001 **Program, Contact:** HWP, Joe Gassner

Report Date: 5/1/2003 **LDPR:** QERPM/NJ01PMRS

Order Comment:

Sample: 030313001-01 **Facility ID:** **Site:** PM Resources

Customer # : 0300306 **County:** St. Louis **Collect Date:** 3/12/2003

Collector: Kenneth Hannon **Affiliation:** ESP **Collect Time:**

Matrix: Nonpotable Water **Sample Comment:** Trip blank

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
BNAs	1,2,4-Trichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,2-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,3-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,4-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4,5-Trichlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4,6-Trichlorophenol	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dichlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dimethylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dinitrophenol	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dinitrotoluene	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	2,6-Dinitrotoluene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Chloronaphthalene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Chlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Methyl-4,6-dinitrophenol	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	2-Methylnaphthalene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Methylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Nitrophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	3,3-Dichlorobenzidine	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	3-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Bromophenyl phenyl ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chloro-3-methylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chloroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chlorophenyl phenyl ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Methylphenol	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	4-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	

Date Printed: 5/14/2003

Sample: 030313001-01 Facility ID: Site: PM Resources

Customer # : 0300306 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time:

Matrix: Nonpotable Water Sample Comment: Trip blank

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
BNAs	4-Nitrophenol	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	Acenaphthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Acenaphthylene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	azobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(a)anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(a)pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(b)fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(ghi)perylene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(k)fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzoic Acid	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Chloroethoxy)methane	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Chloroethyl)ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-chloroisopropyl)ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Ethylhexyl) phthalate	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	Butyl benzyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Chrysene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Di-n-butyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Di-n-octyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Dibenzo(a,h)anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Dibenzofuran	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Diethyl phthalate	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	Dimethyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Fluorene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorobutadiene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorocyclopentadiene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachloroethane	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Indeno(1,2,3-cd)pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Isophorone	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	n-Nitroso-di-n-propylamine	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	n-Nitrosodiphenylamine	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	Naphthalene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Nitrobenzene	< 5.00	ug/L	Q0409-02bna	8270C	

Sample: 030313001-01 Facility ID: Site: PM Resources

Customer # : 0300306 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time:

Matrix: Nonpotable Water Sample Comment: Trip blank

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
BNAs	Pentachlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Phenanthrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Phenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
Chlorinated Herbicides	2,4,5-T	< 0.50	ug/L	Q0315-02Herb	8151A	
Chlorinated Herbicides	2,4,5-TP (Silvex)	< 0.50	ug/L	Q0315-02Herb	8151A	
Chlorinated Herbicides	2,4-D	< 5.00	ug/L	Q0315-02Herb	8151A	
Organochlorine Pesticides	4,4-DDD	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	4,4-DDE	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	4,4-DDT	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides,	Aldrin	< 0.25	ug/kg	Q0315-01Pest	8081A	
Organochlorine Pesticides	alpha-BHC	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	beta-BHC	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Chlordane	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	delta-BHC	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Dieldrin	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan I	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan II	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan sulfate	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endrin	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endrin aldehyde	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	gamma-BHC (Lindane)	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Heptachlor	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Heptachlor Epoxide	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Methoxychlor	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Toxaphene	< 2.50	ug/L	Q0315-01Pest	8081A	
VOAs	1,1,1,2-Tetrachloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1,1-Trichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1,2,2-Tetrachloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1,2-Trichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1-Dichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1-Dichloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1-Dichloropropanone	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1-Dichloropropene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2,3-Trichlorobenzene	< 5.0	ug/L	Q0413-05VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-01 Facility ID: Site: PM Resources

Customer # : 0300306 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time:

Matrix: Nonpotable Water Sample Comment: Trip blank

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
VOAs	1,2,3-Trichloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2,4-Trichlorobenzene	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2,4-Trimethylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dibromo-3-chloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dibromoethane (EDB)	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dichlorobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dichloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,3,5-Trimethylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,3-Dichlorobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,3-Dichloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,4-Dichlorobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1-Chorobutane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2,2-Dichloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Butanone (MEK)	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Chlorotoluene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Hexanone	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Nitropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	4-Chlorotoluene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	4-Methyl-2-pentanone(MIBK)	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	acetone	< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Acrylonitrile	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Allyl Chloride	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Benzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromochloromethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromodichloromethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromoform	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromomethane	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	carbon disulfide	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Carbon Tetrachloride	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chloroacetonitrile	< 25.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chlorobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chloroethane	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chloroform	< 1.0	ug/L	Q0413-05VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-01 Facility ID: Site: PM Resources

Customer # : 0300306 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time:

Matrix: Nonpotable Water **Sample Comment:** Trip blank

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
VOAs	Chloromethane	< 25.0	ug/L	Q0413-05VOAs	8260B	
VOAs	cis-1,2-dichloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	cis-1,3-Dichloropropene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Dibromochloromethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Dibromomethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Dichlorodifluoromethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Diethyl ether	< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Ethylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Ethylmethacrylate	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Hexachlorobutadiene	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Hexachloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Iodomethane	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Isopropylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	m&p-Xylenes	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methacrylonitrile	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methyl Acrylate	< 10.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methyl-t-butyl ether	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methylene chloride	< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methylmethacrylate	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	n-Butylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	n-Propylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Naphthalene	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Nitrobenzene	< 10.0	ug/L	Q0413-05VOAs	8260B	
VOAs	o-Xylene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	p-isopropyltoluene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Pentachloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Propionitrile	< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	sec-Butylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Styrene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	tert-Butylbenzene	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Tetrachloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Tetrahydrofuran	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Toluene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Total Xylenes	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	trans-1,2-Dichloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-01 Facility ID: Site: PM Resources

Customer # : 0300306 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time:

Matrix: Nonpotable Water Sample Comment: Trip blank

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
VOAs	trans-1,3-Dichloropropene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	trans-1,4-Dichloro-2-butene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Trichloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Trichlorofluoromethane	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Vinyl Chloride	< 1.0	ug/L	Q0413-05VOAs	8260B	

Sample: 030313001-02 Facility ID: Site: PM Resources

Customer # : 0300307 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 9 10 AM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-13

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
Arsenic-Total in Water	Arsenic 50.	< 2	ug/L		SW 846 7060A (GFAA)	
Barium-Total in Water	Barium 2000	478	ug/L		SW 846 6010B (ICP)	
BNAs	1,2,4-Trichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,2-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,3-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,4-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4,5-Trichlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4,6-Trichlorophenol	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dichlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dimethylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dinitrophenol	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dinitrotoluene	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	2,6-Dinitrotoluene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Chloronaphthalene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Chlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Methyl-4,6-dinitrophenol	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	2-Methylnaphthalene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Methylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Nitrophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	3,3-Dichlorobenzidine	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	3-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	

Sample: 030313001-02 Facility ID: Site: PM Resources

Customer # : 0300307 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 9:10 AM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-13

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
BNAs	4-Bromophenyl phenyl ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chloro-3-methylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chloroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chlorophenyl phenyl ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Methylphenol	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	4-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Nitrophenol	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	Acenaphthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Acenaphthylene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	azobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(a)anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(a)pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(b)fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(ghi)perylene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(k)fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzoic Acid	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Chloroethoxy)methane	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Chloroethyl)ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-chloroisopropyl)ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Ethylhexyl) phthalate	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	Butyl benzyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Chrysene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Di-n-butyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Di-n-octyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Dibenzo(a,h)anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Dibenzofuran	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Diethyl phthalate	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	Dimethyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Fluorene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorobutadiene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorocyclopentadiene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachloroethane	< 5.00	ug/L	Q0409-02bna	8270C	

Date Printed: 5/14/2003

Sample: 030313001-02 Facility ID: Site: PM Resources

Customer # : 0300307 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 9:10 AM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-13

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
BNAs	Indeno(1,2,3-cd)pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Isophorone	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	n-Nitroso-di-n-propylamine	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	n-Nitrosodiphenylamine	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	Naphthalene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Nitrobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Pentachlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Phenanthrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Phenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
Cadmium-Total in Water	Cadmium 5	< 2	ug/L		SW 846 6010B (ICP)	
Chlorinated Herbicides	2,4,5-T	< 0.50	ug/L	Q0315-02Herb	8151A	
Chlorinated Herbicides	2,4,5-TP (Silvex)	< 0.50	ug/L	Q0315-02Herb	8151A	
Chlorinated Herbicides	2,4-D	< 5.00	ug/L	Q0315-02Herb	8151A	
Chromium-Total in Water	Chromium 100	< 5	ug/L		SW 846 6010B (ICP)	
Field pH	pH	7.35			EPA 150.1	
Field Specific Conductivity	Specific Conductivity	967	umhos/cm		SM 2510	
Lead-Total in Water	Lead 15 ?	< 25	ug/L		SW 846 6010B (ICP)	
Mercury-Total in Water	Mercury 2	< 0.2	ug/L		EPA 245.1	
Organochlorine Pesticides	4,4-DDD	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	4,4-DDE	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	4,4-DDT	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Aldrin	< 2.50	ug/kg	Q0315-01Pest	8081A	
Organochlorine Pesticides	alpha-BHC	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	beta-BHC	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Chlordane	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	delta-BHC	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Dieldrin	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan I	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan II	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan sulfate	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endrin	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endrin aldehyde	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	gamma-BHC (Lindane)	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Heptachlor	< 2.50	ug/L	Q0315-01Pest	8081A	

Date Printed: 5/14/2003

Sample: 030313001-02 Facility ID: Site: PM Resources

Customer # : 0300307 County: St Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 9:10 AM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-13

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
Organochlorine Pesticides	Heptachlor Epoxide	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Methoxychlor	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Toxaphene	< 25.0	ug/L	Q0315-01Pest	8081A	
Selenium-Total in Water	Selenium 50	10.3	ug/L		SW 846 7740 (GFAA)	
Silver-Total in Water	Silver 100	< 10	ug/L		SW 846 6010B (ICP)	
Temperature	Temperature	17.6	degrees C		EPA 170.1	
VOAs	1,1,1,2-Tetrachloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1,1-Trichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1,2,2-Tetrachloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1,2-Trichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1-Dichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1-Dichloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1-Dichloropropanone	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1-Dichloropropene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2,3-Trichlorobenzene	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2,3-Trichloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2,4-Trichlorobenzene	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2,4-Trimethylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dibromo-3-chloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dibromoethane (EDB)	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dichlorobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dichloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,3,5-Trimethylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,3-Dichlorobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,3-Dichloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,4-Dichlorobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1-Chorobutane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2,2-Dichloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Butanone (MEK)	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Chlorotoluene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Hexanone	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Nitropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	4-Chlorotoluene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	4-Methyl-2-pentanone(MIBK)	< 1.0	ug/L	Q0413-05VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-02
Customer # : 0300307

Facility ID:
Site: PM Resources
County: St. Louis
Collect Date: 3/12/2003
Collector: Kenneth Hannon
Affiliation: ESP
Collect Time: 9:10 AM
Matrix: Nonpotable Water
Sample Comment: Water grab sample from well labeled MW-13

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
VOAs	acetone	< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Acrylonitrile	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Allyl Chloride	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Benzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromochloromethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromodichloromethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromoform	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromomethane	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	carbon disulfide	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Carbon Tetrachloride	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chloroacetonitrile	< 25.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chlorobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chloroethane	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chloroform	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chloromethane	< 25.0	ug/L	Q0413-05VOAs	8260B	
VOAs	cis-1,2-dichloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	cis-1,3-Dichloropropene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Dibromochloromethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Dibromomethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Dichlorodifluoromethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Diethyl ether	< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Ethylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Ethylmethacrylate	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Hexachlorobutadiene	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Hexachloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Iodomethane	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Isopropylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	m&p-Xylenes	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methacrylonitrile	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methyl Acrylate	< 10.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methyl-t-butyl ether	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methylene chloride	< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methylmethacrylate	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	n-Butylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-02 | Facility ID: | Site: PM Resources

Customer # : 0300307 | County: St. Louis | Collect Date: 3/12/2003

Collector: Kenneth Hannon | Affiliation: ESP | Collect Time: 9:10 AM

Matrix: Nonpotable Water | Sample Comment: Water grab sample from well labeled MW-13

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
VOAs	n-Propylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Naphthalene	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Nitrobenzene	< 10.0	ug/L	Q0413-05VOAs	8260B	
VOAs	o-Xylene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	p-isopropyltoluene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Pentachloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Propionitrile	< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	sec-Butylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Styrene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	tert-Butylbenzene	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Tetrachloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Tetrahydrofuran	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Toluene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Total Xylenes	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	trans-1,2-Dichloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	trans-1,3-Dichloropropene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	trans-1,4-Dichloro-2-butene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Trichloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Trichlorofluoromethane	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Vinyl Chloride	< 1.0	ug/L	Q0413-05VOAs	8260B	

Sample: 030313001-03 | Facility ID: | Site: PM Resources

Customer # : 0300308 | County: St. Louis | Collect Date: 3/12/2003

Collector: Kenneth Hannon | Affiliation: ESP | Collect Time: 11:41 AM

Matrix: Nonpotable Water | Sample Comment: Water grab sample from well labeled MW-1

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
Arsenic-Total in Water	Arsenic	8.87	ug/L		SW 846 7060A (GFAA)	
Barium-Total in Water	Barium	240	ug/L		SW 846 6010B (ICP)	
BNAs	1,2,4-Trichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,2-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,3-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,4-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4,5-Trichlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	

Date Printed: 5/14/2003

Sample: 030313001-03 Facility ID: Site: PM Resources

Customer # : 0300308 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 11:41 AM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-1

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
BNAs	2,4,6-Trichlorophenol	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dichlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dimethylphenol	10.9	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dinitrophenol	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dinitrotoluene	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	2,6-Dinitrotoluene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Chloronaphthalene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Chlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Methyl-4,6-dinitrophenol	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	2-Methylnaphthalene	167	ug/L	Q0409-02bna	8270C	
BNAs	2-Methylphenol	19.8	ug/L	Q0409-02bna	8270C	
BNAs	2-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Nitrophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	3,3-Dichlorobenzidine	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	3-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Bromophenyl phenyl ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chloro-3-methylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chloroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chlorophenyl phenyl ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Methylphenol	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	4-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Nitrophenol	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	Acenaphthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Acenaphthylene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	azobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(a)anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(a)pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(b)fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(ghi)perylene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(k)fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzoic Acid	16.9	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Chloroethoxy)methane	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Chloroethyl)ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-chloroisopropyl)ether	< 5.00	ug/L	Q0409-02bna	8270C	

Date Printed: 5/14/2003

Sample: 030313001-03 Facility ID: Site: PM Resources

Customer # : 0300308 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 11:41 AM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-1

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
BNAs	bis(2-Ethylhexyl) phthalate	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	Butyl benzyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Chrysene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Di-n-butyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Di-n-octyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Dibenzo(a,h)anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Dibenzofuran	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Diethyl phthalate	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	Dimethyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Fluorene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorobutadiene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorocyclopentadiene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachloroethane	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Indeno(1,2,3-cd)pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Isophorone	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	n-Nitroso-di-n-propylamine	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	n-Nitrosodiphenylamine MCL	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	Naphthalene 100	131	ug/L	Q0409-02bna	8270C	
BNAs	Nitrobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Pentachlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Phenanthrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Phenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
Cadmium-Total in Water	Cadmium	< 2	ug/L		SW 846 6010B (ICP)	
Chlorinated Herbicides	2,4,5-T	< 5.00	ug/L	Q0315-02Herb	8151A	
Chlorinated Herbicides	2,4,5-TP (Silvex)	< 5.00	ug/L	Q0315-02Herb	8151A	
Chlorinated Herbicides	2,4-D	< 50.0	ug/L	Q0315-02Herb	8151A	
Chromium-Total in Water	Chromium	< 5	ug/L		SW 846 6010B (ICP)	
Field pH	pH	7.12			EPA 150.1	
Field Specific Conductivity	Specific Conductivity	1320	umhos/cm		SM 2510	
Lead-Total in Water	Lead	< 25	ug/L		SW 846 6010B (ICP)	
Mercury-Total in Water	Mercury	< 0.2	ug/L		EPA 245.1	
Organochlorine Pesticides	4,4-DDD	< 2.50	ug/L	Q0315-01Pest	8081A	

Date Printed: 5/14/2003

Sample: 030313001-03 Facility ID: Site: PM Resources

Customer # : 0300308 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 11:41 AM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-1

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
Organochlorine Pesticides	4,4-DDE	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	4,4-DDT	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Aldrin	< 2.50	ug/kg	Q0315-01Pest	8081A	
Organochlorine Pesticides	alpha-BHC	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	beta-BHC	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Chlordane	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	delta-BHC	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Dieldrin	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan I	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan II	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan sulfate	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endrin	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endrin aldehyde	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	gamma-BHC (Lindane)	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Heptachlor	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Heptachlor Epoxide	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Methoxychlor	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Toxaphene	< 25.0	ug/L	Q0315-01Pest	8081A	
Selenium-Total in Water	Selenium	< 2	ug/L		SW 846 7740 (GFAA)	
Silver-Total in Water	Silver	< 10	ug/L		SW 846 6010B (ICP)	
Temperature	Temperature	19.3	degrees C		EPA 170.1	
VOAs	1,1,1,2-Tetrachloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1,1-Trichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1,2,2-Tetrachloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1,2-Trichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1-Dichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1-Dichloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1-Dichloropropanone	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1-Dichloropropene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2,3-Trichlorobenzene	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2,3-Trichloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2,4-Trichlorobenzene PRC	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2,4-Trimethylbenzene .2	6.86	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dibromo-3-chloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dibromoethane (EDB)	< 1.0	ug/L	Q0413-05VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-03 Facility ID: Site: PM Resources

Customer # : 0300308 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 11:41 AM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-1

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
VOAs	1,2-Dichlorobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dichloropropane PRC	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,3,5-Trimethylbenzene 12	3.25	ug/L	Q0413-05VOAs	8260B	
VOAs	1,3-Dichlorobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,3-Dichloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,4-Dichlorobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1-Chorobutane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2,2-Dichloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Butanone (MEK)	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Chlorotoluene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Hexanone	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Nitropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	4-Chlorotoluene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	4-Methyl-2-pentanone(MIBK)	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	acetone	< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Acrylonitrile	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Allyl Chloride (1 ARC	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Benzene 5	2.43	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromochloromethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromodichloromethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromoform	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromomethane	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	carbon disulfide	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Carbon Tetrachloride	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chloroacetonitrile	< 25.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chlorobenzene 100	771	ug/L	Q0413-05VOAs	8260B	
VOAs	Chloroethane	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chloroform	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chloromethane	< 25.0	ug/L	Q0413-05VOAs	8260B	
VOAs	cis-1,2-dichloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	cis-1,3-Dichloropropene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Dibromochloromethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Dibromomethane	< 1.0	ug/L	Q0413-05VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-03

Customer # : 0300308

Facility ID:

County: St. Louis

Site: PM Resources

Collect Date: 3/12/2003

Collector: Kenneth Hannon

Affiliation: ESP

Collect Time: 11:41 AM

Matrix: Nonpotable Water

Sample Comment: Water grab sample from well labeled MW-1

Test	Parameter		Result	Units	QC BatchID	Method	Qualifier
VOAs	Dichlorodifluoromethane		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Diethyl ether	GIACC	< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Ethylbenzene	700	8.70	ug/L	Q0413-05VOAs	8260B	
VOAs	Ethylmethacrylate		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Hexachlorobutadiene		< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Hexachloroethane		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Iodomethane		< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Isopropylbenzene	1200	3.68	ug/L	Q0413-05VOAs	8260B	
VOAs	m&p-Xylenes	320	14.4	ug/L	Q0413-05VOAs	8260B	
VOAs	Methacrylonitrile		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methyl Acrylate		< 10.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methyl-t-butyl ether		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methylene chloride		< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methylmethacrylate		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	n-Butylbenzene		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	n-Propylbenzene		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Naphthalene	100	21.4	ug/L	Q0413-05VOAs	8260B	
VOAs	Nitrobenzene		< 10.0	ug/L	Q0413-05VOAs	8260B	
VOAs	o-Xylene	320	134	ug/L	Q0413-05VOAs	8260B	
VOAs	p-isopropyltoluene		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Pentachloroethane		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Propionitrile		< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	sec-Butylbenzene		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Styrene		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	tert-Butylbenzene		< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Tetrachloroethene		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Tetrahydrofuran		< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Toluene		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Total Xylenes	320	149	ug/L	Q0413-05VOAs	8260B	
VOAs	trans-1,2-Dichloroethene		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	trans-1,3-Dichloropropene		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	trans-1,4-Dichloro-2-butene		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Trichloroethene		< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Trichlorofluoromethane		< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Vinyl Chloride		< 1.0	ug/L	Q0413-05VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-04 Facility ID: Site: PM Resources

Customer # : 0300309 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 1:40 PM

Matrix: Nonpotable Water **Sample Comment:** Water grab sample from well labeled MW-2

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
Arsenic-Total in Water	Arsenic	5.31	ug/L		SW 846 7060A (GFAA)	
Barium-Total in Water	Barium	222	ug/L		SW 846 6010B (ICP)	
BNAs	1,2,4-Trichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,2-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,3-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,4-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4,5-Trichlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4,6-Trichlorophenol	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dichlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dimethylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dinitrophenol	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dinitrotoluene	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	2,6-Dinitrotoluene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Chloronaphthalene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Chlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Methyl-4,6-dinitrophenol	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	2-Methylnaphthalene	55.9	ug/L	Q0409-02bna	8270C	
BNAs	2-Methylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Nitrophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	3,3-Dichlorobenzidine	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	3-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Bromophenyl phenyl ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chloro-3-methylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chloroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chlorophenyl phenyl ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Methylphenol	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	4-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Nitrophenol	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	Acenaphthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Acenaphthylene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	azobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(a)anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(a)pyrene	< 5.00	ug/L	Q0409-02bna	8270C	

Date Printed: 5/14/2003

Sample: 030313001-04 | Facility ID: | Site: PM Resources

Customer # : 0300309 | County: St. Louis | Collect Date: 3/12/2003

Collector: Kenneth Hannon | Affiliation: ESP | Collect Time: 1:40 PM

Matrix: Nonpotable Water | Sample Comment: Water grab sample from well labeled MW-2

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
BNAs	Benzo(b)fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(ghi)perylene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(k)fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzoic Acid	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Chloroethoxy)methane	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Chloroethyl)ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-chloroisopropyl)ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Ethylhexyl) phthalate	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	Butyl benzyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Chrysene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Di-n-butyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Di-n-octyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Dibenzo(a,h)anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Dibenzofuran	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Diethyl phthalate	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	Dimethyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Fluorene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorobutadiene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorocyclopentadiene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachloroethane	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Indeno(1,2,3-cd)pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Isophorone	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	n-Nitroso-di-n-propylamine	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	n-Nitrosodiphenylamine 07 ACC	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	Naphthalene 5	15.9	ug/L	Q0409-02bna	8270C	
BNAs	Nitrobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Pentachlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Phenanthrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Phenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
Cadmium-Total in Water	Cadmium	< 2	ug/L		SW 846 6010B (ICP)	
Chlorinated Herbicides	2,4,5-T	< 5.00	ug/L	Q0315-02Herb	8151A	
Chlorinated Herbicides	2,4,5-TP (Silvex)	< 5.00	ug/L	Q0315-02Herb	8151A	

Date Printed: 5/14/2003

Sample: 030313001-04 Facility ID: Site: PM Resources

Customer # : 0300309 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 1:40 PM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-2

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
Chlorinated Herbicides	2,4-D	< 50.0	ug/L	Q0315-02Herb	8151A	
Chromium-Total in Water	Chromium	< 5	ug/L		SW 846 6010B (ICP)	
Field pH	pH	7.26			EPA 150.1	
Field Specific Conductivity	Specific Conductivity	1430	umhos/cm		SM 2510	
Lead-Total in Water	Lead	< 25	ug/L		SW 846 6010B (ICP)	
Mercury-Total in Water	Mercury	< 0.2	ug/L		EPA 245.1	
Organochlorine Pesticides	4,4-DDD	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	4,4-DDE	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	4,4-DDT	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Aldrin	< 25.0	ug/kg	Q0315-01Pest	8081A	
Organochlorine Pesticides	alpha-BHC	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	beta-BHC	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Chlordane	< 250	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	delta-BHC	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Dieldrin	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan I	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan II	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan sulfate	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endrin	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endrin aldehyde	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	gamma-BHC (Lindane)	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Heptachlor	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Heptachlor Epoxide	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Methoxychlor	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Toxaphene	< 250	ug/L	Q0315-01Pest	8081A	
Selenium-Total in Water	Selenium	< 2	ug/L		SW 846 7740 (GFAA)	
Silver-Total in Water	Silver	< 10	ug/L		SW 846 6010B (ICP)	
Temperature	Temperature	24.5	degrees C		EPA 170.1	
VOAs	1,1,1,2-Tetrachloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1,1-Trichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1,2,2-Tetrachloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1,2-Trichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1-Dichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1-Dichloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,1-Dichloropropanone	< 2.0	ug/L	Q0413-05VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-04 **Facility ID:** **Site:** PM Resources

Customer # : 0300309 **County:** St. Louis **Collect Date:** 3/12/2003

Collector: Kenneth Hannon **Affiliation:** ESP **Collect Time:** 1:40 PM

Matrix: Nonpotable Water **Sample Comment:** Water grab sample from well labeled MW-2

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
VOAs	1,1-Dichloropropene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2,3-Trichlorobenzene	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2,3-Trichloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2,4-Trichlorobenzene PRG	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2,4-Trimethylbenzene 12	2.47	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dibromo-3-chloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dibromoethane (EDB)	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dichlorobenzene	1.10	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dichloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,2-Dichloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,3,5-Trimethylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,3-Dichlorobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,3-Dichloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1,4-Dichlorobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	1-Chorobutane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2,2-Dichloropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Butanone (MEK)	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Chlorotoluene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Hexanone	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	2-Nitropropane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	4-Chlorotoluene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	4-Methyl-2-pentanone(MIBK)	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	acetone	< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Acrylonitrile	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Allyl Chloride	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Benzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromobenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromochloromethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromodichloromethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromoform	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Bromomethane	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	carbon disulfide	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Carbon Tetrachloride	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chloroacetonitrile 6170C	< 25.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chlorobenzene 100	4900	ug/L	Q0413-05VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-04 Facility ID: Site: PM Resources

Customer # : 0300309 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 1:40 PM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-2

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
VOAs	Chloroethane	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chloroform	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Chloromethane	< 25.0	ug/L	Q0413-05VOAs	8260B	
VOAs	cis-1,2-dichloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	cis-1,3-Dichloropropene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Dibromochloromethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Dibromomethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Dichlorodifluoromethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Diethyl ether	< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Ethylbenzene	3.17	ug/L	Q0413-05VOAs	8260B	
VOAs	Ethylmethacrylate	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Hexachlorobutadiene	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Hexachloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Iodomethane	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Isopropylbenzene	1.26	ug/L	Q0413-05VOAs	8260B	
VOAs	m&p-Xylenes	4.36	ug/L	Q0413-05VOAs	8260B	
VOAs	Methacrylonitrile	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methyl Acrylate	< 10.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methyl-t-butyl ether	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methylene chloride	< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Methylmethacrylate	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	n-Butylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	n-Propylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Naphthalene	25.8	ug/L	Q0413-05VOAs	8260B	
VOAs	Nitrobenzene	< 10.0	ug/L	Q0413-05VOAs	8260B	
VOAs	o-Xylene	19.4	ug/L	Q0413-05VOAs	8260B	
VOAs	p-isopropyltoluene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Pentachloroethane	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Propionitrile	< 20.0	ug/L	Q0413-05VOAs	8260B	
VOAs	sec-Butylbenzene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Styrene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	tert-Butylbenzene	< 2.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Tetrachloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Tetrahydrofuran	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Toluene	< 1.0	ug/L	Q0413-05VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-04 Facility ID: Site: PM Resources

Customer # : 0300309 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 1:40 PM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-2

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
VOAs	Total Xylenes 320	23.7	ug/L	Q0413-05VOAs	8260B	
VOAs	trans-1,2-Dichloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	trans-1,3-Dichloropropene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	trans-1,4-Dichloro-2-butene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Trichloroethene	< 1.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Trichlorofluoromethane	< 5.0	ug/L	Q0413-05VOAs	8260B	
VOAs	Vinyl Chloride	< 1.0	ug/L	Q0413-05VOAs	8260B	

Sample: 030313001-05 Facility ID: Site: PM Resources

Customer # : 0300310 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 1:40 PM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-2 duplicate.

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
Arsenic-Total in Water	Arsenic	4.63	ug/L		SW 846 7060A (GFAA)	
Barium-Total in Water	Barium	230	ug/L		SW 846 6010B (ICP)	
BNAs	1,2,4-Trichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,2-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,3-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,4-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4,5-Trichlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4,6-Trichlorophenol	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dichlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dimethylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dinitrophenol	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dinitrotoluene	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	2,6-Dinitrotoluene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Chloronaphthalene GIARC	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Chlorophenol 40	19.4	ug/L	Q0409-02bna	8270C	
BNAs	2-Methyl-4,6-dinitrophenol	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	2-Methylnaphthalene —	224	ug/L	Q0409-02bna	8270C	
1/10 dilution run on 4/7/03						
BNAs	2-Methylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	

Sample: 030313001-05 Facility ID: Site: PM Resources

Customer # : 0300310 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 1:40 PM

Matrix: Nonpotable Water **Sample Comment:** Water grab sample from well labeled MW-2 duplicate.

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
BNAs	2-Nitrophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	3,3-Dichlorobenzidine	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	3-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Bromophenyl phenyl ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chloro-3-methylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chloroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chlorophenyl phenyl ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Methylphenol	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	4-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Nitrophenol	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	Acenaphthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Acenaphthylene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	azobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(a)anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(a)pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(b)fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(ghi)perylene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(k)fluoranthene PRG	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzoic Acid 1.5×10^5	33.2	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Chloroethoxy)methane	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Chloroethyl)ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-chloroisopropyl)ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Ethylhexyl) phthalate	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	Butyl benzyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Chrysene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Di-n-butyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Di-n-octyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Dibenzo(a,h)anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Dibenzofuran	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Diethyl phthalate	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	Dimethyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Fluorene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	

Date Printed: 5/14/2003

Sample: 030313001-05 Facility ID: Site: PM Resources

Customer # : 0300310 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 1:40 PM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-2 duplicate.

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
BNAs	Hexachlorobutadiene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorocyclopentadiene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachloroethane	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Indeno(1,2,3-cd)pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Isophorone	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	n-Nitroso-di-n-propylamine	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	n-Nitrosodiphenylamine CLAGC	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	Naphthalene 100	84.8	ug/L	Q0409-02bna	8270C	
BNAs	Nitrobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Pentachlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Phenanthrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Phenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
Cadmium-Total in Water	Cadmium	< 2	ug/L		SW 846 6010B (ICP)	
Chlorinated Herbicides	2,4,5-T	< 5.00	ug/L	Q0315-02Herb	8151A	
Chlorinated Herbicides	2,4,5-TP (Silvex)	< 5.00	ug/L	Q0315-02Herb	8151A	
Chlorinated Herbicides	2,4-D	< 50.0	ug/L	Q0315-02Herb	8151A	
Chromium-Total in Water	Chromium	< 5	ug/L		SW 846 6010B (ICP)	
Field pH	pH	7.26			EPA 150.1	
Field Specific Conductivity	Specific Conductivity	1430	umhos/cm		SM 2510	
Lead-Total in Water	Lead	< 25	ug/L		SW 846 6010B (ICP)	
Mercury-Total in Water	Mercury	< 0.2	ug/L		EPA 245.1	
Organochlorine Pesticides	4,4-DDD	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	4,4-DDE	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	4,4-DDT	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Aldrin	< 25.0	ug/kg	Q0315-01Pest	8081A	
Organochlorine Pesticides	alpha-BHC	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	beta-BHC	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Chlordane	< 250	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	delta-BHC	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Dieldrin	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan I	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan II	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan sulfate	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endrin	< 25.0	ug/L	Q0315-01Pest	8081A	

Sample: 030313001-05 Facility ID: Site: PM Resources

Customer # : 0300310 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 1:40 PM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-2 duplicate.

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
Organochlorine Pesticides	Endrin aldehyde	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	gamma-BHC (Lindane)	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Heptachlor	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Heptachlor Epoxide	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Methoxychlor	< 25.0	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Toxaphene	< 250	ug/L	Q0315-01Pest	8081A	
Selenium-Total in Water	Selenium	< 2	ug/L		SW 846 7740 (GFAA)	
Silver-Total in Water	Silver	< 10	ug/L		SW 846 6010B (ICP)	
Temperature	Temperature	24.5	degrees C		EPA 170.1	
VOAs	1,1,1,2-Tetrachloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,1,1-Trichloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,1,2,2-Tetrachloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,1,2-Trichloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,1-Dichloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,1-Dichloroethene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,1-Dichloropropanone	< 2.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,1-Dichloropropene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2,3-Trichlorobenzene	< 5.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2,3-Trichloropropane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2,4-Trichlorobenzene	< 5.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2,4-Trimethylbenzene	1.42	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2-Dibromo-3-chloropropane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2-Dibromoethane (EDB)	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2-Dichlorobenzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2-Dichloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2-Dichloropropane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,3,5-Trimethylbenzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,3-Dichlorobenzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,3-Dichloropropane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,4-Dichlorobenzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1-Chorobutane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	2,2-Dichloropropane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	2-Butanone (MEK)	< 5.0	ug/L	Q0418-11VOAs	8260B	
VOAs	2-Chlorotoluene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	2-Hexanone	< 2.0	ug/L	Q0418-11VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-05 | Facility ID: | Site: PM Resources

Customer # : 0300310 | County: St. Louis | Collect Date: 3/12/2003

Collector: Kenneth Hannon | Affiliation: ESP | Collect Time: 1:40 PM

Matrix: Nonpotable Water | Sample Comment: Water grab sample from well labeled MW-2 duplicate.

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
VOAs	2-Nitropropane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	4-Chlorotoluene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	4-Methyl-2-pentanone(MIBK)	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	acetone	< 20.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Acrylonitrile	< 2.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Allyl Chloride	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Benzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Bromobenzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Bromochloromethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Bromodichloromethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Bromoform	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Bromomethane	< 5.0	ug/L	Q0418-11VOAs	8260B	
VOAs	carbon disulfide	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Carbon Tetrachloride	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Chloroacetonitrile GI ARC	< 25.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Chlorobenzene 100	4320	ug/L	Q0418-11VOAs	8260B	
VOAs	Chloroethane	< 5.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Chloroform	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Chloromethane	< 25.0	ug/L	Q0418-11VOAs	8260B	
VOAs	cis-1,2-dichloroethene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	cis-1,3-Dichloropropene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Dibromochloromethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Dibromomethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Dichlorodifluoromethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Diethyl ether	< 20.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Ethylbenzene 700	2.66	ug/L	Q0418-11VOAs	8260B	
VOAs	Ethylmethacrylate	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Hexachlorobutadiene	< 2.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Hexachloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Iodomethane	< 5.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Isopropylbenzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	m&p-Xylenes 520	2.57	ug/L	Q0418-11VOAs	8260B	
VOAs	Methacrylonitrile	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Methyl Acrylate	< 10.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Methyl-t-butyl ether	< 1.0	ug/L	Q0418-11VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-05 | Facility ID: | Site: PM Resources

Customer # : 0300310 | County: St. Louis | Collect Date: 3/12/2003

Collector: Kenneth Hannon | Affiliation: ESP | Collect Time: 1:40 PM

Matrix: Nonpotable Water | Sample Comment: Water grab sample from well labeled MW-2 duplicate.

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
VOAs	Methylene chloride	< 20.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Methylmethacrylate	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	n-Butylbenzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	n-Propylbenzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Naphthalene 120	24.1	ug/L	Q0418-11VOAs	8260B	
VOAs	Nitrobenzene	< 10.0	ug/L	Q0418-11VOAs	8260B	
VOAs	o-Xylene 320	4.91	ug/L	Q0418-11VOAs	8260B	
VOAs	p-isopropyltoluene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Pentachloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Propionitrile	< 20.0	ug/L	Q0418-11VOAs	8260B	
VOAs	sec-Butylbenzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Styrene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	tert-Butylbenzene	< 2.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Tetrachloroethene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Tetrahydrofuran	< 5.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Toluene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Total Xylenes 320	7.47	ug/L	Q0418-11VOAs	8260B	
VOAs	trans-1,2-Dichloroethene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	trans-1,3-Dichloropropene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	trans-1,4-Dichloro-2-butene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Trichloroethene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Trichlorofluoromethane	< 5.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Vinyl Chloride	< 1.0	ug/L	Q0418-11VOAs	8260B	

Sample: 030313001-06 | Facility ID: | Site: PM Resources

Customer # : 0300311 | County: St. Louis | Collect Date: 3/12/2003

Collector: Kenneth Hannon | Affiliation: ESP | Collect Time: 4:20 PM

Matrix: Nonpotable Water | Sample Comment: Water grab sample from well labeled MW-6

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
Arsenic-Total in Water	Arsenic	2.42	ug/L		SW 846 7060A (GFAA)	
Barium-Total in Water	Barium	432	ug/L		SW 846 6010B (ICP)	
BNAs	1,2,4-Trichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,2-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	

Sample: 030313001-06 | Facility ID: | Site: PM Resources

Customer # : 0300311 | County: St. Louis | Collect Date: 3/12/2003

Collector: Kenneth Hannon | Affiliation: ESP | Collect Time: 4:20 PM

Matrix: Nonpotable Water | Sample Comment: Water grab sample from well labeled MW-6

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
BNAs	1,3-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	1,4-Dichlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4,5-Trichlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4,6-Trichlorophenol	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dichlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dimethylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dinitrophenol	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	2,4-Dinitrotoluene	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	2,6-Dinitrotoluene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Chloronaphthalene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Chlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Methyl-4,6-dinitrophenol	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	2-Methylnaphthalene	82.2	ug/L	Q0409-02bna	8270C	
BNAs	2-Methylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	2-Nitrophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	3,3-Dichlorobenzidine	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	3-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Bromophenyl phenyl ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chloro-3-methylphenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chloroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Chlorophenyl phenyl ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Methylphenol	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	4-Nitroaniline	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	4-Nitrophenol	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	Acenaphthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Acenaphthylene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	azobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(a)anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(a)pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(b)fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(ghi)perylene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzo(k)fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Benzoic Acid	< 10.0	ug/L	Q0409-02bna	8270C	

Date Printed: 5/14/2003

Sample: 030313001-06 Facility ID: Site: PM Resources

Customer # : 0300311 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 4:20 PM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-6

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
BNAs	bis(2-Chloroethoxy)methane	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Chloroethyl)ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-chloroisopropyl)ether	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	bis(2-Ethylhexyl) phthalate	< 10.0	ug/L	Q0409-02bna	8270C	
BNAs	Butyl benzyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Chrysene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Di-n-butyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Di-n-octyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Dibenzo(a,h)anthracene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Dibenzofuran	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Diethyl phthalate	< 20.0	ug/L	Q0409-02bna	8270C	
BNAs	Dimethyl phthalate	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Fluoranthene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Fluorene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorobutadiene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachlorocyclopentadiene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Hexachloroethane	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Indeno(1,2,3-cd)pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Isophorone	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	n-Nitroso-di-n-propylamine	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	n-Nitrosodiphenylamine	< 50.0	ug/L	Q0409-02bna	8270C	
BNAs	Naphthalene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Nitrobenzene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Pentachlorophenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Phenanthrene	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Phenol	< 5.00	ug/L	Q0409-02bna	8270C	
BNAs	Pyrene	< 5.00	ug/L	Q0409-02bna	8270C	
Cadmium-Total in Water	Cadmium	< 2	ug/L		SW 846 6010B (ICP)	
Chlorinated Herbicides	2,4,5-T	< 5.00	ug/L	Q0315-02Herb	8151A	
Chlorinated Herbicides	2,4,5-TP (Silvex)	< 5.00	ug/L	Q0315-02Herb	8151A	
Chlorinated Herbicides	2,4-D	< 50.0	ug/L	Q0315-02Herb	8151A	
Chromium-Total in Water	Chromium	< 5	ug/L		SW 846 6010B (ICP)	
Field pH	pH	7.02			EPA 150.1	
Field Specific Conductivity	Specific Conductivity	927	umhos/cm		SM 2510	

Date Printed: 5/14/2003

Sample: 030313001-06 | Facility ID: | Site: PM Resources

Customer # : 0300311 | County: St. Louis | Collect Date: 3/12/2003

Collector: Kenneth Hannon | Affiliation: ESP | Collect Time: 4:20 PM

Matrix: Nonpotable Water | Sample Comment: Water grab sample from well labeled MW-6

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
Lead-Total in Water	Lead	< 25	ug/L		SW 846 6010B (ICP)	
Mercury-Total in Water	Mercury	< 0.2	ug/L		EPA 245.1	
Organochlorine Pesticides	4,4-DDD	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	4,4-DDE	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	4,4-DDT	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Aldrin	< 0.25	ug/kg	Q0315-01Pest	8081A	
Organochlorine Pesticides	alpha-BHC	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	beta-BHC	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Chlordane	< 2.50	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	delta-BHC	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Dieldrin	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan I	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan II	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endosulfan sulfate	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endrin	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Endrin aldehyde	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	gamma-BHC (Lindane)	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Heptachlor	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Heptachlor Epoxide	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Methoxychlor	< 0.25	ug/L	Q0315-01Pest	8081A	
Organochlorine Pesticides	Toxaphene	< 2.50	ug/L	Q0315-01Pest	8081A	
Selenium-Total in Water	Selenium	< 2	ug/L		SW 846 7740 (GFAA)	
Silver-Total in Water	Silver	< 10	ug/L		SW 846 6010B (ICP)	
Temperature	Temperature	22.3	degrees C		EPA 170.1	
VOAs	1,1,1,2-Tetrachloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,1,1-Trichloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,1,2,2-Tetrachloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,1,2-Trichloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,1-Dichloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,1-Dichloroethene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,1-Dichloropropanone	< 2.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,1-Dichloropropene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2,3-Trichlorobenzene	< 5.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2,3-Trichloropropane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2,4-Trichlorobenzene	< 5.0	ug/L	Q0418-11VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-06 Facility ID: Site: PM Resources

Customer # : 0300311 County: St. Louis Collect Date: 3/12/2003

Collector: Kenneth Hannon Affiliation: ESP Collect Time: 4:20 PM

Matrix: Nonpotable Water Sample Comment: Water grab sample from well labeled MW-6

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
VOAs	1,2,4-Trimethylbenzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2-Dibromo-3-chloropropane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2-Dibromoethane (EDB)	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2-Dichlorobenzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2-Dichloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,2-Dichloropropane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,3,5-Trimethylbenzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,3-Dichlorobenzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,3-Dichloropropane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1,4-Dichlorobenzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	1-Chorobutane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	2,2-Dichloropropane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	2-Butanone (MEK)	< 5.0	ug/L	Q0418-11VOAs	8260B	
VOAs	2-Chlorotoluene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	2-Hexanone	< 2.0	ug/L	Q0418-11VOAs	8260B	
VOAs	2-Nitropropane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	4-Chlorotoluene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	4-Methyl-2-pentanone(MIBK)	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	acetone	< 20.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Acrylonitrile	< 2.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Allyl Chloride	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Benzene 5	2.12	ug/L	Q0418-11VOAs	8260B	
VOAs	Bromobenzene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Bromochloromethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Bromodichloromethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Bromoform	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Bromomethane	< 5.0	ug/L	Q0418-11VOAs	8260B	
VOAs	carbon disulfide 1000	1.14	ug/L	Q0418-11VOAs	8260B	
VOAs	Carbon Tetrachloride	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Chloroacetonitrile	< 25.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Chlorobenzene 100	216	ug/L	Q0418-11VOAs	8260B	
VOAs	Chloroethane	< 5.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Chloroform	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Chloromethane	< 25.0	ug/L	Q0418-11VOAs	8260B	
VOAs	cis-1,2-dichloroethene	< 1.0	ug/L	Q0418-11VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-06 | **Facility ID:** | **Site:** PM Resources

Customer # : 0300311 | **County:** St. Louis | **Collect Date:** 3/12/2003

Collector: Kenneth Hannon | **Affiliation:** ESP | **Collect Time:** 4:20 PM

Matrix: Nonpotable Water | **Sample Comment:** Water grab sample from well labeled MW-6

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
VOAs	cis-1,3-Dichloropropene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Dibromochloromethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Dibromomethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Dichlorodifluoromethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Diethyl ether	< 20.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Ethylbenzene 700	1.35	ug/L	Q0418-11VOAs	8260B	
VOAs	Ethylmethacrylate	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Hexachlorobutadiene	< 2.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Hexachloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Iodomethane	< 5.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Isopropylbenzene —	7.13	ug/L	Q0418-11VOAs	8260B	
VOAs	m&p-Xylenes 320	1.23	ug/L	Q0418-11VOAs	8260B	
VOAs	Methacrylonitrile	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Methyl Acrylate	< 10.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Methyl-t-butyl ether	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Methylene chloride	< 20.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Methylmethacrylate PRL	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	n-Butylbenzene 240	2.68	ug/L	Q0418-11VOAs	8260B	
VOAs	n-Propylbenzene 240	3.68	ug/L	Q0418-11VOAs	8260B	
VOAs	Naphthalene 100	11.1	ug/L	Q0418-11VOAs	8260B	
VOAs	Nitrobenzene	< 10.0	ug/L	Q0418-11VOAs	8260B	
VOAs	o-Xylene 320	1.66	ug/L	Q0418-11VOAs	8260B	
VOAs	p-isopropyltoluene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Pentachloroethane	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Propionitrile PRL	< 20.0	ug/L	Q0418-11VOAs	8260B	
VOAs	sec-Butylbenzene 240	1.47	ug/L	Q0418-11VOAs	8260B	
VOAs	Styrene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	tert-Butylbenzene	< 2.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Tetrachloroethene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Tetrahydrofuran	< 5.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Toluene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Total Xylenes 320	2.89	ug/L	Q0418-11VOAs	8260B	
VOAs	trans-1,2-Dichloroethene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	trans-1,3-Dichloropropene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	trans-1,4-Dichloro-2-butene	< 1.0	ug/L	Q0418-11VOAs	8260B	

Date Printed: 5/14/2003

Sample: 030313001-06

Customer # : 0300311

Facility ID:

Site: PM Resources

County: St. Louis

Collect Date: 3/12/2003

Collector: Kenneth Hannon

Affiliation: ESP

Collect Time: 4:20 PM

Matrix: Nonpotable Water

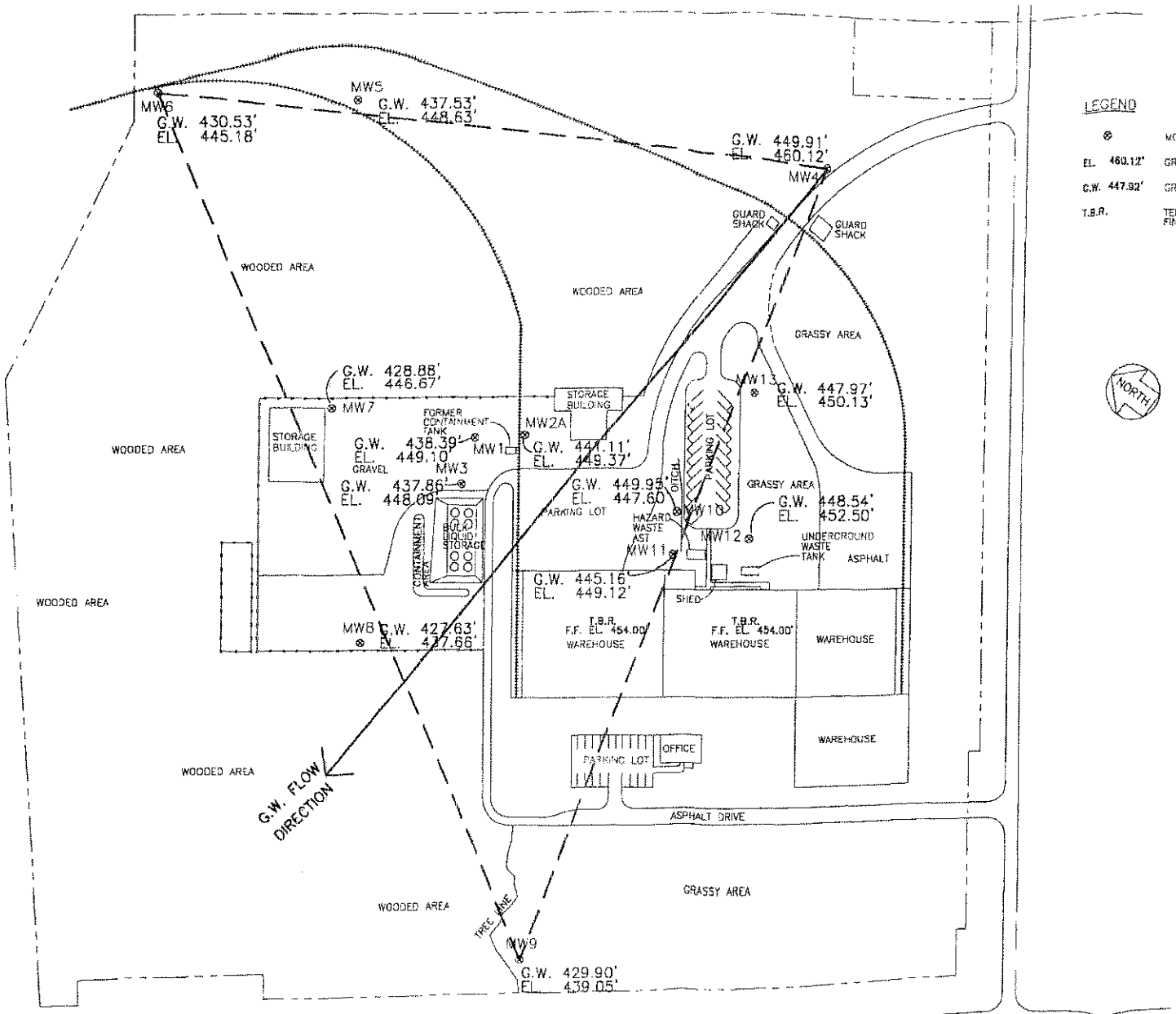
Sample Comment: Water grab sample from well labeled MW-6

Test	Parameter	Result	Units	QC BatchID	Method	Qualifier
VOAs	Trichloroethene	< 1.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Trichlorofluoromethane	< 5.0	ug/L	Q0418-11VOAs	8260B	
VOAs	Vinyl Chloride	< 1.0	ug/L	Q0418-11VOAs	8260B	

The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S. Environmental Protection Agency.

Earl Pabst, Program Director
Environmental Services Program
Air and Land Protection Division

Date Printed: 5/14/2003



P.M. RESOURCES
13001 ST. CHARLES ROCK ROAD
Bridgeton, Missouri

1ST QUARTER 2003
BEDROCK CONTOUR MAP
(w/elevations in ft')

SITEX

Figure 2

Attachment 2

State of Missouri Registered Well Information

Missouri Department of
NATURAL RESOURCES

FAX Transmittal Cover Sheet

DATE: April 20, 2005

TO: JON WILKINSON

CO.: HURST
DEPT:

PHONE: (636)

FAX #: (636) 939-9757

FROM: Sharon Beistel
Wellhead Protection Section
Geological Survey and Resource Assessment Division
Missouri Department of Natural Resources
P.O. Box 250, Rolla, MO 65402
sharon.beistel@dnr.mo.gov

RECYCLED PAPER

PHONE: 573-368-2168

FAX: 573-368-2317

RE: Water Well Search Request

COMMENTS:

WELL SEARCH FOR T46N R05E AND T47N R05E – THIS LIST IS FOR ALL THE WELLS DRILLED SINCE 1987. LET ME KNOW IF YOU NEED MORE INFO –UNDER USE D=DOMESTIC, I=IRRIGATION,N=NONCOMMUNITY,P=PUBLIC WATER SUPPLY

Total number of pages sent was 5 (including this cover sheet). If not all pages are received, or if problems are experienced, please call: Sharon **@ 573/ 368-2168**

MO 780-1430 (10-93)

Missouri Department of NATURAL RESOURCES

FAX Transmittal Cover Sheet

DATE: April 21, 2005

TO: JON WILKINSON

CO.: HERST
DEPT:

PHONE: (636) 939-9111

FAX #: (636) 939-9757

FROM: Sharon Beistel
Wellhead Protection Section
Geological Survey and Resource Assessment Division
Missouri Department of Natural Resources
P.O. Box 250, Rolla, MO 65402
sharon.beistel@dnr.mo.gov

RECYCLED PAPER

PHONE: 573-368-2168

FAX: 573-368-2317

RE: Water Well Search Request

COMMENTS:
REQUESTED WELL RECORDS

Total number of pages sent was 9 (including this cover sheet). If not all pages are received, or if problems are experienced, please call: Sharon **@ 573/ 368-2168**

MO 780-1430 (10-93)

MISSOURI DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF GEOLOGY AND
LAND SURVEY
(573) 368-2165

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

[redacted]

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

OWNER NAME: AMCI CORPORATE WOODS BD TRUSTE -
TELEPHONE: (314) 576-7577
CASING DEPTH DETERMINED BY DNR ☐ YES ☒ NO IF YES, ATTACH A COPY
VARIANCE GRANTED BY DNR ☐ YES ☒ NO IF YES, NUMBER _____ ATTACH A COPY

OWNER ADDRESS: 390 SOUTH WOODSMILL RD B-1
CITY: CHESTERFIELD STATE: MO ZIP CODE: 63017

ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE): EARTH CITY MO
CITY: STATE: ZIP CODE:

PROPOSED USE OF WELL: ☐ DOMESTIC ☐ MULTI-FAMILY ☐ OPEN-LOOP HEAT PUMP WATER SUPPLY ☐ OPEN-LOOP HEAT PUMP WATER RETURN ☐ OTHER _____ ☐ IRRIGATION ☐ NON COMMUNITY ☐ PUBLIC WATER SUPPLY

ABANDONED WELL? ☐ YES ☒ NO
WAS THE ABANDONED WELL PROPERLY PLUGGED ☐ YES ☐ NO
DATE PLUGGED:
INFORMATION VERIFIED BY OWNER SIGNATURE (WELL OWNER, OPTIONAL): X
DATE:

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

Levee 25A
Relief Well

LOCATION OF WELL: LAT. ___ ___ ___ LONG. ___ ___ ___ [redacted]
COUNTY: ST LOUIS
SMALLEST ___ X ___ X ___ LARGEST
SEC. 4 TWN. 46 N RNG. 5 E OR W

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL SITE:
DRILLER NOTES:

CASING DETAILS

LENGTH	O.D. OF CASING	WEIGHT OR SDR #	DIAMETER OF DRILL HOLE	MATERIAL	DRIVE SHOE	CASING DRIVEN	PACKER USED ON PVC CASING	DEPTH SET
40 FT.	16 IN.	16	42 IN.	☒ STEEL ☐ PLASTIC ☐ CONCRETE	☐ YES ☒ NO	☐ YES ☒ NO	☐ NONE ☐ COUPLING ☐ RUBBER BOOT ☐ INVERTED BELL	

CASING GROUT DETAILS
POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☒ TOP
MATERIAL: CEMENT ☒ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ GRANULAR ☐ CHIPS ☐ PELLETS
NUMBER OF SACKS USED:
LBS PER SACK:
METHOD OF INSTALLATION: ☒ GRAVITY ☐ POSITIVE DISPLACEMENT; PRESSURE GROUT ☐ THROUGH TREMIE ☐ OPEN HOLE ☐ TREMIE ☐ THROUGH CASING
DRILLING SUSPENDED ☐ NO ☒ YES 72 HRS.

LINER DETAILS
☐ USED ONLY TO HOLD BACK THE FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
☐ USED TO SEAL OUT RUST
LENGTH: FT. O.D. OF LINER: IN. WEIGHT OR SDR #: MATERIAL: ☐ PLASTIC ☐ STEEL
DEPTH FROM THE SURFACE TO THE TOP OF THE LINER: FT.
PACKER USED ON PVC LINER: ☐ NONE ☐ RUBBER BOOT
DEPTHS SET:

LINER GROUT DETAILS
POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☐ TOP
MATERIAL: CEMENT ☐ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ GRANULAR ☐ CHIPS ☐ PELLETS
NUMBER OF SACKS USED:
LBS. PER SACK:
METHOD OF INSTALLATION: ☐ AS LINER IS INSTALLED ☐ TREMIE

DEPTH FROM	DEPTH TO	FORMATION AND YIELD DESCRIPTION
0	10	FN SND
10	15	CLY
15	40	FN SND
40	60	CRSE SND

WELL YIELD: 1000
WELL CHLORINATED AFTER DRILLING: ☒ YES ☐ NO
☐ NEW PUMP ☐ REPLACEMENT
PUMP DETAILS: ___ G.P.M. PUMP SET AT ___ FT.
STATIC WATER LEVEL: FEET FROM SURFACE

GRAVEL PACK THICKNESS FROM 40 FT TO 60 FT
WILL A CENTRIFUGAL PUMP BE INSTALLED ☐ YES ☒ NO

SCREEN LENGTH FROM 40 FT TO 60 FT

HEAT PUMP DETAILS
AMOUNT OF WATER HEAT PUMP UTILIZES:
METHOD OF WATER DISPOSAL ☐ SURFACE ☐ RETURN WELL

TYPE OF TOP CASING SEAL: ☐ PITLESS ADAPTOR ☐ WELL SEAL ☐ OTHER _____

REFERENCE NUMBER OF CERTIFICATION FORM FOR WATER RETURN WELL:
TOTAL DEPTH: 60
SIGNATURE (PRIMARY CONTRACTOR):
PERMIT NUMBER: 001120
WELL CHLORINATED AFTER SETTING PUMP ☐ YES ☐ NO
DATE PUMP INSTALLATION WAS COMPLETED:
DATE WELL DRILLING WAS COMPLETED: 08/06/2002

I HEREBY CERTIFY THAT THE WELL/PUMP HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.

SIGNATURE (WELL DRILLER): X
PERMIT NUMBER: 001120
DATE:
SIGNATURE (PUMP INSTALLER): X
PERMIT NUMBER:
DATE:

MO 780-0250 (8-99)
DISTRIBUTION: WHITE/DIVISION CANARY/CONTRACTOR PINK/OWNER
MAIL WHITE COPY TO: DEPARTMENT OF NATURAL RESOURCES, P.O. BOX 250, ROLLA, MO 65402
ENCLOSE $35 WATER WELL CERTIFICATION FEE WITHIN 60 DAYS AFTER WELL COMPLETION

SCREEN LENGTH FROM 87 FT TO 37 FT — 52 FT. FROM SURFACE

HEAT PUMP DETAILS
AMOUNT OF WATER HEAT PUMP UTILIZES:
METHOD OF WATER DISPOSAL ☐ SURFACE ☐ RETURN WELL

TYPE OF TOP CASING SEAL: ☐ PITLESS ADAPTOR ☒ WELL SEAL ☐ OTHER _____

REFERENCE NUMBER OF CERTIFICATION FORM FOR WATER RETURN WELL:
TOTAL DEPTH: 87
SIGNATURE (PRIMARY CONTRACTOR):
PERMIT NUMBER: 001120
WELL CHLORINATED AFTER SETTING PUMP ☐ YES ☒ NO
DATE PUMP INSTALLATION WAS COMPLETED:
DATE WELL DRILLING WAS COMPLETED: 08/14/2004

I HEREBY CERTIFY THAT THE WELL/PUMP HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.

SIGNATURE (WELL DRILLER): X
PERMIT NUMBER: 001120
DATE:
SIGNATURE (PUMP INSTALLER): X
PERMIT NUMBER: 001120
DATE:

MO 780-0250 (8-99)
DISTRIBUTION: WHITE/DIVISION CANARY/CONTRACTOR PINK/OWNER
MAIL WHITE COPY TO: DEPARTMENT OF NATURAL RESOURCES, P.O. BOX 250, ROLLA, MO 65402
ENCLOSE $35 WATER WELL CERTIFICATION FEE WITHIN 60 DAYS AFTER WELL COMPLETION

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

[redacted]

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

OWNER NAME: CRYSTAL SPRINGS QURY GOLF CLUB -
TELEPHONE: (636) 344-4448
CASING DEPTH DETERMINED BY DNR ☐ YES ☒ NO IF YES, ATTACH A COPY
VARIANCE GRANTED BY DNR ☐ YES ☒ NO IF YES, NUMBER _____ ATTACH A COPY

OWNER ADDRESS: 12163 RICHARD FARM ROAD
CITY: MARYLAND HEIGHTS
STATE: MO
ZIP CODE: 63043

ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE):
CITY:
STATE:
ZIP CODE:

PROPOSED USE OF WELL
☐ DOMESTIC
☐ MULTI-FAMILY
☐ OPEN-LOOP HEAT PUMP WATER SUPPLY
☐ OPEN-LOOP HEAT PUMP WATER RETURN
☐ OTHER _____
☒ IRRIGATION
☐ NON COMMUNITY
☐ PUBLIC WATER SUPPLY

ABANDONED WELL? ☐ YES ☒ NO
WAS THE ABANDONED WELL PROPERLY PLUGGED ☐ YES ☐ NO
DATE PLUGGED
INFORMATION VERIFIED BY OWNER SIGNATURE (WELL OWNER, OPTIONAL): X
DATE

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

LOCATION OF WELL
LAT. ___ ° ___ ' ___ "
LONG. ___ ° ___ ' ___ "
[redacted]
COUNTY ST LOUIS

SMALLEST NE ¼ NW ¼ SE ¼ LARGEST
SEC. 17 TWN. 46 N RNG. 6 E OR W

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL SITE

DRILLER NOTES:

CASING DETAILS

LENGTH	O.D. OF CASING	WEIGHT OR SDR #	DIAMETER OF DRILL HOLE	MATERIAL	DRIVE SHOE	CASING DRIVEN	PACKER USED ON PVC CASING	DEPTH SET
40 FT.	16 IN.	62.58	32 IN.	☒ STEEL ☐ PLASTIC ☐ CONCRETE	☐ YES ☒ NO	☐ YES ☒ NO	☐ NONE ☐ COUPLING ☐ RUBBER BOOT ☐ INVERTED BELL	

CASING GROUT DETAILS
POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☒ TOP
MATERIAL: CEMENT ☐ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ GRANULAR ☒ CHIPS ☐ PELLETS
NUMBER OF SACKS USED
LBS PER SACK
METHOD OF INSTALLATION: ☐ GRAVITY ☐ POSITIVE DISPLACEMENT ☐ PRESSURE GROUT ☐ THROUGH TREMIE ☐ OPEN HOLE ☐ TREMIE ☐ THROUGH CASING _____
DRILLING SUSPENDED ☐ NO ☒ YES 72 HRS.

LINER DETAILS
☐ USED ONLY TO HOLD BACK THE FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
☐ USED TO SEAL OUT RUST
LENGTH FT. O.D. OF LINER IN. WEIGHT OR SDR # MATERIAL ☐ PLASTIC ☐ STEEL
DEPTH FROM THE SURFACE TO THE TOP OF THE LINER FT.
PACKER USED ON PVC LINER ☐ NONE ☐ RUBBER BOOT
DEPTHS SET

LINER GROUT DETAILS
POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☐ TOP
MATERIAL: CEMENT ☐ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ GRANULAR ☐ CHIPS ☐ PELLETS
NUMBER OF SACKS USED
LBS. PER SACK
METHOD OF INSTALLATION ☐ AS LINER IS INSTALLED ☐ TREMIE

DEPTH FROM	DEPTH TO	FORMATION AND YIELD DESCRIPTION
0	10	SILTY CLY
10	30	FN SND
30	80	MD SND,PEA GRVL STRINGERS
80		
210		
250		

TOTAL DEPTH: 80

WELL YIELD: 1507
WELL CHLORINATED AFTER DRILLING ☐ YES ☒ NO
☒ NEW PUMP ☐ REPLACEMENT
GRAVEL PACK THICKNESS FROM 10 FT TO 80 FT
WILL A CENTRIFUGAL PUMP BE INSTALLED ☐ YES ☒ NO
PUMP DETAILS 1500 G.P.M. PUMP SET AT 80 FT.
STATIC WATER LEVEL 16 FEET FROM SURFACE
SCREEN LENGTH FROM FT TO FT
HEAT PUMP DETAILS: AMOUNT OF WATER HEAT PUMP UTILIZES
METHOD OF WATER DISPOSAL ☐ SURFACE ☐ RETURN WELL
TYPE OF TOP CASING SEAL ☐ PITLESS ADAPTOR ☒ WELL SEAL ☐ OTHER _____
REFERENCE NUMBER OF CERTIFICATION FORM FOR WATER RETURN WELL -
SIGNATURE (PRIMARY CONTRACTOR)
PERMIT NUMBER
WELL CHLORINATED AFTER SETTING PUMP ☐ YES ☒ NO
DATE PUMP INSTALLATION WAS COMPLETED
DATE WELL DRILLING WAS COMPLETED 02/11/2000

I HEREBY CERTIFY THAT THE WELL/PUMP HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.

SIGNATURE (WELL DRILLER)	PERMIT NUMBER	DATE	SIGNATURE (PUMP INSTALLER)	PERMIT NUMBER	DATE
X	001261		X	001260	

MO 780-0230 (8-99)

DISTRIBUTION: WHITE/DIVISION CANARY/CONTRACTOR PINK/OWNER
MAIL WHITE COPY TO: DEPARTMENT OF NATURAL RESOURCES, P.O. BOX 250, ROLLA, MO 65402
ENCLOSE $95 WATER WELL CERTIFICATION FEE WITHIN 60 DAYS AFTER WELL COMPLETION

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

[redacted]

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

OWNER NAME: SID KURTZ
TELEPHONE: (314) 921-5596
CASING DEPTH DETERMINED BY DNR ☐ YES ☒ NO IF YES, ATTACH A COPY
VARIANCE GRANTED BY DNR ☐ YES ☒ NO IF YES, NUMBER _____ ATTACH A COPY

OWNER ADDRESS: 3553 DOUGLAS RD
CITY: FLORISSANT
STATE: MO
ZIP CODE: 63034

ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE):
CITY:
STATE:
ZIP CODE:

PROPOSED USE OF WELL
☐ DOMESTIC ☒ IRRIGATION
☐ MULTI-FAMILY ☐ NON COMMUNITY
☐ OPEN-LOOP HEAT PUMP WATER SUPPLY ☐ PUBLIC WATER SUPPLY
☐ OPEN-LOOP HEAT PUMP WATER RETURN
☐ OTHER _____

ABANDONED WELL? ☐ YES ☒ NO
WAS THE ABANDONED WELL PROPERLY PLUGGED ☐ YES ☐ NO
DATE PLUGGED:

INFORMATION VERIFIED BY OWNER SIGNATURE (WELL OWNER, OPTIONAL): X
DATE:

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

LOCATION OF WELL
LAT. ____ ° ____ ' ____ "
LONG. ____ ° ____ ' ____ "
[redacted]
COUNTY: ST CHARLES

SMALLEST ____ X ____ X ____ X LARGEST
SEC. 188 TWN. 47 N RNG. 5 E OR W

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL SITE:

DRILLER NOTES:

CASING DETAILS

LENGTH	O.D. OF CASING	WEIGHT OR SDR #	DIAMETER OF DRILL HOLE	MATERIAL	DRIVE SHOE	CASING DRIVEN	PACKER USED ON PVC CASING	DEPTH SET
50 FT.	16 IN.	.500	24 IN.	☐ STEEL ☒ PLASTIC ☐ CONCRETE	☐ YES ☒ NO	☐ YES ☒ NO	☐ NONE ☐ COUPLING ☐ RUBBER BOOT ☐ INVERTED BELL	

CASING GROUT DETAILS

POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☒ TOP
MATERIAL: CEMENT ☐ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☒ GRANULAR ☐ CHIPS ☐ PELLETS
NUMBER OF SACKS USED: 14
LBS PER SACK: 50
METHOD OF INSTALLATION: ☒ GRAVITY ☐ POSITIVE DISPLACEMENT; PRESSURE GROUT ☐ THROUGH TREMIE ☐ OPEN HOLE ☐ TREMIE ☐ THROUGH CASING
DRILLING SUSPENDED: ☒ NO ☐ YES ____ HRS.

LINER DETAILS

☐ USED ONLY TO HOLD BACK THE FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
☐ USED TO SEAL OUT RUST

LENGTH: ____ FT. O.D. OF LINER: ____ IN. WEIGHT OR SDR #: MATERIAL: ☐ PLASTIC ☐ STEEL
DEPTH FROM THE SURFACE TO THE TOP OF THE LINER: ____ FT.
PACKER USED ON PVC LINER: ☐ NONE ☐ RUBBER BOOT
DEPTHS SET:

LINER GROUT DETAILS

POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☐ TOP
MATERIAL: CEMENT ☐ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ GRANULAR ☐ CHIPS ☐ PELLETS
NUMBER OF SACKS USED:
LBS. PER SACK:
METHOD OF INSTALLATION: ☐ AS LINER IS INSTALLED ☐ TREMIE

DEPTH FROM	DEPTH TO	FORMATION AND YIELD DESCRIPTION
0	15	TOPSOIL
15	25	CLY,FN SND
25	55	HEAVY SND,SM ROCK
55	65	SND,SM ROCKS
65	75	SND,GRVL
75	90	HEAVY SND,SM ROCK

TOTAL DEPTH: 90

WELL YIELD:
WELL CHLORINATED AFTER DRILLING ☒ YES ☐ NO

GRAVEL PACK THICKNESS: FROM 50 FT TO 90 FT
WILL A CENTRIFUGAL PUMP BE INSTALLED ☐ YES ☒ NO

SCREEN LENGTH: FROM 50 FT TO 90 FT

☐ NEW PUMP ☐ REPLACEMENT
PUMP DETAILS: ____ G.P.M. PUMP SET AT ____ FT.
STATIC WATER LEVEL: 21 FEET FROM SURFACE

HEAT PUMP DETAILS: AMOUNT OF WATER HEAT PUMP UTILIZES
METHOD OF WATER DISPOSAL ☐ SURFACE ☐ RETURN WELL

TYPE OF TOP CASING SEAL
☐ PITLESS ADAPTOR
☐ WELL SEAL
☐ OTHER _____

REFERENCE NUMBER OF CERTIFICATION FORM FOR WATER RETURN WELL:

SIGNATURE (PRIMARY CONTRACTOR):
PERMIT NUMBER: 001571
WELL CHLORINATED AFTER SETTING PUMP ☐ YES ☐ NO
DATE PUMP INSTALLATION WAS COMPLETED:
DATE WELL DRILLING WAS COMPLETED: 08/13/2002

I HEREBY CERTIFY THAT THE WELL/PUMP HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.

SIGNATURE (WELL DRILLER)	PERMIT NUMBER	DATE	SIGNATURE (PUMP INSTALLER)	PERMIT NUMBER	DATE
X	003745		X		

MO 780-0230 (8-99)

DISTRIBUTION: WHITE/DIVISION CANARY/CONTRACTOR PINK/OWNER
MAIL WHITE COPY TO: DEPARTMENT OF NATURAL RESOURCES, P.O. BOX 250, ROLLA, MO 65402
ENCLOSE $35 WATER WELL CERTIFICATION FEE WITHIN 60 DAYS AFTER WELL COMPLETION

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

[redacted]

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

OWNER NAME: TOM TESON
TELEPHONE: (314) 993-6946
CASING DEPTH DETERMINED BY DNR ☐ YES ☒ NO IF YES, ATTACH A COPY
VARIANCE GRANTED BY DNR ☐ YES ☒ NO IF YES, NUMBER _____ ATTACH A COPY

OWNER ADDRESS: 1666 TESON
CITY: HAZELWOOD STATE: MO ZIP CODE: 63042

ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE):
CITY: STATE: ZIP CODE:

PROPOSED USE OF WELL
☒ DOMESTIC
☐ MULTI-FAMILY
☐ OPEN-LOOP HEAT PUMP WATER SUPPLY
☐ OPEN-LOOP HEAT PUMP WATER RETURN
☐ OTHER _____
☐ IRRIGATION
☐ NON COMMUNITY
☐ PUBLIC WATER SUPPLY

ABANDONED WELL? ☐ YES ☒ NO
WAS THE ABANDONED WELL PROPERLY PLUGGED ☐ YES ☐ NO
DATE PLUGGED
INFORMATION VERIFIED BY OWNER SIGNATURE (WELL OWNER, OPTIONAL): X
DATE

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

LOCATION OF WELL
LAT. ___ ° ___ ' ___ "
LONG. ___ ° ___ ' ___ "
[redacted]
COUNTY ST LOUIS
SMALLEST ___ ¼ ___ ¼ ___ ¼ LARGEST
SEC. 22 TWN. 47 N RNG. 5 E OR W

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL SITE

DRILLER NOTES:

CASING DETAILS

LENGTH	O.D. OF CASING	WEIGHT OR SDR #	DIAMETER OF DRILL HOLE	MATERIAL	DRIVE SHOE	CASING DRIVEN	PACKER USED ON PVC CASING	DEPTH SET
50 FT.	16 IN.	40	30 IN.	☐ STEEL ☒ PLASTIC ☐ CONCRETE	☐ YES ☒ NO	☐ YES ☒ NO	☐ NONE ☐ COUPLING ☐ RUBBER BOOT ☐ INVERTED BELL	

CASING GROUT DETAILS
POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☒ TOP
MATERIAL: CEMENT ☐ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ GRANULAR ☒ CHIPS ☐ PELLETS
NUMBER OF SACKS USED: 20
LBS PER SACK: 50
METHOD OF INSTALLATION: ☒ GRAVITY ☐ POSITIVE DISPLACEMENT ☐ OPEN HOLE ☐ TREMIE ☐ THROUGH TREMIE ☐ THROUGH CASING
PRESSURE GROUT
DRILLING SUSPENDED ☐ NO ☒ YES 72 HRS.

LINER DETAILS
☐ USED ONLY TO HOLD BACK THE FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
☐ USED TO SEAL OUT RUST
LENGTH ___ FT. O.D. OF LINER ___ IN. WEIGHT OR SDR # MATERIAL ☐ PLASTIC ☐ STEEL
DEPTH FROM THE SURFACE TO THE TOP OF THE LINER ___ FT.
PACKER USED ON PVC LINER ☐ NONE ☐ RUBBER BOOT
DEPTHS SET

LINER GROUT DETAILS
POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☐ TOP
MATERIAL: CEMENT ☐ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ GRANULAR ☐ CHIPS ☐ PELLETS
NUMBER OF SACKS USED
LBS. PER SACK
METHOD OF INSTALLATION ☐ AS LINER IS INSTALLED ☐ TREMIE

WELL YIELD: 3000
WELL CHLORINATED AFTER DRILLING ☒ YES ☐ NO

GRAVEL PACK THICKNESS FROM 75 FT TO 35 FT
WILL A CENTRIFUGAL PUMP BE INSTALLED ☐ YES ☒ NO

SCREEN LENGTH FROM 75 FT TO 45 FT

HEAT PUMP DETAILS
AMOUNT OF WATER HEAT PUMP UTILIZES
METHOD OF WATER DISPOSAL ☐ SURFACE ☐ RETURN WELL

REFERENCE NUMBER OF CERTIFICATION FORM FOR WATER RETURN WELL:

☒ NEW PUMP ☐ REPLACEMENT
PUMP DETAILS: 1200 G.P.M. PUMP SET AT 60 FT.
STATIC WATER LEVEL: 10 FEET FROM SURFACE
TYPE OF TOP CASING SEAL
☒ PITLESS ADAPTOR
☐ WELL SEAL
☐ OTHER _____

DEPTH FROM	DEPTH TO	FORMATION AND YIELD DESCRIPTION
0	2	CLY
2	25	SND
25	40	MED SND
40	55	CRSE SND
55	75	GRVL

TOTAL DEPTH: 75

SIGNATURE (PRIMARY CONTRACTOR)
PERMIT NUMBER: 001120
WELL CHLORINATED AFTER SETTING PUMP ☐ YES ☒ NO
DATE PUMP INSTALLATION WAS COMPLETED
DATE WELL DRILLING WAS COMPLETED: 04/21/2004

I HEREBY CERTIFY THAT THE WELL/PUMP HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.

SIGNATURE (WELL DRILLER)	PERMIT NUMBER	DATE	SIGNATURE (PUMP INSTALLER)	PERMIT NUMBER	DATE
X	001120		X	001120	

MO 780-0230 (6-99)

DISTRIBUTION: WHITE/DIVISION CANARY/CONTRACTOR PINK/OWNER
MAIL WHITE COPY TO: DEPARTMENT OF NATURAL RESOURCES, P.O. BOX 250, ROLLA, MO 65402
ENCLOSE $35 WATER WELL CERTIFICATION FEE WITHIN 60 DAYS AFTER WELL COMPLETION

MISSOURI DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF GEOLOGY AND
LAND SURVEY
(573) 368-2165

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

[redacted]

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

OWNER NAME: BILLY PROUGHET
TELEPHONE:
OWNER ADDRESS: PO BOX 804
CITY: BRIDGETON
STATE: MO
ZIP CODE: 63044
ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE): MO BOTTOM RD
CITY:
STATE:
ZIP CODE:

CASING DEPTH DETERMINED BY DNR ☐ YES ☒ NO
IF YES, ATTACH A COPY
VARIANCE GRANTED BY DNR ☐ YES ☒ NO
IF YES, NUMBER _____
ATTACH A COPY

PROPOSED USE OF WELL
☐ DOMESTIC
☐ MULTI-FAMILY
☐ OPEN-LOOP HEAT PUMP WATER SUPPLY
☐ OPEN-LOOP HEAT PUMP WATER RETURN
☐ OTHER _____
☒ IRRIGATION
☐ NON COMMUNITY
☐ PUBLIC WATER SUPPLY

ABANDONED WELL? ☐ YES ☒ NO
WAS THE ABANDONED WELL PROPERLY PLUGGED ☐ YES ☐ NO
DATE PLUGGED
INFORMATION VERIFIED BY OWNER SIGNATURE (WELL OWNER, OPTIONAL): X
DATE

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

LOCATION OF WELL
LAT. ___ ° ___ ' ___ "
LONG. ___ ° ___ ' ___ "
[redacted]
COUNTY ST LOUIS
SMALLEST ___ ¼ ___ ¼ ___ ¼ LARGEST
SEC. 22 TWN. 47 N RNG. 5 E OR W

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL SITE

DRILLER NOTES:

CASING DETAILS	LENGTH	O.D. OF CASING	WEIGHT OR SDR #	DIAMETER OF DRILL HOLE	MATERIAL	DRIVE SHOE	CASING DRIVEN	PACKER USED ON PVC CASING	DEPTH SET
	50 FT.	16 IN.	40	30 IN.	☐ STEEL ☒ PLASTIC ☐ CONCRETE	☐ YES ☒ NO	☐ YES ☒ NO	☐ NONE ☐ COUPLING ☐ RUBBER BOOT ☐ INVERTED BELL	

CASING GROUT DETAILS
POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☒ TOP
MATERIAL: CEMENT ☐ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☒ CHIPS ☐ GRANULAR ☐ PELLETS
NUMBER OF SACKS USED: 20
LBS PER SACK: 50
METHOD OF INSTALLATION: ☒ GRAVITY ☐ POSITIVE DISPLACEMENT; PRESSURE GROUT ☐ THROUGH TREMIE ☐ OPEN HOLE ☐ TREMIE ☐ THROUGH CASING
DRILLING SUSPENDED ☐ NO ☒ YES 72 HRS.

LINER DETAILS
☐ USED ONLY TO HOLD BACK THE FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
☐ USED TO SEAL OUT RUST
LENGTH: FT. O.D. OF LINER: IN. WEIGHT OR SDR #: MATERIAL ☐ PLASTIC ☐ STEEL
DEPTH FROM THE SURFACE TO THE TOP OF THE LINER: FT.
PACKER USED ON PVC LINER ☐ NONE ☐ RUBBER BOOT
DEPTHS SET

LINER GROUT DETAILS
POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☐ TOP
MATERIAL: CEMENT ☐ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ CHIPS ☐ GRANULAR ☐ PELLETS
NUMBER OF SACKS USED
LBS. PER SACK
METHOD OF INSTALLATION ☐ AS LINER IS INSTALLED ☐ TREMIE

DEPTH FROM	DEPTH TO	FORMATION AND YIELD DESCRIPTION
0	2	CLY
2	25	SND
25	40	MED SND
40	65	CRS SND
65	75	CRSE GRBL
75		

TOTAL DEPTH: 75

WELL YIELD: 3000
WELL CHLORINATED AFTER DRILLING ☒ YES ☐ NO
☒ NEW PUMP ☐ REPLACEMENT
PUMP DETAILS: 1200 G.P.M. PUMP SET AT 80 FT.
STATIC WATER LEVEL: 10 FEET FROM SURFACE

GRAVEL PACK THICKNESS: FROM 75 FT TO 35 FT
WILL A CENTRIFUGAL PUMP BE INSTALLED ☐ YES ☒ NO

SCREEN LENGTH: FROM 75 FT TO 45 FT

HEAT PUMP DETAILS: AMOUNT OF WATER HEAT PUMP UTILIZES
METHOD OF WATER DISPOSAL ☐ SURFACE ☐ RETURN WELL

TYPE OF TOP CASING SEAL
☒ PITLESS ADAPTOR
☐ WELL SEAL
☐ OTHER _____

REFERENCE NUMBER OF CERTIFICATION FORM FOR WATER RETURN WELL:

SIGNATURE (PRIMARY CONTRACTOR)
PERMIT NUMBER: 001120
WELL CHLORINATED AFTER SETTING PUMP ☐ YES ☒ NO
DATE PUMP INSTALLATION WAS COMPLETED
DATE WELL DRILLING WAS COMPLETED: 04/21/2004

I HEREBY CERTIFY THAT THE WELL/PUMP HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.

SIGNATURE (WELL DRILLER)	PERMIT NUMBER	DATE	SIGNATURE (PUMP INSTALLER)	PERMIT NUMBER	DATE
X	001120		X	001120	

MO 780-0330 (8-99)

DISTRIBUTION: WHITE/DIVISION CANARY/CONTRACTOR PINK/OWNER
MAIL WHITE COPY TO: DEPARTMENT OF NATURAL RESOURCES, P.O. BOX 250, ROLLA, MO 65402
ENCLOSE $35 WATER WELL CERTIFICATION FEE WITHIN 60 DAYS AFTER WELL COMPLETION

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

[redacted]

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

OWNER NAME: SOUTHARD CONSTRUCTION -
TELEPHONE:
OWNER ADDRESS: 2133 CREVE COUER MILL RD
CITY: MARYLAND HEIGHTS
STATE: MO
ZIP CODE: 63043
ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE): 370 GOLF COMPLEX BRIDGETON
CITY:
STATE:
ZIP CODE:

CASING DEPTH DETERMINED BY DNR ☐ YES ☒ NO
IF YES, ATTACH A COPY
VARIANCE GRANTED BY DNR ☐ YES ☒ NO
IF YES, NUMBER _____
ATTACH A COPY

PROPOSED USE OF WELL
☐ DOMESTIC
☐ MULTI-FAMILY
☐ OPEN-LOOP HEAT PUMP WATER SUPPLY
☐ OPEN-LOOP HEAT PUMP WATER RETURN
☐ OTHER _____
☒ IRRIGATION
☐ NON COMMUNITY
☐ PUBLIC WATER SUPPLY

ABANDONED WELL? ☐ YES ☒ NO
WAS THE ABANDONED WELL PROPERLY PLUGGED ☐ YES ☐ NO
DATE PLUGGED
INFORMATION VERIFIED BY OWNER SIGNATURE (WELL OWNER, OPTIONAL): X
DATE

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

LOCATION OF WELL
LAT. ___ ° ___ ' ___ "
LONG. ___ ° ___ ' ___ "
[redacted]
COUNTY ST LOUIS
SMALLEST ___ ¼ ___ ¼ ___ ¼ LARGEST
SEC. 32 TWN. 47 N RNG. 5 E OR W

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL SITE

DRILLER NOTES:

CASING DETAILS
LENGTH: 44 FT. | O.D. OF CASING: 16 IN. | WEIGHT OR SDR #: | DIAMETER OF DRILL HOLE: 30 IN.
MATERIAL: ☐ STEEL ☒ PLASTIC ☐ CONCRETE
DRIVE SHOE ☐ YES ☒ NO
CASING DRIVEN ☐ YES ☒ NO
PACKER USED ON PVC CASING ☐ NONE ☐ COUPLING ☐ RUBBER BOOT ☐ INVERTED BELL
DEPTH SET

CASING GROUT DETAILS
POSITION OF SEAL: ☒ FULL LENGTH ☐ BOTTOM ☐ TOP
MATERIAL: CEMENT ☒ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ GRANULAR ☐ CHIPS ☐ PELLETS
NUMBER OF SACKS USED: 10
LBS PER SACK: 94
METHOD OF INSTALLATION: ☒ GRAVITY ☐ POSITIVE DISPLACEMENT ☐ PRESSURE GROUT ☐ THROUGH TREMIE ☐ OPEN HOLE ☐ TREMIE ☐ THROUGH CASING
DRILLING SUSPENDED ☒ NO ☐ YES ___ HRS.

LINER DETAILS
☐ USED ONLY TO HOLD BACK THE FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
☐ USED TO SEAL OUT RUST
LENGTH: ___ FT. | O.D. OF LINER: ___ IN. | WEIGHT OR SDR # | MATERIAL: ☐ PLASTIC ☐ STEEL
DEPTH FROM THE SURFACE TO THE TOP OF THE LINER ___ FT.
PACKER USED ON PVC LINER ☐ NONE ☐ RUBBER BOOT
DEPTHS SET

LINER GROUT DETAILS
POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☐ TOP
MATERIAL: CEMENT ☐ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ GRANULAR ☐ CHIPS ☐ PELLETS
NUMBER OF SACKS USED | LBS. PER SACK
METHOD OF INSTALLATION: ☐ AS LINER IS INSTALLED ☐ TREMIE

DEPTH FROM	DEPTH TO	FORMATION AND YIELD DESCRIPTION
0	20	FN SND
20	45	CRSE SND
45	74	CRSE SND,GRVL,BOULDERS
74	79	FN SND

TOTAL DEPTH: 74

WELL YIELD: 100
WELL CHLORINATED AFTER DRILLING ☒ YES ☐ NO
☒ NEW PUMP ☐ REPLACEMENT
PUMP DETAILS: 40 G.P.M. PUMP SET AT 60 FT.
STATIC WATER LEVEL: 18 FEET FROM SURFACE

GRAVEL PACK THICKNESS FROM FT TO FT
WILL A CENTRIFUGAL PUMP BE INSTALLED ☐ YES ☒ NO

SCREEN LENGTH FROM FT TO FT

TYPE OF TOP CASING SEAL
☐ PITLESS ADAPTOR
☒ WELL SEAL
☐ OTHER _____

HEAT PUMP DETAILS
AMOUNT OF WATER HEAT PUMP UTILIZES
METHOD OF WATER DISPOSAL ☐ SURFACE ☐ RETURN WELL

REFERENCE NUMBER OF CERTIFICATION FORM FOR WATER RETURN WELL:

SIGNATURE (PRIMARY CONTRACTOR)
PERMIT NUMBER: 001120
WELL CHLORINATED AFTER SETTING PUMP ☐ YES ☒ NO
DATE PUMP INSTALLATION WAS COMPLETED
DATE WELL DRILLING WAS COMPLETED: 08/26/2004

I HEREBY CERTIFY THAT THE WELL/PUMP HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.

SIGNATURE (WELL DRILLER): X
PERMIT NUMBER: 001120
DATE
SIGNATURE (PUMP INSTALLER): X
PERMIT NUMBER: 001120
DATE

MO 780-0230 (8-99)

DISTRIBUTION: WHITE/DIVISION CANARY/CONTRACTOR PINK/OWNER
MAIL WHITE COPY TO: DEPARTMENT OF NATURAL RESOURCES, P.O. BOX 250, ROLLA, MO 65402
ENCLOSE $35 WATER WELL CERTIFICATION FEE WITHIN 60 DAYS AFTER WELL COMPLETION

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

[redacted]

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

OWNER NAME: AMCI CORPORATE WOODS BD TRUSTE -
TELEPHONE: (314) 576-7577
CASING DEPTH DETERMINED BY DNR ☐ YES ☒ NO IF YES, ATTACH A COPY
VARIANCE GRANTED BY DNR ☐ YES ☒ NO IF YES, NUMBER _____ ATTACH A COPY

OWNER ADDRESS: 390 SOUTH WOODSMILL RD B-1
CITY: CHESTERFIELD
STATE: MO
ZIP CODE: 63017

ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE): EARTH CITY MO
CITY:
STATE:
ZIP CODE:

PROPOSED USE OF WELL
☐ DOMESTIC
☐ MULTI-FAMILY
☐ OPEN-LOOP HEAT PUMP WATER SUPPLY
☐ OPEN-LOOP HEAT PUMP WATER RETURN
☐ OTHER _____
☐ IRRIGATION
☐ NON COMMUNITY
☐ PUBLIC WATER SUPPLY

ABANDONED WELL? ☐ YES ☒ NO
WAS THE ABANDONED WELL PROPERLY PLUGGED ☐ YES ☐ NO
DATE PLUGGED
INFORMATION VERIFIED BY OWNER SIGNATURE (WELL OWNER, OPTIONAL): X
DATE

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

Levee x 33 A
Relief Well

LOCATION OF WELL
LAT. ____ ° ____ ' ____ "
LONG. ____ ° ____ ' ____ "
[redacted]
COUNTY ST LOUIS
SMALLEST ____ ¼ ____ ¼ ____ ¼ LARGEST
SEC. 4 TWN. 48 N RNG. 5 E OR W

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL SITE
DRILLER NOTES:

CASING DETAILS	LENGTH	O.D. OF CASING	WEIGHT OR SDR #	DIAMETER OF DRILL HOLE	MATERIAL	DRIVE SHOE	CASING DRIVEN	PACKER USED ON PVC CASING	DEPTH SET
	40 FT.	16 IN.	10	42 IN.	☒ STEEL ☐ PLASTIC ☐ CONCRETE	☐ YES ☒ NO	☐ YES ☒ NO	☐ NONE ☐ COUPLING ☐ RUBBER BOOT ☐ INVERTED BELL	

CASING GROUT DETAILS
POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☒ TOP
MATERIAL: CEMENT ☒ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ CHIPS ☐ GRANULAR ☐ PELLETS
NUMBER OF SACKS USED
LBS PER SACK
METHOD OF INSTALLATION: ☒ GRAVITY ☐ POSITIVE DISPLACEMENT; PRESSURE GROUT ☐ THROUGH TREMIE ☐ OPEN HOLE ☐ TREMIE ☐ THROUGH CASING
DRILLING SUSPENDED ☐ NO ☒ YES 72 HRS.

LINER DETAILS
☐ USED ONLY TO HOLD BACK THE FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
☐ USED TO SEAL OUT RUST
LENGTH FT. O.D. OF LINER IN. WEIGHT OR SDR # MATERIAL ☐ PLASTIC ☐ STEEL
DEPTH FROM THE SURFACE TO THE TOP OF THE LINER FT.
PACKER USED ON PVC LINER ☐ NONE ☐ RUBBER BOOT
DEPTHS SET

LINER GROUT DETAILS
POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☐ TOP
MATERIAL: CEMENT ☐ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ CHIPS ☐ GRANULAR ☐ PELLETS
NUMBER OF SACKS USED
LBS. PER SACK
METHOD OF INSTALLATION ☐ AS LINER IS INSTALLED ☐ TREMIE

DEPTH FROM	DEPTH TO	FORMATION AND YIELD DESCRIPTION
0	10	FN SND
10	15	CLY
15	40	FN SND
40	60	CRSE SND

TOTAL DEPTH: 60

WELL YIELD 1000
WELL CHLORINATED AFTER DRILLING ☒ YES ☐ NO
GRAVEL PACK THICKNESS FROM 10 FT TO 60 FT
WILL A CENTRIFUGAL PUMP BE INSTALLED ☐ YES ☒ NO
SCREEN LENGTH FROM 40 FT TO 60 FT

☐ NEW PUMP ☐ REPLACEMENT
PUMP DETAILS ____ G.P.M. PUMP SET AT ____ FT.
STATIC WATER LEVEL ____ FEET FROM SURFACE
TYPE OF TOP CASING SEAL
☐ PITLESS ADAPTOR
☐ WELL SEAL
☐ OTHER _____

HEAT PUMP DETAILS
AMOUNT OF WATER HEAT PUMP UTILIZES
METHOD OF WATER DISPOSAL ☐ SURFACE ☐ RETURN WELL
REFERENCE NUMBER OF CERTIFICATION FORM FOR WATER RETURN WELL:

SIGNATURE (PRIMARY CONTRACTOR)
PERMIT NUMBER 001120
WELL CHLORINATED AFTER SETTING PUMP ☐ YES ☐ NO
DATE PUMP INSTALLATION WAS COMPLETED
DATE WELL DRILLING WAS COMPLETED 08/06/2002

I HEREBY CERTIFY THAT THE WELL/PUMP HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.

SIGNATURE (WELL DRILLER)	PERMIT NUMBER	DATE	SIGNATURE (PUMP INSTALLER)	PERMIT NUMBER	DATE
X	001120		X		

MO 780-0230 (8-99)

DISTRIBUTION: WHITE/DIVISION CANARY/CONTRACTOR PINK/OWNER
MAIL WHITE COPY TO: DEPARTMENT OF NATURAL RESOURCES, P.O. BOX 250, ROLLA, MO 65402
ENCLOSE $35 WATER WELL CERTIFICATION FEE WITHIN 60 DAYS AFTER WELL COMPLETION

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-5165

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

OWNER NAME: CR CONCRETE -
TELEPHONE:
CASING DEPTH DETERMINED BY DRILLER ☐ YES ☒ NO
IF YES, ATTACH A COPY

OWNER ADDRESS: PO BOX 381
CITY: COLUMBIA
STATE: MO
ZIP CODE: 65232
VARIANCE GRANTED BY DNR ☐ YES ☒ NO
IF YES, ATTACH A COPY
IF YES, WELL NUMBER

ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE): 5 RIVER RD ST CHARLES
CITY:
STATE:
ZIP CODE:
ATTACH A COPY

PROPOSED USE OF WELL: ☐ DOMESTIC ☐ MULTI-FAMILY ☐ OPEN-LOOP HEAT PUMP WATER SUPPLY ☐ OPEN-LOOP HEAT PUMP WATER RETURN ☐ OTHER
☒ IRRIGATION ☐ NON COMMUNITY ☐ PUBLIC WATER SUPPLY
WELL ABANDONED? ☐ YES ☒ NO
WELL PROPERLY PLUGGED? ☐ YES ☐ NO
DATE PLUGGED:
SIGNATURE (WELL OWNER OR AGENT) INFORMATION VERIFIED BY OWNER: X
DATE:

SKETCH THE LOCATION OF THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

LOCATION OF WELL: LAT. ___ ° ___ ' ___ " LONG. ___ ° ___ ' ___ "
COUNTY: ST. CHARLES
SMALLEST ___ X ___ X ___ X ___ LARGEST
S ___ E OR W ___ DIRN. N ___ 48 ___ TWP. ___ 1 ___ SEC.

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL SITE:
DRILLER NOTES:

CASING DETAILS

LENGTH	O.D. OF CASING	WEIGHT OR SDR #	DIAMETER OF DRILL HOLE	MATERIAL: ☒ PLASTIC ☐ STEEL ☐ CONCRETE	SHOE DRIVE	DRIVEN CASING	PACKER USED ON PVC CASING	DEPTH SET
31 FT.	16 IN.		30 IN.		☒ YES ☐ NO	☒ YES ☐ NO	☐ NONE ☐ RUBBER BOOT ☐ COUPLING ☐ INTERNAL BELT	

CASING DETAILS CONT.

FOOTAGE OF SEAL: ☒ FULL LENGTH	MATERIAL: ☒ TYPE I CEMENT ☐ SLURRY ☐ BENTONITE ☐ GRANULAR ☐ PELLETS ☐ CHIPS ☐ HEADER	☐ TOP ☐ BOTTOM	NUMBER OF SACKS USED: 50	BAGS PER SACK: 50	METHOD OF INSTALLATION: ☒ OPEN HOLE ☐ GRAVITY ☐ THROUGH TREMIE ☐ THROUGH CASING ☐ POSITIVE DISPLACEMENT ☐ PRESSURE GROUT	DRILLING STABILIZED: ☐ YES ☒ NO	CASING HEIGHT ABOVE LAND: 12 IN.

GROUT DETAILS

FORMATION AND WELL DESCRIPTION	DEPTH FROM	DEPTH TO
CLAY AND FILL	0	24
LIME AND	24	40
GRAY OR BLUE GRAY	40	51

LINER DETAILS

FOOTAGE OF SEAL: ☐ FULL LENGTH	MATERIAL: ☐ TYPE I CEMENT ☐ SLURRY ☐ BENTONITE ☐ GRANULAR ☐ PELLETS ☐ CHIPS ☐ HEADER	☐ TOP ☐ BOTTOM	NUMBER OF SACKS USED	BAGS PER SACK	METHOD OF INSTALLATION: ☐ TREMIE ☐ AS LINER IS INSTALLED

LINER DETAILS

☐ USED ONLY TO HOLD BACK THE FORMATION
☐ USED TO SEAL OUT COMMUNICATION OR OTHER CONDITIONS
☐ USED TO SEAL OUT BURST

LENGTH	O.D. OF LINER	WEIGHT OR SDR #	MATERIAL: ☐ PLASTIC ☐ STEEL
FT.	IN.		

DEPTH FROM THE SURFACE TO THE TOP OF THE LINER: FT.
DEPTHS SET:
PACKER USED ON PVC LINER: ☐ NONE ☐ RUBBER BOOT

SCREEN DETAILS

SCREEN LENGTH	MATERIAL OF WATER BEARING FORM FOR WATER BEARING WELL:	METHOD OF WATER DISCHARGE: ☐ SURFACE ☐ RETURN WELL
FROM 31 FT. TO 31 FT.	HEAT PUMP CLOSED	

GRAVEL PACK THICKNESS

FROM	TO	WELL A CENTRIFUGAL PUMP WILL BE INSTALLED
FT.	FT.	☐ YES ☒ NO

WELL DATA

WELL YIELD	WELL CHLORINATED AFTER DRILLING
300	☒ YES ☐ NO

☒ NEW WELL ☐ REPLACEMENT

PUMP DETAILS	STATIC WATER LEVEL
300 G.P.M.	14 FEET

NORMAL SURFACE	TYPE OF TOP CASING SEAL
25 FT.	☐ FLANGE ADAPTOR ☒ WELL SEAL ☐ OTHER

TOTAL DEPTH: 51

REFERENCE NUMBER OF CERTIFICATION FROM FOR WATER BEARING WELL:

SIGNATURE (PRIMARY CONTRACTOR)	PERMIT NUMBER	WELL CHLORINATED WATER BEFORE PUMP SETTING	DATE PUMP INSTALLATION MAY COMPLETED	DATE WELL DRILLING MAY COMPLETED
	001150	☐ YES ☒ NO		4/30/2004

I HEREBY CERTIFY THAT THE WELL/PUMP HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES RECOMMENDATIONS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.

SIGNATURE (WELL DRILLER)	PERMIT NUMBER	DATE	SIGNATURE (PUMP INSTALLER)	PERMIT NUMBER	DATE
X	001150		X	001150	

ENCLOSE $50 WATER WELL CERTIFICATION FEE WITHIN 60 DAYS AFTER WELL COMPLETION
MAIL WHITE COPY TO DEPARTMENT OF NATURAL RESOURCES, PO BOX 250, ROLLA, MO 65402
DISTRIBUTION: WHITE/DIVISION CANARY/CONTRACTOR PINK/OWNER

MO 780-0530 (8-95)

APR-21-2005 11:12 DNR GEOLOGY&LAND SURVEY 573 368 2317 P.09
TOTAL P.09

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FAX Transmittal Cover Sheet

Date of Fax: 4-30-02

- ☐ URGENT
- ☐ Priority
- ☐ Routine
- ☐ As Requested
- ☐ FYI

To: Dana Rosenberg

From: SHARON BEISTEL
DNR/DGLS

FAX: 636-939-9757 Phone:

FAX: 573-368-2317 Phone: 573-368-2168

SUBJECT:

COMMENTS: copies of records for well search - most do have directions or maps - hope this helps

RESPONSE EXPECTED:

Total # of pages sent (including transmittal sheet): 14

If problems with FAX call:

MO 780-1406 (10-94)

RECYCLED PAPER

(1)

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

WATER WELL RECORD AND PUMP INFORMATION RECORD

(PLEASE PRINT CLEARLY)

DO NOT FILL IN	
FILE NO. 77004	DATE RECEIVED MAY
CROSS REFERENCE NO.	CHECK 11632
STATE WELL NUMBER A34585	TRANSMITTAL NO. 661676 /DNRID
CHECKED BY	ENTERED BY
APPROVED BY	DATE ENTERED
	DATE APPROVED

OWNER
NAME: Darrell Thies (Thies Farm Greenhouse)
ADDRESS: 4215 North Henley Rd.
CITY: St. Louis
STATE: Mo. ZIP CODE: 63121
TELEPHONE NO.: 426-6869

OWNER STATUS
☐ BUILDING CONTRACTOR ☐ PRIVATE HOME OWNER ☐ DEVELOPER ☒ OTHER (SPECIFY) Farmer ☐ BUILDER

DRILLING CONTRACTOR
NAME: St. Charles Drilling Co.
PUMP CONTRACTOR NAME:

DRILLING EQUIPMENT
☒ MUD ROTARY ☐ CABLE TOOL ☐ REVERSE ROTARY ☐ AUGER (TYPE) ☐ AIR ROTARY ☐ OTHER (SPECIFY)
DATE COMPLETED: 5-1-92
EXISTING CONSTRUCTION NUMBER:

CASING DETAILS
LENGTH: 82 DIAM. (IN.): 6 5/8 WEIGHT OR SDR NO.: 134 DIAM. OF DRILL HOLE: 12"
JOINTS: ☐ THREADED ☒ WELDED ☐ GLUED DRIVE SHOE? ☐ YES ☒ NO
MATERIAL: ☒ STEEL ☐ PLASTIC ☐ OTHER (SPECIFY)

PACKER INFORMATION
USED ON CASING? No PACKER DEPTH (FT.) N/A USED ON CEMENT? ☐ YES ☒ NO PACKER DEPTH (FT.) N/A

CASING GROUTING DETAILS
TYPE OF SEAL: ☒ FULL LENGTH ☐ TOP ☐ BOTTOM
MATERIAL USED: ☐ NEAT CEMENT ☒ BENTONITE ☒ CUTTINGS ☐ OTHER
DEPTH OF SEAL: TOP ___ BOTTOM ___
SACKS OF CEMENT OR BENTONITE USED: TOP ___ BOTTOM ___ FULL LENGTH 6
DRILLING SUSPENDED 72 HRS. AFTER GROUTING? ☐ YES ☒ NO

LINER DETAILS
LENGTH: ___ DIAM. (IN.): ___ WEIGHT OR SDR NO.: ___
DEPTH FROM LAND SURFACE: ___
JOINTS: ☐ THREADED ☐ WELDED ☐ GLUED
MATERIAL: ☐ STEEL ☐ PLASTIC ☐ OTHER (SPECIFY)

LINER GROUTING DETAILS
TYPE OF SEAL: ☐ FULL LENGTH ☐ TOP ☐ BOTTOM
MATERIAL USED: ☐ NEAT CEMENT ☐ BENTONITE ☐ OTHER
DEPTH OF SEAL: TOP ___ BOTTOM ___ FULL LENGTH ___
SACKS OF CEMENT OR BENTONITE: TOP ___ BOTTOM ___ FULL LENGTH ___

SCREEN DETAILS
MAKE OR TYPE: Doerr LENGTH OPEN TO AQUIFER (FT.): 8 SLOT SIZE: 2/32" DIAM. (IN.): 6 5/8"
THICKNESS OF GRAVEL PACK: 6"
GRAVEL SIZE: 1/16 - 1/4 (IN.) FROM (FT.): 82 TO (FT.): 90

YIELD TEST
☐ BAILED ☐ PUMPED ☒ COMPRESSED AIR
HOURS: 1/2 YIELD (GPM): 200
WELL DISINFECTED AFTER DRILLING? ☒ YES ☐ NO
TYPE OF TOP CASING SEAL: ☒ PITLESS ADAPTER ☐ WELL SEAL ☐ OTHER

WATER LEVEL
MEASURE FROM LAND SURFACE STATIC (FT.): 20
DRAW DOWN OR PUMPING LEVEL: DURING YIELD TEST ___ FT. AFTER ___ HOURS
ABANDONED WELL: IS THERE AN ABANDONED WELL? ☐ YES ☒ NO WAS IT PROPERLY SEALED? ☐ YES ☐ NO N/A

COMPLETION DATA
PUMP CAPACITY: 80 GPM 3 HP
SETTING 78 FT. 7 STAGES AT
MAKE OF PUMP: Ste-Rite
TYPE OF DROP PIPE: ☒ PLASTIC ☐ GALVANIZED
WELL DISINFECTED AFTER SETTING PUMP? ☒ YES ☐ NO
PUMP SET BY: ☐ PUMP INSTALLER ☐ OWNER ☒ DRILLER
NOT TO BE INSTALLED UNTIL

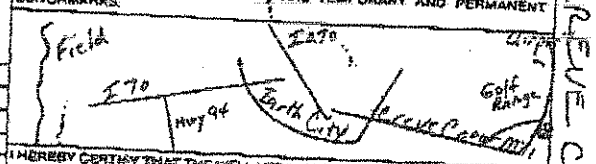
DEPTH FROM LAND SURFACE FEET	TO FEET	FORMATION DESCRIPTION	DIAMETER OF DRILL HOLE
0	70	Clay-Sand	12"
70	90	Gravel	12"

IF YIELD WAS TESTED AT DIFFERENT DEPTHS DURING DRILLING, LIST BELOW.

FEET	GALLONS PER MINUTE
70 - 90	200

LOCATION OF WELL
SHOW LOCATION IN SECTION PLAT: NW SW SW SE
AREA NO. 31
COUNTY St. Louis
SURFACE ELEVATION 450
TWN 46N N. RNG 5E E OR W
SEC. 18
TOTAL DEPTH OF WELL 90

SKETCH EXACT LOCATION OF WELL WITH DISTANCES TO AT LEAST TWO PERMANENT LANDMARKS. ALSO SHOW ABANDONED WELL. FOR MONITORING WELLS, LANDMARKS ARE TEMPORARY AND PERMANENT BENCHMARKS.



CREVE COEUR

NOTES, MILEAGE AND DIRECTION FROM NEAREST TOWN OR HIGHWAY
I70 E. to Earth City. TR South to Creve Coeur Mill Rd. TR follow back to airport. Just before Airport.

I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS AND/OR MONITORING WELLS.

SIGNATURE (WELL DRILLER): [signature]
DATE: 5-1-92
PERMIT NO. (WELL DRILLER): D00134
SIGNATURE (PUMP INSTALLER):
DATE:
PERMIT NO. (PUMP INSTALLER):

INFORMATION TO BE SUPPLIED BY OWNER
PROPOSED USE OF WELL: ☐ DOMESTIC (1 TO 3 CONNECTIONS) ☐ PUBLIC WATER SUPPLY ☐ HEAT PUMP ☐ OTHER (SPECIFY) ☐ MULTIPLE FAMILY ☐ NON-COMMUNITY ☒ IRRIGATION ☐ MONITORING
SIGNATURE (WELL OWNER):
DATE:

FOR MONITORING WELLS ONLY
WELL POINT NUMBER:
WASTE MANAGEMENT (EPA ID-NO.):
MEAN SEA LEVEL ELEVATION OF WELL:
SITE TYPE: ☐ RCRA ☐ SUPERFUND

MO 780-0456 (1-89)
DISTRIBUTION:

(2)

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

OFFICE USE ONLY	
REF. NO. 126120	DATE RECEIVED RECEIVED MAR 2 1
ROUTE	CHECK NO.
STATE WELL NUMBER	TRANSMITTAL NO. 375986
CHECKED BY	CROSS REFERENCE NO.
APPROVED BY	ENTERED Pt.1 ✓ Pt.2 Final
	DATE APPROVED

INFORMATION SUPPLIED BY OWNER

NAME: Tom Lanzer
TELEPHONE:
ADDRESS: 714 Moundale Dr
CITY: Ferguson
STATE: MO
ZIP CODE: 63115
ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE):
CITY:
STATE:
ZIP CODE:

OWNER STATUS: ☒ PRIVATE HOME OWNER ☐ BUILDER ☐ DEVELOPER ☐ OTHER (SPECIFY)

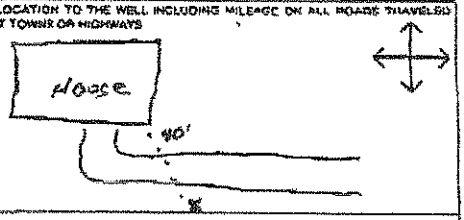
PROPOSED USE OF WELL: ☒ DOMESTIC (1 TO 5 CONNECTIONS) ☐ MULTI-FAMILY ☐ HEATPUMP WATER SUPPLY ☐ HEATPUMP WATER RETURN ☐ IRRIGATION ☐ PUBLIC WATER SUPPLY ☐ OTHER

VARIANCE ISSUED? ☐ YES ☒ NO
DATE ISSUED:
VARIANCE NUMBER: V
SIGNATURE (WELL OWNER):
DATE:

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

LOCATION OF WELL SHOW LOCATION IN SECTION PLAT: T 47 T 26E
SMALLEST ¼ 34
COUNTY: St. Louis
ELEVATION:
AREA NO.: 1
LARGEST ¼
SEC. 35 TWN. 47 N, RNG. 6E E OR W
LAT. 38 51 213 LONG. 90 19 583

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWN OR HIGHWAYS



DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL: New Hope Ferry South From Schaefer Rd to North Prairie 1st House on Right

WELL INSTALLATION CONTRACTOR'S NAME: Imperial Drilling Co
PERMIT NUMBER: A001595WDMH

WELL CONSTRUCTION INFORMATION

CASING DETAILS: LENGTH 109 FT. DIAMETER OF CASING 6¼ IN. WEIGHT OR SCH # 13 lb DIAMETER OF DRILL HOLE 10¼ IN. JOINTS ☐ THREADED ☐ GLUED ☒ WELDED DRIVE SHOE ☒ YES ☒ NO MATERIAL ☐ PLASTIC ☒ STEEL ☐ CONCRETE

CASING PACKER DETAILS: TYPE USED ☐ NONE ☐ RUBBER BOOT ☐ COUPLING ☐ INVERTED BELL DEPTH SET FT.

CASING GROUT DETAILS: POSITION OF SEAL ☒ FULL LENGTH ☒ BOTTOM ☐ TOP; MATERIAL ☐ CEMENT SLURRY BENTONITE ☒ CHIPS ☐ GRANULAR ☐ PELLETS; DEPTH FROM THE SURFACE TO THE TOP OF THE GROUT SEAL 79 FT.; DEPTH FROM THE SURFACE TO THE BOTTOM OF THE GROUT SEAL 109 FT.; METHOD OF INSTALLATION ☒ GRAVITY ☐ HYDRAULIC ☐ VACUUM ☐ MANUFACTURER'S RECOMMENDATION; HYDRAULIC GROUT ☐ THROUGH THROW ☐ BOTTOM ☐ THROUGH CASING

DRILLING SUSPENDED AFTER GROUTING ☐ YES HOURS ☒ NO

LINER DETAILS: PURPOSE OF LINER ☐ USED ONLY TO HOLD BACK THE FORMATION ☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS; MEASURED DEPTH FROM THE SURFACE TO THE TOP OF THE LINER FT.; MEASURED DEPTH FROM THE SURFACE TO THE BOTTOM OF THE LINER FT.; DIAMETER OF LINER IN.; WEIGHT OR SCH #; JOINTS ☐ THREADED ☐ GLUED ☐ WELDED; MATERIAL ☐ STEEL ☐ PLASTIC

LINER PACKER DETAILS: TYPE USED ☐ NONE ☐ RUBBER BOOT; DEPTHS OF: PACKER 1 FT. PACKER 2 FT. PACKER 3 FT.

LINER GROUT DETAILS: POSITION OF SEAL ☐ FULL LENGTH ☐ BOTTOM ☐ TOP; MATERIAL ☐ CEMENT SLURRY BENTONITE ☐ CHIPS ☐ GRANULAR ☐ PELLETS; DEPTH FROM THE SURFACE TO THE TOP OF THE GROUT SEAL FT.; DEPTH FROM THE SURFACE TO THE BOTTOM OF THE GROUT SEAL FT.

ALLUVIAL SCREEN DETAILS: MAKE OR TYPE; SLOT SIZE; GRAVEL PACK; GRAIN SIZE; THICKNESS; FROM FT. TO FT.

DEPTH	FORMATION DESCRIPTION
0-67	Clay
67-72	Broken sandy lime
72-216	Flinty lime
216-294	Lime, some sandy some shaly
294-381	Flinty lime w/ Lime w/k shale seams
381-412	Shaley lime w/ shale
T.D	412

YIELD TEST: ☒ COMPRESSED AIR ☐ BAILED ☐ OTHER; YIELD 15/hr; STATIC WATER LEVEL 220 FEET FROM SURFACE; DRAW DURING YIELD TEST DOWN FEET AFTER HOURS; ABANDONED WELL? ☐ YES ☒ NO; WAS THE ABANDONED WELL PROPERLY SEALED ☐ YES ☒ NO

WELL DISINFECTED AFTER DRILLING? ☐ YES ☒ NO
TYPE OF TOP CASING SEAL: ☒ PITLESS ADAPTOR ☐ WELL SEAL ☐ OTHER
PUMP SET BY ☒ DRILLER ☐ PUMP INSTALLER ☐ OWNER
NOT TO BE INSTALLED UNTIL
DATE WELL CONSTRUCTION WAS COMPLETED: 3-17-95

I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.
SIGNATURE (WELL DRILLER): Donald L. Gaines A001595WDMH
DATE: 3-17-95

INFORMATION SUPPLIED BY PUMP INSTALLATION CONTRACTOR

PUMP CONTRACTOR'S NAME: Imperial Drilling Co
PERMIT NUMBER: A001595WDMH

COMPLETION DATA: PUMP DETAILS 5 G.P.M. 1 HP; PUMP SET AT 400 FT.; WELL DISINFECTED AFTER SETTING PUMP ☒ YES ☐ NO; TYPE OF DROP PIPE ☒ PLASTIC ☐ GALVANIZED; DATE PUMP INSTALLATION WAS COMPLETED 3/22/95

I HEREBY CERTIFY THAT THE PUMP HEREIN DESCRIBED WAS INSTALLED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.
SIGNATURE (PUMP INSTALLER): Steve L. Quinn 002339A
DATE: 3/22/95

MO 780-0200 (2-94) DISTRIBUTION: WHITE/DRILLER CANARY/DIVISION PINK/WELL OWNER

(B)

MIO

CK#3022

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
WATER WELL RECORD

MAIL CANARY COPY TO:
WELL DRILLER'S FUND
P.O. BOX 250
ROLLA, MISSOURI 65401
ENCLOSE $15.00 WATER WELL CERTIFICATION FEE WITHIN 60 DAYS AFTER WELL COMPLETION.

REC'D AUG 1988

DO NOT FILL IN
STATE WELL NO. 1988A05790
OTHER NO. 456141

OWNER	NAME: Veterans Septic Tank Service	ADDRESS: 13010 Gist, Bridgeton, Mo. 63044
DRILLING CONTRACTOR	NAME: St. Charles Drilling Co.	ADDRESS: 6349 Old Hwy. 94 So., St. Charles, Mo. 63303
LOCATION AND DATE	MILEAGE AND DIRECTION FROM NEAREST TOWN OR HIGHWAY: Hwy. 70 to Earth City to St. Charles Rock Rd.	DATE COMPLETED: 8-12-88

PROPOSED USE OF WELL: ☐ DOMESTIC ☐ INDUSTRIAL ☐ AIR CONDITIONING ☐ TEST WELL (SEALED AFTER ABANDONED ☐ YES ☐ NO) ☒ BUSINESS ESTABLISHMENT ☐ FARM ☐ IRRIGATION ☐ OTHER (SPECIFY)

DRILLING EQUIPMENT: ☐ MUD ROTARY ☐ REVERSE ROTARY ☒ AIR ROTARY ☐ CABLE TOOL ☐ OTHER (SPECIFY)

CASING DETAILS	DEPTH (FT.)	DIAM. (IN.)	WEIGHT/FT. OR SCHEDULE	SPACER GUIDES USED	JOINTS	~~DRIVE NOLE~~ Casing Shoe	MATERIAL
	30	6.9	ASTM480	☐ YES ☒ NO	☐ THREADED ☒ WELDED	☒ YES ☐ NO	☐ STEEL ☐ PLASTIC ☒ OTHER PVC

GROUTING DETAILS	TYPE OF SEAL	MATERIAL USED	DEPTH OF SEAL	SACKS OF CEMENT OR BENTONITE USED	DRILLING SUSPENDED 72 HRS. AFTER GROUTING
	☐ FULL LENGTH ☐ TOP ☐ BOTTOM	☐ NEAT CEMENT ☒ BENTONITE	TOP BOTTOM	TOP FULL LENGTH BOTTOM	☐ YES ☒ NO

SCREEN DETAILS	MAKE				LENGTH OPEN TO AQUIFER (FT.)	
	SLOT SIZE	DIAM (IN.)	IF GRAVEL PACKED:	DIAMETER OF WELL INCLUDING GRAVEL PACK (IN.)	GRAVEL SIZE (IN.)	FROM (FT.) / TO (FT.)

YIELD TEST				
	☐ BAILED ☐ PUMPED	☒ COMPRESSED AIR	HOURS 1/2	YIELD (GPM) 30

WATER LEVEL	MEASURE FROM LAND SURFACE STATIC (FT.)	DURING YIELD TEST	DEPTH OF COMPLETED WELL IN FEET BELOW GROUND SURFACE
	25	N/A (FEET) AFTER HOURS	245

COMPLETION DATA	PUMP CAPACITY AT SETTING	TYPE OF TOP CASING SEAL	WELL DISINFECTED AFTER DRILLING	WELL DISINFECTED AFTER SETTING PUMP	IS THERE AN ABANDONED WELL?	WAS IT PROPERLY SEALED?
	11 GPM; TDH; 320 FEET	Pitless Adapter	☒ YES ☐ NO	☒ YES ☐ NO	☐ YES ☒ NO	N/A ☐ YES ☐ NO

DEPTH FROM LAND SURFACE FEET	TO FEET	FORMATION DESCRIPTION	DIAM. OF DRILL HOLE
0	50	Clay	8 5/8
50	80	Lime	8 5/8
80	245	Lime	5 1/8

See Map!

9-23-88 jb

LOCATION OF WELL (SHOW LOCATION IN SECTION PLAT) COUNTY St. Louis

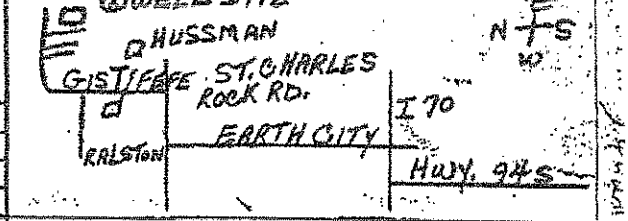
NE SE SE NE

NE ¼ NE ¼ SEC. 1 T 46N N, R 5E E W

TOTAL DEPTH 245

ELEV. 600

Sketch exact location of well with distances, to at least two permanent landmarks. Also show abandoned well.



IF YIELD WAS TESTED AT DIFFERENT DEPTHS DURING DRILLING, LIST BELOW

FEET	GALLONS PER MINUTE
240	30

I hereby certify that I directed that the well herein described be constructed in accordance with Department of Natural Resources requirements for nonpublic water supply wells.

SIGNATURE (WELL OWNER) | DATE

I hereby certify that the well herein described was constructed in accordance with Department of Natural Resources requirements for construction of nonpublic water supply wells.

SIGNATURE (WELL DRILLER) [signature] | DATE 8-27-88

PERMIT NO. A00152

MO 780-0230 (1-67) DISTRIBUTION: WHITE/DRILLER'S COPY CANARY/SEE AT TOP OF PAGE PINK/WELL OWNER

(4)

JERRY KEEVEN

ch# 30609

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

OFFICE USE ONLY	DATE RECEIVED
REF. NO. 169337	RECEIVED APR 23 1997
C.R. NO. 178370	CHECK NO. 30609
STATE WELL NUMBER A60916	TRANSMITTED 104034
ENTERED Ph 1 ✓ Ph 2 Ph N	APPROVED BY

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

OWNER NAME: BOB SCHRODER
TELEPHONE: 314 240 4900
OWNER ADDRESS: 805 Palm
CITY: St Charles
STATE: Mo
ZIP CODE: 633.01
ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE):
CITY:
STATE:
ZIP CODE:

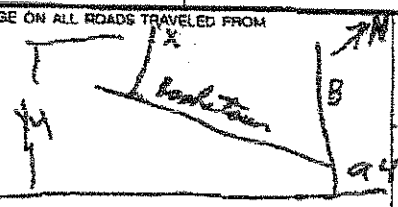
CASING DEPTH DETERMINED BY THE D.N.R.
☐ NO
☐ YES, ATTACH A COPY OF THE LETTER
IF VARIANCE WAS GRANTED PLEASE ATTACH A COPY

PROPOSED USE OF WELL
☐ DOMESTIC
☐ MULTI-FAMILY
☐ OPEN-LOOP HEAT PUMP WATER SUPPLY
☐ OPEN-LOOP HEAT PUMP WATER RETURN
☐ LIVESTOCK
☐ OTHER
☑ IRRIGATION
☐ NON COMMUNITY
☐ PUBLIC WATER SUPPLY

ABANDONED WELL? ☐ YES ☑ NO
WAS THE ABANDONED WELL PROPERLY SEALED ☐ YES ☐ NO

INFORMATION VERIFIED BY OWNER SIGNATURE (WELL OWNER): X
DATE: 4 18 97

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS



to St Charles 4 mile

LOCATION OF WELL: St. Charles
LAT. ___
LONG. ___
AREA: Sum 188A
ELEV. ___
COUNTY: St Charles

SMALLEST ___ x ___ x ___ LARGEST
SEC. S188 TWN. 47 N RNG. 5 E OR W

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL: 4 mi SW on Bookstown Rd to NW 1000' into field 150 SE of old house

DRILLER NOTES: water supply well for Dry well

CASING DETAILS

LENGTH	O.D. OF CASING	WEIGHT OR SDR #	DIAMETER OF DRILL HOLE	MATERIAL	DRIVE SHOE	CASING DRIVEN	PACKER USED ON PVC CASING	DEPTH SET
37' FT.	4" IN.	26	30" IN.	☐ STEEL ☐ OTHER ☑ PLASTIC ☐ CONCRETE	☐ YES ☑ NO	☐ YES ☑ NO	☐ NONE ☐ COUPLING ☐ RUBBER BOOT ☐ INVERTED BELL	

CASING GROUT DETAILS

POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☑ TOP
MATERIAL: CEMENT ☑ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ CHIPS ☐ GRANULAR ☐ PELLETS
NUMBER OF SACKS USED: 4 yards
LBS PER SACK:
METHOD OF INSTALLATION: ☑ GRAVITY ☐ POSITIVE DISPLACEMENT; PRESSURE GROUT ☐ THROUGH TREMIE ☐ OTHER; ☑ OPEN HOLE ☐ TREMIE ☐ THROUGH CASING
DRILLING SUSPENDED ☐ NO ☐ YES ___ HRS.

LINER DETAILS

☐ USED ONLY TO HOLD BACK THE FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
☐ USED TO SEAL OUT RUST

LENGTH ___ FT. O.D. OF LINER ___ IN. WEIGHT OR SDR # ___ MATERIAL ☐ PLASTIC ☐ STEEL
DEPTH FROM THE SURFACE TO THE TOP OF THE LINER ___ FT.
PACKER USED ON PVC LINER ☐ NONE ☐ RUBBER BOOT
DEPTHS SET

LINER GROUT DETAILS

POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☐ TOP
MATERIAL: CEMENT ☐ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ CHIPS ☐ GRANULAR ☐ PELLETS
NUMBER OF SACKS USED
LBS. PER SACK
METHOD OF INSTALLATION ☐ AS LINER IS INSTALLED ☐ TREMIE

DEPTH FROM	DEPTH TO	FORMATION AND YIELD DESCRIPTION
0	35'	silty clay
35	37'	sand

TOTAL DEPTH:

GRAVEL PACK THICKNESS FROM 20 FT TO 35 FT
WILL A CENTRIFUGAL PUMP BE INSTALLED ☐ YES ☐ NO

HEAT PUMP DETAILS
AMOUNT OF WATER HEAT PUMP UTILIZES
METHOD OF WATER DISPOSAL ☐ SURFACE ☐ RETURN WELL

REFERENCE NUMBER OF CERTIFICATION FORM FOR WATER RETURN WELL:

WELL YIELD 100 GPM
WELL CHLORINATED AFTER DRILLING ☐ YES ☐ NO

COMPLETION DATA
PUMP DETAILS ___ G.P.M. PUMP SET AT ___ FT.
STATIC WATER LEVEL ___ FEET FROM SURFACE
TYPE OF TOP CASING SEAL
☐ PITLESS ADAPTOR
☐ WELL SEAL
☐ OTHER
WELL CHLORINATED AFTER SETTING PUMP ☐ YES ☐ NO
DATE PUMP INSTALLATION WAS COMPLETED
DATE WELL DRILLING WAS COMPLETED: 4 18 97

MARY CONTRACTOR'S NAME
PERMIT NUMBER

I HEREBY CERTIFY THAT THE WELL/PUMP HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.

SIGNATURE (WELL DRILLER): X
PERMIT NUMBER: PW2072HP
DATE
SIGNATURE (PUMP INSTALLER): X
PERMIT NUMBER
DATE

(5)

VARIANCE ~~[illegible]~~ # 963 ck # 31481

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

OFFICE USE ONLY	DATE RECEIVED
REF. NO. 169355	MAY 26 1998
C.R. NO. 198830	CHECK NO. 31481
STATE WELL NUMBER A71356	TRANSACTION NO. 556206
ENTERED Ph 1 Ph 2 Ph 3	APPROVED BY [illegible] ROUTE

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

OWNER NAME: Larry Kevin Keeven
TELEPHONE: 314 839 5019
OWNER ADDRESS: Po Box 247
CITY: O'fallon
STATE: Mo
ZIP CODE: 63366
ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE):
CITY: St Charles
STATE: Mo
ZIP CODE:

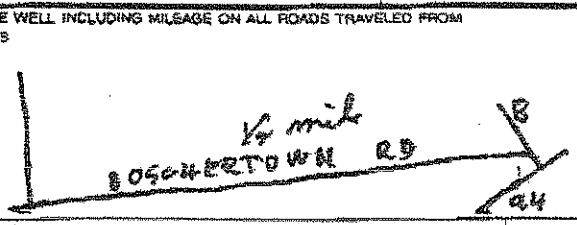
CASING DEPTH DETERMINED BY THE D.N.R.
☐ NO
☐ YES, ATTACH A COPY OF THE LETTER
IF VARIANCE WAS GRANTED PLEASE ATTACH A COPY

PROPOSED USE OF WELL
☐ DOMESTIC ☐ OTHER
☐ MULTI-FAMILY ☒ IRRIGATION
☐ OPEN-LOOP HEAT PUMP WATER SUPPLY ☐ NON COMMUNITY
☐ OPEN-LOOP HEAT PUMP WATER RETURN ☐ PUBLIC WATER SUPPLY
☐ LIVESTOCK

ABANDONED WELL? ☐ YES ☒ NO
WAS THE ABANDONED WELL PROPERLY SEALED ☐ YES ☐ NO

INFORMATION VERIFIED BY OWNER SIGNATURE (WELL OWNER): X
DATE: 5,20,98

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS



LOCATION OF WELL: St Charles
LAT. ___ LONG. ___
AREA: SURV 187 A
ELEV: 445
COUNTY: St Charles
SMALLEST: SENWSW LARGEST
SEC. 13 TWN. 47 N RNG. 5 E OR W

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL:
DRILLER NOTES:

CASING DETAILS

LENGTH	O.D. OF CASING	WEIGHT OR SDR #	DIAMETER OF DRILL HOLE	MATERIAL	DRIVE SHOE	CASING DRIVEN	PACKER USED ON PVC CASING	DEPTH SET
85 FT.	16 IN.	SDR 26	30 IN.	☒ PLASTIC ☐ STEEL ☐ CONCRETE ☐ OTHER	☐ YES ☒ NO	☐ YES ☒ NO	☒ NONE ☐ COUPLING ☐ RUBBER BOOT ☐ INVERTED BELL	

CASING GROUT DETAILS

POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☒ TOP
MATERIAL: VARIANCE 963 — CEMENT ☐ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ CHIPS ☐ GRANULAR ☐ PELLETS
NUMBER OF SACKS USED: 4405
LBS PER SACK:
METHOD OF INSTALLATION: ☒ GRAVITY ☐ POSITIVE DISPLACEMENT
PRESSURE GROUT: ☐ THROUGH TREMIE ☐ OTHER ☐ OPEN HOLE ☐ TREMIE ☐ THROUGH CASING
DRILLING SUSPENDED: ☐ NO ☐ YES ___ HRS.

LINER DETAILS

☐ USED ONLY TO HOLD BACK THE FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
☐ USED TO SEAL OUT RUST

LENGTH ___ FT. O.D. OF LINER ___ IN. WEIGHT OR SDR # MATERIAL ☐ PLASTIC ☐ STEEL
DEPTH FROM THE SURFACE TO THE TOP OF THE LINER ___ FT.
PACKER USED ON PVC LINER ☐ NONE ☐ RUBBER BOOT
DEPTHS SET

LINER GROUT DETAILS

POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☐ TOP
MATERIAL: CEMENT ☐ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ CHIPS ☐ GRANULAR ☐ PELLETS
NUMBER OF SACKS USED:
LBS. PER SACK:
METHOD OF INSTALLATION: ☐ AS LINER IS INSTALLED ☐ TREMIE

DEPTH FROM	DEPTH TO	FORMATION AND YIELD DESCRIPTION
0	8	silt
8	51	medium sand
51	85	med to coarse sand

TOTAL DEPTH: 85'

GRAVEL PACK THICKNESS: FROM 20 FT TO 85 FT — WILL A CENTRIFUGAL PUMP BE INSTALLED ☐ YES ☐ NO

HEAT PUMP DETAILS: AMOUNT OF WATER HEAT PUMP UTILIZES; METHOD OF WATER DISPOSAL ☐ SURFACE ☐ RETURN WELL

REFERENCE NUMBER OF CERTIFICATION FORM FOR WATER RETURN WELL:

WELL YIELD:
WELL CHLORINATED AFTER DRILLING ☒ YES ☐ NO

COMPLETION DATA
PUMP DETAILS: ___ G.P.M.
PUMP SET AT ___ FT.
STATIC WATER LEVEL: 6 FEET FROM SURFACE
TYPE OF TOP CASING SEAL: ☐ PITLESS ADAPTOR ☐ WELL SEAL ☐ OTHER

PRIMARY CONTRACTOR'S NAME: SART SISK
PERMIT NUMBER:
WELL CHLORINATED AFTER SETTING PUMP ☐ YES ☐ NO
DATE PUMP INSTALLATION WAS COMPLETED:
DATE WELL DRILLING WAS COMPLETED: 5-6-98

I HEREBY CERTIFY THAT THE WELL/PUMP HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.

SIGNATURE (WELL DRILLER)	PERMIT NUMBER	DATE	SIGNATURE (PUMP INSTALLER)	PERMIT NUMBER	DATE
X [signature]	2032	5,21,98 X			

MO 780-0228 (10-96)
DISTRIBUTION: WHITE/DIVISION CANARY/CONTRACTOR PINK/OWNER
MAIL WHITE COPY TO: DEPARTMENT OF NATURAL RESOURCES, P.O. BOX 250, ROLLA, MO 65402

(6)

Variance 1117

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

OFFICE USE ONLY
REF. NO. 28382
DATE RECEIVED
STATE WELL NUMBER
TRANSMITTAL NO.
ENTERED BY
APPROVED BY

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

OWNER NAME: Virginia Thoele Thoele
TELEPHONE: 314-724-6111
OWNER ADDRESS: 1020 Hawthorne
CITY: St. Charles
STATE: Mo
ZIP CODE: 63301
ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE): 3527 N HWY 94
CITY: St. Charles
STATE: Mo
ZIP CODE: 63301

CASING DEPTH DETERMINED BY THE D.N.R.
☒ NO
☐ YES, ATTACH A COPY OF THE LETTER
IF VARIANCE WAS GRANTED PLEASE ATTACH A COPY 1117

PROPOSED USE OF WELL
☒ DOMESTIC
☐ MULTI-FAMILY
☐ OPEN-LOOP HEAT PUMP WATER SUPPLY
☐ OPEN-LOOP HEAT PUMP WATER RETURN
☐ LIVESTOCK
☐ OTHER
☐ IRRIGATION
☐ NON COMMUNITY
☐ PUBLIC WATER SUPPLY

ABANDONED WELL? ☐ YES ☒ NO
WAS THE ABANDONED WELL PROPERLY SEALED ☐ YES ☐ NO

INFORMATION VERIFIED BY OWNER SIGNATURE (WELL OWNER, OPTIONAL): X
DATE

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

LOCATION OF WELL: St Charles
LAT. ___ ° ___ ___
LONG. ___ ° ___ ___
COUNTY: St. Charles

SMALLEST: NW SW SW ¼ LARGEST: ___ ¼
SEC. 16 TWN. 47 N RNG. 5 ☒ OR W

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL SITE: well is N. of garage

DRILLER NOTES:

CASING DETAILS	LENGTH	O.D. OF CASING	WEIGHT OR SDR #	DIAMETER OF DRILL HOLE	MATERIAL	DRIVE SHOE	CASING DRIVEN	PACKER USED ON PVC CASING	DEPTH SET
	30½ FT.	6 5/8 IN.	40 PVC	12 IN.	☒ PLASTIC ☐ STEEL ☐ CONCRETE ☐ OTHER	☐ YES ☐ NO	☐ YES ☐ NO	☐ NONE ☐ COUPLING ☐ RUBBER BOOT ☐ INVERTED BELL	

CASING GROUT DETAILS	POSITION OF SEAL	MATERIAL	NUMBER OF SACKS USED	METHOD OF INSTALLATION	PRESSURE GROUT	DRILLING SUSPENDED
	☒ FULL LENGTH ☐ BOTTOM ☐ TOP	CEMENT: ☐ TYPE 1 ☐ HI-EARLY; BENTONITE: ☐ SLURRY ☒ CHIPS ☐ GRANULAR ☐ PELLETS	18 LBS PER SACK 50	☒ GRAVITY ☐ POSITIVE DISPLACEMENT ☐ OPEN HOLE ☐ TREMIE ☐ THROUGH CASING	☐ THROUGH TREMIE ☐ OTHER	☐ NO ☐ YES ___ HRS.

LINER DETAILS		LENGTH	O.D. OF LINER	WEIGHT OR SDR #	MATERIAL
	☐ USED ONLY TO HOLD BACK THE FORMATION ☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS ☐ USED TO SEAL OUT RUST	FT.	IN.		☐ PLASTIC ☐ STEEL

DEPTH FROM THE SURFACE TO THE TOP OF THE LINER FT.
PACKER USED ON PVC LINER ☐ NONE ☐ RUBBER BOOT
DEPTHS SET

LINER GROUT DETAILS	POSITION OF SEAL	MATERIAL	NUMBER OF SACKS USED	LBS. PER SACK
	☐ FULL LENGTH ☐ BOTTOM ☐ TOP	CEMENT: ☐ TYPE 1 ☐ HI-EARLY; BENTONITE: ☐ SLURRY ☐ CHIPS ☐ GRANULAR ☐ PELLETS	METHOD OF INSTALLATION: ☐ AS LINER IS INSTALLED ☐ TREMIE	

WELL YIELD 25 +
WELL CHLORINATED AFTER DRILLING ☒ YES ☐ NO

GRAVEL PACK THICKNESS: FROM 25 FT TO 40½ FT
WILL A CENTRIFUGAL PUMP BE INSTALLED ☐ YES ☒ NO

HEAT PUMP DETAILS: AMOUNT OF WATER HEAT PUMP UTILIZES
METHOD OF WATER DISPOSAL ☐ SURFACE ☐ RETURN WELL

REFERENCE NUMBER OF CERTIFICATION FORM FOR WATER RETURN WELL:

COMPLETION DATA
PUMP DETAILS: 15 G.P.M. PUMP SET AT 40 FT.
STATIC WATER LEVEL: 22 FEET FROM SURFACE
TYPE OF TOP CASING SEAL
☒ PITLESS ADAPTOR
☐ WELL SEAL
☐ OTHER

DEPTH FROM	DEPTH TO	FORMATION AND YIELD DESCRIPTION
0	17	clay w/ sand
17	18	sand
18	22	sand & clay
22	26	silt & sand
10' PVC 6" screen 20 slot		

TOTAL DEPTH: 40½'

SIGNATURE (PRIMARY CONTRACTOR)
PERMIT NUMBER: WP 1493
WELL CHLORINATED AFTER SETTING PUMP ☒ YES ☐ NO
DATE PUMP INSTALLATION WAS COMPLETED: 5-30-99
DATE WELL DRILLING WAS COMPLETED: 3-25-99

I HEREBY CERTIFY THAT THE WELL/PUMP HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.

SIGNATURE (WELL DRILLER)	PERMIT NUMBER	DATE	SIGNATURE (PUMP INSTALLER)	PERMIT NUMBER	DATE
X		4-12-99	X		

DISTRIBUTION: WHITE/DIVISION CANARY/CONTRACTOR PINK/OWNER

(7)

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

OFFICE USE ONLY	DATE RECEIVED
REF. NO. 251797	
C.R. NO.	CHECK NO. JUL 20 2000 56052
STATE WELL NUMBER A946b6D	REVENUE NO. 072000
ENTERED Pt 1	APPROVED BY	ROUTE

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

OWNER NAME: NATIONAL CART / ANNERSTALL, LLC
TELEPHONE:
CASING DEPTH DETERMINED BY DNR ☐ YES ☑ NO IF YES, ATTACH A COPY
VARIANCE GRANTED BY DNR ☐ YES ☐ NO IF YES, NUMBER _____ ATTACH A COPY

OWNER ADDRESS: 2080 EXCHANGE DRIVE | CITY: St. CHARLES | STATE: Mo | ZIP CODE: 63303

ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE): BOSCHERTOWN ROAD | CITY: St. CHARLES | STATE: Mo | ZIP CODE: 63301

PROPOSED USE OF WELL:
☐ DOMESTIC ☐ IRRIGATION
☐ MULTI-FAMILY ☐ NON COMMUNITY
☐ OPEN-LOOP HEAT PUMP WATER SUPPLY ☑ PUBLIC WATER SUPPLY
☐ OPEN-LOOP HEAT PUMP WATER RETURN alluvial
☐ OTHER _____

ABANDONED WELL? ☐ YES ☑ NO
WAS THE ABANDONED WELL PROPERLY PLUGGED ☐ YES ☐ NO
DATE PLUGGED

INFORMATION VERIFIED BY OWNER SIGNATURE (WELL OWNER, OPTIONAL): X
DATE

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

National Cart ← West
Boschertown Rd
6
94 S

LOCATION OF WELL: St Charles
LAT. ___ ° ___ ' ___ "
LONG. ___ ° ___ ' ___ "
AREA
ELEV. 450
COUNTY St CHARLES

SMALLEST SW NW SE LARGEST
U.S. SURVEY
SEC. 20B TWN. 47 N RNG. 5 (E OR W)

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL SITE
DRILLER NOTES:

CASING DETAILS	LENGTH	O.D. OF CASING	WEIGHT OR SDR #	DIAMETER OF DRILL HOLE	MATERIAL	DRIVE SHOE	CASING DRIVEN	PACKER USED ON PVC CASING	DEPTH SET
	50 FT.	8" IN.	40	30 IN.	☑ STEEL ☐ PLASTIC ☐ CONCRETE	☐ YES ☑ NO	☐ YES ☑ NO	☐ NONE ☐ COUPLING ☐ RUBBER BOOT ☐ INVERTED BELL	

CASING GROUT DETAILS
POSITION OF SEAL: ☑ FULL LENGTH ☐ BOTTOM ☐ TOP
MATERIAL: CEMENT ☑ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ CHIPS ☐ GRANULAR ☐ PELLETS
NUMBER OF SACKS USED: 4 yds
LBS PER SACK
METHOD OF INSTALLATION: ☐ GRAVITY ☐ POSITIVE DISPLACEMENT ☐ OPEN HOLE ☐ TREMIE; PRESSURE GROUT ☐ THROUGH TREMIE ☑ THROUGH CASING
DRILLING SUSPENDED ☐ NO ☑ YES 72 HRS. +

LINER DETAILS
☐ USED ONLY TO HOLD BACK THE FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
☐ USED TO SEAL OUT RUST
LENGTH FT. | O.D. OF LINER IN. | WEIGHT OR SDR # | MATERIAL ☐ PLASTIC ☐ STEEL
DEPTH FROM THE SURFACE TO THE TOP OF THE LINER FT.
PACKER USED ON PVC LINER ☐ NONE ☐ RUBBER BOOT
DEPTHS SET

LINER GROUT DETAILS
POSITION OF SEAL: ☐ FULL LENGTH ☐ BOTTOM ☐ TOP
MATERIAL: CEMENT ☐ TYPE 1 ☐ HI-EARLY; BENTONITE ☐ SLURRY ☐ CHIPS ☐ GRANULAR ☐ PELLETS
NUMBER OF SACKS USED | LBS. PER SACK
METHOD OF INSTALLATION ☐ AS LINER IS INSTALLED ☐ TREMIE

DEPTH FROM	DEPTH TO	FORMATION AND YIELD DESCRIPTION
0	5	Dirt
5	15	Sand
15	80	Sand & Gravel

WELL YIELD 500
WELL CHLORINATED AFTER DRILLING ☑ YES ☐ NO
GRAVEL PACK THICKNESS: FROM 80 FT TO 40 FT
WILL A CENTRIFUGAL PUMP BE INSTALLED ☐ YES ☑ NO
SCREEN LENGTH: FROM 80 FT TO 50 FT

☑ NEW PUMP ☐ REPLACEMENT
PUMP DETAILS: 50 G.P.M. PUMP SET AT 63 FT.
STATIC WATER LEVEL: 10 FEET FROM SURFACE

HEAT PUMP DETAILS: AMOUNT OF WATER HEAT PUMP UTILIZES | METHOD OF WATER DISPOSAL ☐ SURFACE ☐ RETURN WELL

TYPE OF TOP CASING SEAL
☑ PITLESS ADAPTOR
☐ WELL SEAL
☐ OTHER _____

TOTAL DEPTH: 80

REFERENCE NUMBER OF CERTIFICATION FORM FOR WATER RETURN WELL:
SIGNATURE (PRIMARY CONTRACTOR) | PERMIT NUMBER
WELL CHLORINATED AFTER SETTING PUMP ☑ YES ☐ NO
DATE PUMP INSTALLATION WAS COMPLETED: 7-7-00
DATE WELL DRILLING WAS COMPLETED: 5-00

I HEREBY CERTIFY THAT THE WELL/PUMP HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.

SIGNATURE (WELL DRILLER)	PERMIT NUMBER	DATE	SIGNATURE (PUMP INSTALLER)	PERMIT NUMBER	DATE
X	0011202WPH	7-7-00	X	0011202WPH	7-7-00

MO 780-0230 (6-99) DISTRIBUTION: WHITE/DIVISION CANARY/CONTRACTOR PINK/OWNER

(8)

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
(573) 368-2165

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

OFFICE USE ONLY	DATE RECEIVED
REF. NO. 225700	JUL 26 1999
C.R. NO.	CHECK NO. 5744
STATE WELL NUMBER A 28197	TRANSMITTAL NO. 072699
ENTERED Ph 1 SB Ph 2 SB	APPROVED BY PCD ROUTE / /

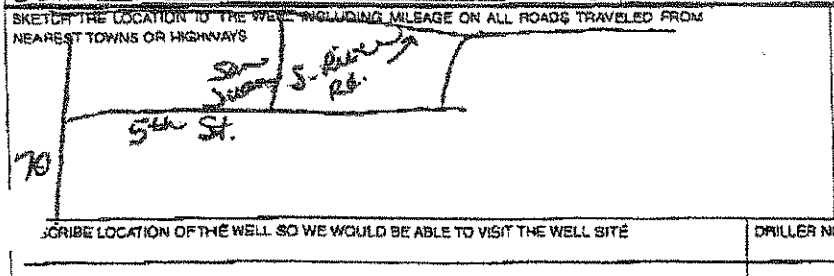
INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

OWNER NAME: Kurth / Laforge Corp.
TELEPHONE: 314-940-0073
CASING DEPTH DETERMINED BY DNR ☐ YES ☑ NO IF YES, ATTACH A COPY
OWNER ADDRESS: 2115 South Rim Rd
CITY: St Charles STATE: Mo ZIP CODE: 63303
VARIANCE GRANTED BY DNR ☐ YES ☐ NO IF YES, NUMBER _____ ATTACH A COPY
ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE)
CITY STATE ZIP CODE

PROPOSED USE OF WELL
☑ DOMESTIC ☐ IRRIGATION
☐ MULTI-FAMILY ☐ NON COMMUNITY
☐ OPEN-LOOP HEAT PUMP WATER SUPPLY ☐ PUBLIC WATER SUPPLY
☐ OPEN-LOOP HEAT PUMP WATER RETURN
☐ OTHER _____

ABANDONED WELL? ☐ YES ☑ NO
WAS THE ABANDONED WELL PROPERLY PLUGGED ☐ YES ☐ NO
DATE PLUGGED
INFORMATION VERIFIED BY OWNER SIGNATURE (WELL OWNER, OPTIONAL) X
DATE

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS



LOCATION OF WELL
LAT. ___ ° ___ ' ___ "
LONG. ___ ° ___ ' ___ "
AREA A
ELEV 450
COUNTY St Louis
SMALLEST SE SE LARGEST
SEC. 6 TWN. 46 N RNG. 5 E OR W

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL SITE
DRILLER NOTES:

CASING DETAILS	LENGTH	O.D. OF CASING	WEIGHT OR SDR #	DIAMETER OF DRILL HOLE	MATERIAL	DRIVE SHOE	CASING DRIVEN	PACKER USED ON PVC CASING	DEPTH SET
	105 FT.	6 5/8 IN.	.188	8 5/8 IN.	☑ STEEL ☐ PLASTIC ☐ CONCRETE	☑ YES ☐ NO	☐ YES ☑ NO	☑ NONE ☐ COUPLING ☐ RUBBER BOOT ☐ INVERTED BELL	

CASING GROUT DETAILS	POSITION OF SEAL	MATERIAL	NUMBER OF SACKS USED	METHOD OF INSTALLATION	PRESSURE GROUT	DRILLING SUSPENDED
	☐ FULL LENGTH ☑ BOTTOM ☐ TOP	CEMENT: ☑ TYPE 1 ☐ HI-EARLY; BENTONITE: ☐ SLURRY ☐ GRANULAR ☐ CHIPS ☐ PELLETS	5 LBS PER SACK 94	☐ GRAVITY ☐ POSITIVE DISPLACEMENT ☐ OPEN HOLE ☑ TREMIE	☐ THROUGH TREMIE ☐ THROUGH CASING	☑ NO ☐ YES ____ HRS.

LINER DETAILS	LENGTH	O.D. OF LINER	WEIGHT OR SDR #	MATERIAL
☐ USED ONLY TO MOLD BACK THE FORMATION ☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS ☐ USED TO SEAL OUT RUST	FT.	IN.		☐ PLASTIC ☐ STEEL

DEPTH FROM THE SURFACE TO THE TOP OF THE LINER FT.
PACKER USED ON PVC LINER ☐ NONE ☐ RUBBER BOOT
DEPTHS SET

LINER GROUT DETAILS	POSITION OF SEAL	MATERIAL	NUMBER OF SACKS USED	LBS. PER SACK	METHOD OF INSTALLATION
	☐ FULL LENGTH ☐ BOTTOM ☐ TOP	CEMENT: ☐ TYPE 1 ☐ HI-EARLY; BENTONITE: ☐ SLURRY ☐ GRANULAR ☐ CHIPS ☐ PELLETS			☐ AS LINER IS INSTALLED ☐ TREMIE

DEPTH FROM	DEPTH TO	FORMATION AND YIELD DESCRIPTION
0	34	SAND
34	50	WEATHERED
50	100	WHITE
100	160	GREY
160	220	SHALEY LIME
220	400	LIMESTONE

TOTAL DEPTH: 400

WELL YIELD 6 gpm
WELL CHLORINATED AFTER DRILLING ☑ YES ☐ NO
☐ NEW PUMP ☐ REPLACEMENT
PUMP DETAILS 5 G.P.M. PUMP SET AT 380 FT.
STATIC WATER LEVEL 210 FEET FROM SURFACE
GRAVEL PACK THICKNESS FROM FT TO FT
WILL A CENTRIFUGAL PUMP BE INSTALLED ☐ YES ☐ NO
SCREEN LENGTH FROM FT TO FT
HEAT PUMP DETAILS: AMOUNT OF WATER HEAT PUMP UTILIZES; METHOD OF WATER DISPOSAL ☐ SURFACE ☐ RETURN WELL
TYPE OF TOP CASING SEAL ☑ PITLESS ADAPTOR ☐ WELL SEAL ☐ OTHER _____
REFERENCE NUMBER OF CERTIFICATION FORM FOR WATER RETURN WELL:
WELL CHLORINATED AFTER SETTING PUMP ☑ YES ☐ NO
DATE PUMP INSTALLATION WAS COMPLETED 7-13-99
DATE WELL DRILLING WAS COMPLETED 7-8-99

SIGNATURE (PRIMARY CONTRACTOR) Flynn Drilling Co. PERMIT NUMBER 00112drlP 11

I HEREBY CERTIFY THAT THE WELL/PUMP HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS.

SIGNATURE (WELL DRILLER)	PERMIT NUMBER	DATE	SIGNATURE (PUMP INSTALLER)	PERMIT NUMBER	DATE
X	00112drlP 11	7-22-99	X	00112drlP 4	7-22-99

MO 780-0230 (2-89)

DISTRIBUTION: WHITE/DIVISION CANARY/CONTRACTOR PINK/OWNER
MAIL WHITE COPY TO: DEPARTMENT OF NATURAL RESOURCES, P.O. BOX 250, ROLLA, MO 65402
ENCLOSE $50 WATER WELL CERTIFICATION FEE WITHIN 60 DAYS AFTER WELL COMPLETION

MO LINK/DOLS 573 368 2111 P.09/14
HRK-30-2002 14:30

(9)

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

OFFICE USE ONLY	
REF. NO.	DATE RECEIVED
ROUTE RCD	CHECK NO. 870319
STATE WELL NUMBER A59292	TRANSMITTAL NO. 784613
CHECKED BY	CROSS REFERENCE NO.
APPROVED BY FK	ENTERED PH 1 PH 2 PH 3
	DATE APPROVED 9/16/97

INFORMATION SUPPLIED BY OWNER

NAME: Fred Weber, Inc. TELEPHONE: 314-344-0070

ADDRESS: P.O Box 2501 CITY: Maryland Heights STATE: MO. ZIP CODE: 63043-8501

ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE): Crystal Springs Golf Course CITY: Maryland Heights STATE: MO ZIP CODE: 63043

OWNER STATUS: ☐ PRIVATE HOME OWNER ☐ BUILDER ☐ DEVELOPER ☒ OTHER (SPECIFY) CONTRACTOR

PROPOSED USE OF WELL: ☐ DOMESTIC (1 TO 3 CONNECTIONS) ☐ MULTI-FAMILY ☐ HEATPUMP WATER SUPPLY ☐ HEATPUMP WATER RETURN ☒ IRRIGATION ☐ PUBLIC WATER SUPPLY ☐ OTHER

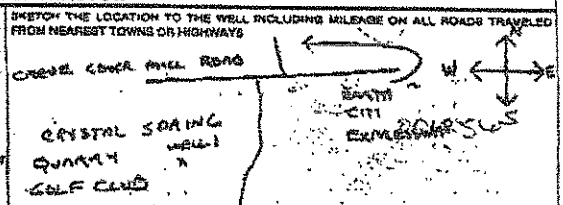
VARIANCE ISSUED? ☐ YES ☒ NO — DATE ISSUED — VARIANCE NUMBER: V

SIGNATURE (WELL OWNER): [signature] DATE: 12/18/96

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

LOCATION OF WELL — SHOW LOCATION IN SECTION PLAT: COUNTY: St. Louis; ELEVATION: 450'; AREA NO.: A1; SMALLEST ¼ ___ ¼ ___ ¼ ___ ¼; LARGEST ¼ ___; SEC. 17 TWN: 44N RNG: 5 (E) OR (W); LAT. ___ LONG. ___

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS



DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL: I-70 TO EARTH CITY EXPRESSWAY. EARTH CITY EXPRESSWAY SOUTH TO GRAVE COVER MILL ROAD. GRAVE COVER MILL ROAD WEST 150 YDS. SOUTH TO CRYSTAL SPRINGS GOLF COURSE

WELL INSTALLATION CONTRACTOR'S NAME: LAYNE-WESTERN COMPANY — PERMIT NUMBER: A 001261 WPM

WELL CONSTRUCTION INFORMATION

CASING DETAILS: LENGTH 67 FT.; DIAMETER OF CASING 10 IN.; WEIGHT OR SCH. .365 WALL; DIAMETER OF DRILL HOLE 14 IN.; JOINTS ☐ THREADED ☐ GLUED ☒ WELDED; DRIVE SHOE ☐ YES ☒ NO; MATERIAL ☐ PLASTIC ☒ STEEL ☐ CONCRETE

CASING PACKER DETAILS: TYPE USED ☒ NONE ☐ RUBBER BOOT ☐ COUPLING ☐ INVERTED BELL; DEPTH SET ___ FT.

CASING GROUT DETAILS: POSITION OF SEAL ☐ FULL LENGTH ☐ BOTTOM ☒ TOP; MATERIAL ☐ CEMENT SLURRY ☐ BENTONITE ☒ CHIPS ☐ GRANULAR ☐ PELLETS; DEPTH FROM THE SURFACE TO THE TOP OF THE GROUT SEAL: GROUT TO BOTTOM OF PITLESS 5 FT.; DEPTH FROM THE SURFACE TO THE BOTTOM OF THE GROUT SEAL: 10 FT.; DRILLING SUSPENDED AFTER GROUTING ☒ YES GRAVEL PACK WELL HOURS ☐ NO

LINER DETAILS: PURPOSE OF LINER ☐ USED ONLY TO HOLD BACK THE FORMATION ☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS; MEASURED DEPTH FROM THE SURFACE TO THE TOP OF THE LINER ___ FT.; MEASURED DEPTH FROM THE SURFACE TO THE BOTTOM OF THE LINER ___ FT.; DIAMETER OF LINER ___ IN.; WEIGHT OR SCH. ___; JOINTS ☐ THREADED ☐ GLUED ☐ WELDED; MATERIAL ☐ STEEL ☐ PLASTIC

LINER PACKER DETAILS: TYPE USED ☐ NONE ☐ RUBBER BOOT; DEPTHS SET; PACKER 1 ___ FT.; PACKER 2 ___ FT.; PACKER 3 ___ FT.

LINER GROUT DETAILS: POSITION OF SEAL ☐ FULL LENGTH ☐ BOTTOM ☐ TOP; MATERIAL NA ☐ CEMENT SLURRY ☐ BENTONITE ☐ CHIPS ☐ GRANULAR ☐ PELLETS; DEPTH FROM THE SURFACE TO THE TOP OF THE GROUT SEAL ___ FT.; DEPTH FROM THE SURFACE TO THE BOTTOM OF THE GROUT SEAL ___ FT.

ALLUVIAL SCREEN DETAILS: MAKE OR TYPE; SLOT SIZE .060"; GRAVEL PACK; GRAIN SIZE MUSCATINE NO. 2; THICKNESS; FROM 10 FT. TO TOTAL DEPTH FT.

DEPTH	FORMATION DESCRIPTION	YIELD
0-3	BROWN SILTY CLAY	
3-28	BROWN SILT	
28-42	BROWN SILT	
42-47	MEDIUM SAND	
47-60	BROWN SILT	
60-90	MEDIUM TO COARSE SAND	
	WELL CASING AND SCREEN SET TO 86'	
	TOP OF SCREEN 66'	
	CASING 1' ABOVE GROUND LEVEL	

YIELD TEST: ☐ COMPRESSED AIR ☐ BAILED ☒ OTHER PUMP; YIELD 535 GPM; STATIC WATER LEVEL 12 FEET FROM SURFACE; DRAW DURING YIELD TEST: DOWN 14 FEET AFTER 4 HOURS; ABANDONED WELL? ☐ YES ☒ NO; WAS THE ABANDONED WELL PROPERLY SEALED ☐ YES ☐ NO

WELL DISINFECTED AFTER DRILLING? ☒ YES ☐ NO

TYPE OF TOP CASING SEAL: ☒ PITLESS ADAPTOR ☐ WELL SEAL ☐ OTHER

PUMP SET BY: ☒ DRILLER ☐ PUMP INSTALLER ☐ OWNER; NOT TO BE INSTALLED UNTIL

DATE WELL CONSTRUCTION WAS COMPLETED: 9/17/96

I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS. SIGNATURE (WELL DRILLER): [signature] DATE: 12/16/96

INFORMATION SUPPLIED BY PUMP INSTALLATION CONTRACTOR

PUMP CONTRACTOR'S NAME: LAYNE-WESTERN COMPANY — PERMIT NUMBER: CRAIG SKOWRY 001261 WPM

COMPLETION DATA: PUMP DETAILS: 500 G.P.M. 30 HP; PUMP SET AT 62.5 FT. ABOVE BELOW; WELL DISINFECTED AFTER SETTING PUMP ☒ YES ☐ NO; TYPE OF DROP PIPE ☐ PLASTIC ☒ GALVANIZED; DATE PUMP INSTALLATION WAS COMPLETED 11/5/96

I HEREBY CERTIFY THAT THE PUMP HEREIN DESCRIBED WAS INSTALLED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS. SIGNATURE (PUMP INSTALLER): [signature] DATE: 12/16/96

MO 780-0202 (11-93) DISTRIBUTION: WHITE/DRILLER CANARY/DIVISION PINK/WELL OWNER

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

WATER WELL CERTIFICATION AND PUMP INFORMATION RECORD

OFFICE USE ONLY	DATE RECEIVED MAR 20 2000
REF. NO.	CHECK NO. 870691
ROUTE PCR	TRANSMITTAL NO. 032100
STATE WELL NUMBER A87214	CROSS REFERENCE NO.
CHECKED BY	ENTERED
APPROVED BY	DATE APPROVED

INFORMATION SUPPLIED BY OWNER

NAME: Crystal Springs Quarry Golf Club — TELEPHONE: 636-344-4448

ADDRESS: 12162 Prichard Farm Road — CITY: Maryland Heights — STATE: MO — ZIP CODE: 63043

ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE) — CITY — STATE — ZIP CODE

OWNER STATUS: ☐ PRIVATE HOME OWNER ☐ BUILDER ☐ DEVELOPER ☒ OTHER (SPECIFY) GOLF COURSE

PROPOSED USE OF WELL: ☐ DOMESTIC (1 TO 3 CONNECTIONS) ☐ MULTI-FAMILY ☐ HEATPUMP WATER SUPPLY ☐ HEATPUMP WATER RETURN ☒ IRRIGATION ☐ PUBLIC WATER SUPPLY ☐ OTHER

VARIANCE ISSUED? ☐ YES ☒ NO — DATE ISSUED — VARIANCE NUMBER: V

SIGNATURE (WELL OWNER) — DATE

INFORMATION SUPPLIED BY WELL OR PUMP INSTALLATION CONTRACTOR

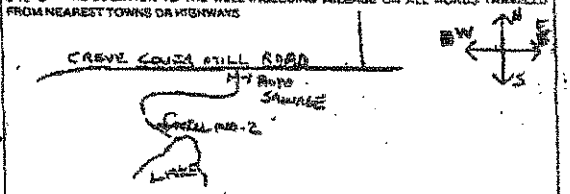
LOCATION OF WELL SHOW LOCATION IN SECTION PLAT: Creve Coeur COUNTY ST. LOUIS; ELEVATION 446'; AREA NO. A1

SMALLEST ¼: ___ LARGEST ¼: NE NW SE

SEC. 17 TWP. 46 RANGE 5 E OR W

LAT. ___ LONG. ___

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWN OR HIGHWAY



DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL: TAKE EARTH CITY EXPRESSWAY SOUTH FROM I-70 SOUTH TO CREVE COEUR MILL ROAD (WEST) ABOUT 1 MILE YOU WILL SEE AUTO SALVAGE, ENTRANCE WEST OF AUTO SALVAGE, FOLLOW GRAVEL

WELL INSTALLATION CONTRACTOR'S NAME: LAYNE-WESTERN (Craig Skouby) — PERMIT NUMBER: A 001261 WPM

WELL CONSTRUCTION INFORMATION

CASING DETAILS: LENGTH 40 FT.; DIAMETER OF CASING 16 IN.; WEIGHT OR SDR # 62.58#; DIAMETER OF DRILL HOLE 32 IN.; JOINTS ☐ GLUED ☐ THREADED ☒ WELDED; DRIVE SHOE ☐ YES ☒ NO; MATERIAL ☒ STEEL ☐ PLASTIC ☐ CONCRETE

CASING PACKER DETAILS: TYPE USED ☒ NONE ☐ RUBBER BOOT ☐ COUPLING ☐ INVERTED BELL; DEPTH SET ___ FT.

CASING GROUT DETAILS: POSITION OF SEAL ☐ FULL LENGTH ☐ BOTTOM ☒ TOP; MATERIAL ☐ CEMENT SLURRY ☐ BENTONITE ☒ CHIPS ☐ GRANULAR ☐ PELLETS; DEPTH FROM THE SURFACE TO THE TOP OF THE GROUT SEAL (SEAL FROM BOTTOM OF PITLESS) 4 FT.; DEPTH FROM THE SURFACE TO THE BOTTOM OF THE GROUT SEAL 10 FT.

DRILLING SUSPENDED AFTER GROUTING ☒ YES 72 HOURS ☐ NO

LINER DETAILS: PURPOSE OF LINER ☐ USED ONLY TO HOLD BACK THE FORMATION ☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS; MEASURED DEPTH FROM THE SURFACE TO THE TOP OF THE LINER ___ FT.; MEASURED DEPTH FROM THE SURFACE TO THE BOTTOM OF THE LINER ___ FT.; DIAMETER OF LINER ___ IN.; WEIGHT OR SDR # ___; JOINTS ☐ GLUED ☐ THREADED ☐ WELDED; MATERIAL ☐ STEEL ☐ PLASTIC

LINER PACKER DETAILS: TYPE USED ☐ NONE ☐ RUBBER BOOT; DEPTHS SET; PACKER 1 ___ FT.; PACKER 2 ___ FT.; PACKER 3 ___ FT.

LINER GROUT DETAILS: POSITION OF SEAL ☐ FULL LENGTH ☐ BOTTOM ☐ TOP; MATERIAL ☐ CEMENT SLURRY ☐ BENTONITE ☐ CHIPS ☐ GRANULAR ☐ PELLETS; DEPTH FROM THE SURFACE TO THE TOP OF THE GROUT SEAL ___ FT.; DEPTH FROM THE SURFACE TO THE BOTTOM OF THE GROUT SEAL ___ FT.

ALLUVIAL SCREEN DETAILS: MAKE OR TYPE STAINLESS STEEL WIRE-WRAP; SLOT SIZE .060; GRAVEL PACK; GRAIN SIZE WINONA GROUT #30; THICKNESS 8"; FROM 30 FT. TO 10 FT.

DEPTH	FORMATION DESCRIPTION	YIELD
0-10	SILTY CLAY	
10-30	FINE SAND	
30-40	MEDIUM SAND WITH SOME PEA GRAVEL STRINGES	1500 GPM

YIELD TEST: ☐ COMPRESSED AIR ☐ BAILED ☒ OTHER PUMP; YIELD 1500; STATIC WATER LEVEL 18 FEET FROM SURFACE; DRAW DURING YIELD TEST DOWN 10 FEET AFTER 24 HOURS; ABANDONED WELL? ☐ YES ☒ NO; WAS THE ABANDONED WELL PROPERLY SEALED ☐ YES ☐ NO

WELL DISINFECTED AFTER DRILLING? ☒ YES ☐ NO; TYPE OF TOP CASING SEAL ☒ PITLESS ADAPTOR ☐ WELL SEAL ☐ OTHER; PUMP SET BY ☒ PUMP INSTALLER ☐ DRILLER ☐ OWNER; NOT TO BE INSTALLED UNTIL; DATE WELL CONSTRUCTION WAS COMPLETED 2/11/2000

I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS. SIGNATURE (WELL DRILLER): Craig Skouby — DATE 3/10/00

INFORMATION SUPPLIED BY PUMP INSTALLATION CONTRACTOR

PUMP CONTRACTOR'S NAME: LAYNE-WESTERN Jensen Skouby — PERMIT NUMBER 001260WP

COMPLETION DATA: PUMP DETAILS 1500 G.P.M. 60 HP; PUMP SET AT 60 FT.; WELL DISINFECTED AFTER SETTING PUMP ☒ YES ☐ NO; TYPE OF DROP PIPE 8 INCH STEEL ☐ PLASTIC ☒ GALVANIZED; DATE PUMP INSTALLATION WAS COMPLETED 3/13/2000

I HEREBY CERTIFY THAT THE PUMP HEREIN DESCRIBED WAS INSTALLED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS. SIGNATURE (PUMP INSTALLER): Jensen P Skouby — DATE 3/10/00

MO 780-0230 (1-93) DISTRIBUTION: WHITE/DRILLER CANARY/DIVISION PINK/WELL OWNER

(11)

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

WATER WELL RECORD AND PUMP INFORMATION RECORD

(PLEASE PRINT CLEARLY)

DO NOT FILL IN	
FILE NO. 54413	REC'D SEP 04 1990
CROSS REFERENCE NO.	CHECK NO. 2137
STATE WELL NUMBER AL-5111	TRANSMITTAL NO. 661031
CHECKED BY	ENTERED BY ACD
APPROVED BY	DATE ENTERED
	DATE APPROVED 3

OWNER — NAME: Joe Keeven — TELEPHONE NO.: 314-739-7929
ADDRESS: Rt 1 Box 141 — CITY: Bridgeton — STATE: Mo — ZIP CODE: 63042

OWNER STATUS — ☐ BUILDING CONTRACTOR ☐ PRIVATE HOMEOWNER ☐ DEVELOPER ☐ BUILDER ☒ OTHER (SPECIFY) Farmer

DRILLING CONTRACTOR — NAME: William M. Wurth — **PUMP CONTRACTOR** NAME:

DRILLING EQUIPMENT — ☐ MUD ROTARY ☐ REVERSE ROTARY ☐ AIR ROTARY ☐ CABLE TOOL ☐ AUGER (TYPE) ☐ OTHER (SPECIFY) Sand Bucket — DATE COMPLETED 10-05-88 — EXISTING GEOTOMOGRAPHY NUMBER

CASING DETAILS — LENGTH 21' — DIAM. (IN.) 12" — WEIGHT OR SDR NO — DIAM. OF DRILL HOLE 20" — JOINTS: ☐ THREADED ☒ WELDED ☐ GLUED — DRIVE SHOE ☐ YES ☒ NO — MATERIAL: ☒ STEEL ☐ PLASTIC ☐ OTHER (SPECIFY)

PACKER INFORMATION — USED ON CASING? — PACKER DEPTH (FT.) — USED ON LINER? ☐ YES ☐ NO — PACKER DEPTH (FT.)

CASING GROUTING DETAILS — TYPE OF SEAL: ☐ FULL LENGTH ☐ TOP ☐ BOTTOM — MATERIAL USED: ☐ NEAT CEMENT ☐ BENTONITE ☐ CUTTINGS ☐ OTHER — DEPTH OF SEAL: TOP BOTTOM — SACKS OF CEMENT OR BENTONITE USED: TOP BOTTOM FULL LENGTH — DRILLING SUSPENDED 12 HRS. AFTER GROUTING? ☐ YES ☐ NO

See below

LINER DETAILS — LENGTH — DIAM. (IN.) — WEIGHT OR SDR NO — DEPTH FROM LAND SURFACE — JOINTS: ☐ THREADED ☐ WELDED ☐ GLUED — MATERIAL: ☐ STEEL ☐ PLASTIC ☐ OTHER (SPECIFY)

LINER GROUTING DETAILS — TYPE OF SEAL: ☐ FULL LENGTH ☐ TOP ☐ BOTTOM — MATERIAL USED: ☐ NEAT CEMENT ☐ BENTONITE ☐ OTHER — DEPTH OF SEAL: TOP BOTTOM FULL LENGTH — SACKS OF CEMENT OR BENTONITE: TOP BOTTOM FULL LENGTH

SCREEN DETAILS — MAKE OR TYPE Johnson — LENGTH OPEN TO AQUIFER (FT.) 40' — SLOT SIZE .032 — DIAM. (IN.) 12" — THICKNESS OF GRAVEL PACK 4" on the wall — GRAVEL SIZE 14 to Coarse sand (IN.) FROM (FT.) 60 TO (FT.) 40

YIELD TEST — ☐ BAILED ☐ PUMPED ☐ COMPRESSED AIR — HOURS — YIELD (GPM) — WELL DISINFECTED AFTER DRILLING? ☒ YES ☐ NO — TYPE OF TOP CASING SEAL: ☐ PITLESS ADAPTER ☐ WELL SEAL ☒ OTHER Steel

WATER LEVEL — MEASURE FROM LAND SURFACE STATIC (FT.) — DRAW DOWN OR PUMPING LEVEL: DURING YIELD TEST FT. AFTER HOURS — **ABANDONED WELL** — IS THERE AN ABANDONED WELL? ☐ YES ☒ NO — WAS IT PROPERLY SEALED? ☐ YES ☐ NO

COMPLETION DATA — PUMP CAPACITY GPM HP STAGES AT SETTING FT. — MAKE OF PUMP — TYPE OF DROP PIPE ☐ PLASTIC ☐ GALVANIZED — WELL DISINFECTED AFTER SETTING PUMP? ☐ YES ☐ NO — PUMP SET BY: ☐ PUMP INSTALLER ☐ OWNER ☐ DRILLER — NOT TO BE INSTALLED UNTIL

DEPTH FROM LAND SURFACE FEET	TO FEET	FORMATION DESCRIPTION	DIAMETER OF DRILL HOLE
0	10	Top soil Dark brown	
10	60	Coarse sand + gravel	

None found

IF YIELD WAS TESTED AT DIFFERENT DEPTHS DURING DRILLING, LIST BELOW.

FEET	GALLONS PER MINUTE
No [illegible] testing done for [illegible] information only	

X Drilling gravel packed + filled in with drill cuttings

LOCATION OF WELL — SHOW LOCATION IN SECTION PLAT: See attached map — NE UR ¼ NW ¼ SEC. 8 — TWN 46 N. RNG 5 ☐ OR W — TOTAL DEPTH OF WELL 60' — AREA NO. AL 5 — COUNTY St. Louis — SURFACE ELEVATION 400

SKETCH EXACT LOCATION OF WELL WITH DISTANCES TO AT LEAST TWO PERMANENT LANDMARKS. ALSO SHOW ABANDONED WELL, FOR MONITORING WELLS, LANDMARKS ARE TEMPORARY AND PERMANENT BENCHMARKS.

CREVE COEUR

NOTES, MILEAGE AND DIRECTION FROM NEAREST TOWN OR HIGHWAY

I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF WATER SUPPLY WELLS AND/OR MONITORING WELLS.

SIGNATURE (WELL DRILLER): William Wurth — DATE 8-20-91 — PERMIT NO. (WELL DRILLER) AC00.84 — SIGNATURE (PUMP INSTALLER) — DATE — PERMIT NO. (PUMP INSTALLER)

INFORMATION TO BE SUPPLIED BY OWNER

PROPOSED USE OF WELL: ☐ DOMESTIC (1 TO 3 CONNECTIONS) ☐ PUBLIC WATER SUPPLY ☐ HEAT PUMP ☐ OTHER (SPECIFY) ☐ MULTIPLE FAMILY ☐ NON-COMMUNITY ☒ IRRIGATION ☐ MONITORING

SIGNATURE (WELL OWNER) — DATE 10-15-88

FOR MONITORING WELLS ONLY

WELL POINT NUMBER
WASTE MANAGEMENT (EPA ID NO.)
MEAN SEA LEVEL ELEVATION OF WELL
SITE TYPE ☐ RCRA ☐ SUPERFUND ☐ LANDFILL ☐ OTHER

(12)

W-5171A

C/#2521

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
WATER WELL RECORD

REC'D APR 11 1988

MAIL CANARY COPY TO:
WELL DRILLER'S FUND
P.O. BOX 250
ROLLA, MISSOURI 65401
ENCLOSE $15.00 WATER WELL CERTIFICATION FEE WITHIN 60 DAYS AFTER WELL COMPLETION.

DO NOT FILL IN
STATE WELL NO. A0 3856-60
OTHER NO. 458685

OWNER	NAME: Melvin R. Overy #2	ADDRESS: 1700 Teson Rd., Hazelwood, Mo. 63042
DRILLING CONTRACTOR	NAME: St. Charles Drilling Co.	ADDRESS: 6349 Old Hwy. 94, So., St. Charles, Mo. 63303
LOCATION AND DATE	MILEAGE AND DIRECTION FROM NEAREST TOWN OR HIGHWAY: 1 8/10 Mi. to Teson Rd.	DATE COMPLETED: 3-22288

PROPOSED USE OF WELL: ☒ DOMESTIC ☐ INDUSTRIAL ☐ AIR CONDITIONING ☐ TEST WELL (SEALED AFTER ABANDONED ☐ YES ☐ NO) ☐ BUSINESS ESTABLISHMENT ☐ FARM ☐ IRRIGATION ☐ OTHER (SPECIFY)

DRILLING EQUIPMENT: ☒ MUD ROTARY ☐ REVERSE ROTARY ☐ AIR ROTARY ☐ CABLE TOOL ☐ OTHER (SPECIFY)

CASING DETAILS	DEPTH (FT.)	DIAM. (IN.)	WEIGHT/FT. OR SCHEDULE	SPACER GUIDES USED	JOINTS	DRIVE HOLE	MATERIAL
	30	6.9	ASTM480	☐ YES ☒ NO	☐ THREADED ☒ WELDED	☐ YES ☒ NO	☐ STEEL ☒ PLASTIC ☐ OTHER

GROUTING DETAILS	TYPE OF SEAL	MATERIAL USED	DEPTH OF SEAL	SACKS OF CEMENT OR BENTONITE USED	DRILLING SUSPENDED 72 HRS. AFTER GROUTING
	☐ FULL LENGTH ☐ TOP ☐ BOTTOM	☐ CEMENT ☒ BENTONITE Drillers Mud Cuttings	TOP BOTTOM	TOP FULL LENGTH BOTTOM	☐ YES ☒ NO

SCREEN DETAILS	MAKE	LENGTH OPEN TO AQUIFER (FT.)
	Shop made	2'

SLOT SIZE	DIAM. (IN.)	IF GRAVEL PACKED:	DIAMETER OF WELL INCLUDING GRAVEL PACK (IN.)	GRAVEL SIZE (IN.) FROM (FT.)	TO (FT.)
2/32"	6.9		11 3/4	1/16 - 1/4 28	30

YIELD TEST: ☐ BAILED ☒ COMPRESSED AIR ☐ PUMPED — HOURS: 1/2 — YIELD (GPM): 50

WATER LEVEL: MEASURE FROM LAND SURFACE - STATIC (FT.) 5 — DURING YIELD TEST N/A (FEET) AFTER HOURS — DEPTH OF COMPLETED WELL IN FEET BELOW GROUND SURFACE

COMPLETION DATA: PUMP CAPACITY AT SETTING 12 GPM 20 TDH FEET — TYPE OF TOP CASING SEAL: Pitless Adapter — WELL DISINFECTED: AFTER DRILLING ☒ YES ☐ NO; AFTER SETTING PUMP ☒ YES ☐ NO — IS THERE AN ABANDONED WELL? ☐ YES ☒ NO — WAS IT PROPERLY SEALED? ☐ YES ☐ NO N/A

DEPTH FROM LAND SURFACE FEET	TO FEET	FORMATION DESCRIPTION	DIAM. OF DRILL HOLE
0	5	Clay	11 3/4
5	28	Fine Sand	11 3/4
28	30	Coarse Sand	11 3/4

Encountered bedrock at 30'. Rock in this area produces salt and/or heavy concentrations of sulphur. Customer elected alluvial water supply source.

DH 5-12-88

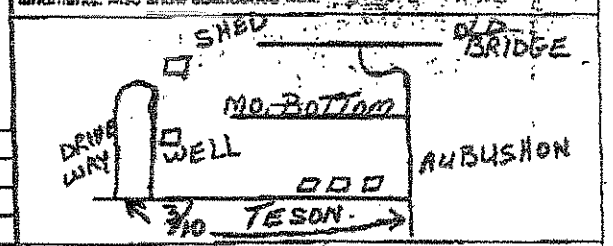
LOCATION OF WELL (SHOW LOCATION IN SECTION PLAT) — COUNTY St. Louis

NW ¼ NW ¼ SEC. 28 T 47N N, R 5E E/W

TOTAL DEPTH 30

ELEV.

Sketch exact location of well with distances, to at least two permanent landmarks. Also show abandoned well.



IF YIELD WAS TESTED AT DIFFERENT DEPTHS DURING DRILLING, LIST BELOW

FEET	GALLONS PER MINUTE

I hereby certify that I directed that the well herein described be constructed in accordance with Department of Natural Resources requirements for nonpublic water supply wells.

SIGNATURE (WELL OWNER) — DATE

I hereby certify that the well herein described was constructed in accordance with Department of Natural Resources requirements for construction of nonpublic water supply wells.

SIGNATURE (WELL DRILLER) — DATE 4-7-88

PERMIT NO. A00152

TOTAL P.14

Ref. 7478A

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
WATER WELL RECORD

MAIL CANARY COPY TO:
WELL DRILLER'S FUND
P.O. BOX 250
ROLLA, MISSOURI 65401
ENCLOSE $15.00 WATER WELL CERTIFICATION FEE WITHIN 60 DAYS AFTER WELL COMPLETION.

REC'D AUG 11 1988

DO NOT FILL IN
STATE WELL NUMBER: 1906 A05788
OWNER NO. 456191

OWNER	NAME: Sally Dickherber	ADDRESS: 24 San Carlos, St. Charles, Mo. 63303
DRILLING CONTRACTOR	NAME: St. Charles Drilling Co.	ADDRESS: 6349 Old Hwy. 94 So., St. Charles, Mo. 63303
LOCATION AND DATE	MILEAGE AND DIRECTION FROM NEAREST TOWN OR HIGHWAY: Hwy. 94 to Hwy. 70 to 5th St. to Rio	DATE COMPLETED: Vista 8-5-88

PROPOSED USE OF WELL: ☒ DOMESTIC ☐ INDUSTRIAL ☐ AIR CONDITIONING ☐ TEST WELL (SEALED AFTER ABANDONED ☐ YES ☐ NO) ☐ BUSINESS ESTABLISHMENT ☐ FARM ☐ IRRIGATION ☐ OTHER (SPECIFY)

DRILLING EQUIPMENT: ☐ MUD ROTARY ☐ REVERSE ROTARY ☒ AIR ROTARY ☐ CABLE TOOL ☐ OTHER (SPECIFY)

CASING DETAILS: DEPTH (FT.): 80 | DIAM. (IN.): 6.9 | WEIGHT/FT. OR SCHEDULE: ASTM 480 | SPACER GUIDES USED: ☐ YES ☒ NO | JOINTS: ☐ THREADED ☒ WELDED | DRIVE HOLE: ☒ YES Casing Shoe ☐ NO | MATERIAL: ☐ STEEL ☐ PLASTIC ☒ OTHER PVC

GROUTING DETAILS: TYPE OF SEAL: ☒ FULL LENGTH ☐ TOP ☐ BOTTOM | MATERIAL USED: ☐ NEAT CEMENT ☒ BENTONITE Cuttings | DEPTH OF SEAL: TOP / BOTTOM | SACKS OF CEMENT OR BENTONITE USED: TOP / FULL LENGTH / BOTTOM | DRILLING SUSPENDED 72 HRS. AFTER GROUTING: ☐ YES ☒ NO

SCREEN DETAILS: MAKE | LENGTH OPEN TO AQUIFER (FT.) | SLOT SIZE | DIAM (IN.) | IF GRAVEL PACKED: | DIAMETER OF WELL INCLUDING GRAVEL PACK (IN.) | GRAVEL SIZE (IN.) FROM (FT.) TO (FT.)

YIELD TEST: ☐ BAILED ☐ PUMPED ☒ COMPRESSED AIR | HOURS: 1/2 | YIELD (GPM): 10

WATER LEVEL: MEASURE FROM LAND SURFACE - STATIC (FT.): 85 | DURING YIELD TEST: N/A (FEET) AFTER HOURS | DEPTH OF COMPLETED WELL IN FEET BELOW GROUND SURFACE: 385

COMPLETION DATA: PUMP CAPACITY AT SETTING: 5 GPM / TDH / 350 FEET | TYPE OF TOP CASING SEAL: Pitless Adapter | WELL DISINFECTED: AFTER DRILLING ☒ YES ☐ NO; AFTER SETTING PUMP ☒ YES ☐ NO | IS THERE AN ABANDONED WELL? ☐ YES ☒ NO | WAS IT PROPERLY SEALED? N/A ☐ YES ☐ NO

DEPTH FROM LAND SURFACE FEET	TO FEET	FORMATION DESCRIPTION	DIAM. OF DRILL HOLE
0	40	Clay	8 5/8
40	80	Lime	8 5/8
80	185	Lime	6 1/8
185	195	Blue Shale	6 1/8
195	205	Lime	6 1/8
205	300	Blue Shale	6 1/8
300	385	Lime	6 1/8

9-23-88 jf

LOCATION OF WELL (SHOW LOCATION IN SECTION PLAT) COUNTY: St. Charles

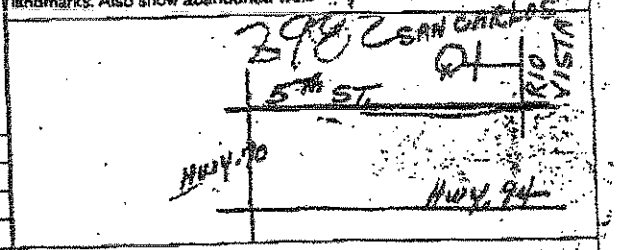
not plotted Survey 2982 (6) sec. T 46N N R 5E E W

Capel Tract

TOTAL DEPTH: 385

ELEV.

Sketch exact location of well with distances, to at least two permanent landmarks. Also show abandoned well.



IF YIELD WAS TESTED AT DIFFERENT DEPTHS DURING DRILLING, LIST BELOW

FEET	GALLONS PER MINUTE
285	2
380	8

I hereby certify that I directed that the well herein described be constructed in accordance with Department of Natural Resources requirements for nonpublic water supply wells.

SIGNATURE (WELL OWNER) | DATE

I hereby certify that the well herein described was constructed in accordance with Department of Natural Resources requirements for construction of nonpublic water supply wells.

SIGNATURE (WELL DRILLER): [signature] | DATE: 8-11-88

PERMIT NO. A00152

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FAX Transmittal Cover Sheet

Date of Fax: 4-26-02

- ☐ URGENT
- ☐ Priority
- ☐ Routine
- ☐ As Requested
- ☐ FYI

To: Dana Rosenberg

From: SHARON BEISTEL
DNR/DGLS

FAX: 626-939-9757 Phone:

FAX: 573-368-2317 Phone: 573-368-2168

SUBJECT:

COMMENTS: list of wells with completion dates added

RESPONSE EXPECTED:

Total # of pages sent (including transmittal sheet): 3

If problems with FAX call:

MO 780-1450 (10-94)

RECYCLED PAPER

0007476A	W	VETERANS SEPTIC TANK SERVICE	8-12-88	13010 GIST	BRIDGETON	D
0225700A	W	KURTZ/LAFARGE CORP	7-8-99	2115 S RIVER RD	ST CHARLES	D
0007478A	W	8-5-88	DICKHERBER	24 SAN CARLOS	ST CHARLES	D
0054413A	W	10-5-88	KEEVEN	RT. 1, BOX 141	BRIDGETON	I
0100272A	W	CRYSTAL SPRINGS QURY GOLF CLUB	2-11-2000	12163 RICHARD FARM ROAD	MARYLAND H	I
0100251A	W	FRED WEBER INC	11-5-96	PO BOX 2501	MARYLAND H	I
0077004A	W	THIES FARM GREENHOUSE 5-1-92	THIES	4215 N HANLEY RD	ST LOUIS	I
0208382A	W	3-3-99	THOELE	1020 HAWTHORNE	ST CHARLES	D
0251797A	W	NATIONAL CART/UNNERSTALL LLC	7-7-2000	325 BOSCHERT TOWN RD	ST CHARLES	P
0169355A	W	5-6-98	KEEVEN	PO BOX 247	OFALLON	I
0169337A	W	4-18-97	SCHRODER	805 PALM	ST CHARLES	I
0005171A	W	3-22-88	OVERY	1700 TESON ROAD	HAZELWOOD	D
0126120A	W	3-22-95	LANZER	714 MOUNDALE DR.	FERGUSON	D

WREENUM	TYPE	BUSINESS IN	OWNER LAST	OWN ADD	CITY
0181904A	W	8-23-97	COCKS	3945 CHARBONIER	FLORRISSANT

lblRptDR2 4/26/2002

USE	TOTAL DPTH	C.#	C.2	Q.3	SEC	TWN	RNG	CASING	EAST	QD	SWL
D	70			SE	18	47	6	71		3	8

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FAX Transmittal Cover Sheet

Date of Fax: 4-26-02

- ☐ URGENT
- ☐ Priority
- ☐ Routine
- ☐ As Requested
- ☐ FYI

To: Dana Rosenberg

FAX: 636-939-9757 Phone:

From: SHARON BEISTEL
DNR/DGLS

FAX: 573-368-2317 Phone: 573-368-2168

SUBJECT:

COMMENTS: list of water wells in 3-mile radius of 47N 5E sec 34 (13570 St Charles Rock Rd)

RESPONSE EXPECTED:

Total # of pages sent (including transmittal sheet): 4

If problems with FAX call:

MO 780-1430 (10-94)

RECYCLED PAPER

PERMIT	TYPE	BUSINESS N	OWNER LAST	OWR ADD 1	CITY	USE
0007476A	W	VETERANS SEPTIC TANK SERVICE		13010 GIST	BRIDGETON	D
0225700A	W	KURTZ/LAFARGE CORP		2115 S RIVER RD	ST CHARLES	D
0007478A	W		DICKHERBER	24 SAN CARLOS	ST CHARLES	D
0054413A	W		KEEVEN	RT. 1, BOX 141	BRIDGETON	I
0100272A	W	CRYSTAL SPRINGS QURY GOLF CLUB		12163 RICHARD FARM ROAD	MARYLAND H	I
0100251A	W	FRED WEBER INC		PO BOX 2501	MARYLAND H	I
0077004A	W	THIES FARM GREENHOUSE	THIES	4215 N HANLEY RD	ST LOUIS	I
0208382A	W		THOELE	1020 HAWTHORNE	ST CHARLES	D
0251797A	W	NATIONAL CART/UNNERSTALL LLC		325 BOSCHERT TOWN RD	ST CHARLES	P
0169355A	W		KEEVEN	PO BOX 247	OFALLON	I
0169337A	W		SCHRODER	805 PALM	ST CHARLES	I
0005171A	W		OVERY	1700 TESON ROAD	HAZELWOOD	D
0126120A	W		LANZER	714 MOUNDALE DR.	FERGUSON	D

TOTAL DEPTH	Q 1	Q 2	Q 3	SEC	TWN	RNG	CASING L	TEST YLD	SWL
245	SE	SE	NE	1	46	5	80	30	25
400	SE	SE	SE	6	46	5	105	6	210
385		NW	NE	6	46	5	80	10	85
60			NW	8	46	5	21	0	0
80	NE	NW	SE	17	46	5	40	1507	18
90				17	46	5	67	535	12
90	SW	SW	SE	18	46	5	82	200	20
40	NW	SW	SW	16	47	5	30	25	22
80	SW	NW	SE	17	47	5	50	500	10
85	SE	NW	SW	17	47	5	85	0	0
0				18	47	5	37	100	0
30		NW	NW	26	47	5	30	50	5
412				35	47	5	109	15	220

tblRptDR2

4/26/2002

FREENUM	TYPE	BUSINESS N	OWNER LAST	OWN ADDR1	CITY
0181904A	W		COCKS	3945 CHARBONIER	FLORRISSANT

tblRptDR2

4/26/2002

USE	TOTAL DPTH	Q 1	Q 2	Q 3	SEC	TWN	RNG	CASING L	TEST YLD	SWL
D	70			SE	18	47	6	71	3	8

Attachment 3

Asphalt Plant LUST Documentation

TIMELINE FOR MARYON INDUSTRIES LUST INVESTIGATION

In a May 5, 1993 letter from MDNR addressed to ADR Environmental regarding Westlake (ESP File No. LU3874), the MDNR noted that it had received a Spill Report #04223-KT-1612 and had determined that a petroleum release occurred. The May 5, 1993 letter stated that a site assessment report was due within 45 days. An attachment to the May 5, 1993 letter indicated that gas, diesel, and waste oil were spilled at an unknown quantity, and the spill was discovered during closure activities.

Westlake Companies, UT #0013618, closed several tanks in 1993 and submitted a Closure Report dated June 14, 1993, under ESP File # LU3874. Seven tanks were identified as present, and the report indicated the tanks were numbered by the MDNR as #1, #2, #4 – #6, #8, and #11. These were equivalently identified as tanks #1 through #7 by Westlake Companies. Figures included in the June 14, 1993 report indicate that tanks 5 and 6 were located between the landfill office building and the demolition fill area. Tanks 1, 2, and 3 were located under the conveyor of the concrete plant. Tank #7 was located at the asphalt batch plant and is the tank of concern. The June 14, 1993 report described tank #7 (MDNR tank #11) as a 10,000 gallon steel tank that held diesel fuel. Soil sampling conducted during removal of tank #7 (MDNR tank #11) yielded TPH at 13,270 mg/kg, plus benzene (0.131 mg/kg), toluene (0.24 mg/kg), ethylbenzene (4.04 mg/kg), and xylenes (4.26) mg/kg).

In a June 25, 1993 telephone record, Steve Johnston of the MDNR noted that he spoke with Pat Reeves with ADR (LU3874) and agreed that the most urgent issues were a limited assessment in and around the former tank excavations for T4 and T7, an investigation of the depth of groundwater in these areas to see if groundwater is or has been affected, and sample the T7 backfill to determine contamination levels.

In a July 6, 1993 letter from Mr. Larry Coen of the MDNR to Mr. Pat Reeves of ADR/St. Louis, the MDNR noted receipt of the UST Closure Report for ESP File No. LU3874. The MDNR stated that it was looking forward to ADR's Assessment Plan proposal to follow in the upcoming weeks.

In a November 17, 1993 telephone record, Anita Schroeter of the MDNR noted that she spoke with Pat Reeves regarding the position Westlake was considering for LU3874. According to the telephone record, Mr. Reeves spoke of requesting a health risk assessment, the possibility that the site would be included as part of the EPA radioactive site, and that uranium had been found in the groundwater at relatively low levels.

In a December 6, 1993 letter from Pat Reeves of ADR to Ms. Schroeder (sic) of the MDNR, Mr. Reeves noted that Westlake Companies authorized ADR to initiate data compilation for possible interim remedial and site characterization directed towards Tank #4, 6, and 7, which indicated levels in excess of the soil cleanup levels.

In a December 20, 1993 telephone record, Anita Schroeter of the MDNR noted that she spoke with Pat Reeves (LU3874) regarding receipt of ADR's December 6, 1993 letter. Ms. Schroeter noted that some monitoring wells had been constructed, and some of the

wells indicated free product. Maryon Industries was identified as the current leasor, and may assist in some of the cleanup.

In a January 10, 1994 letter from C. Dean Martin of the MDNR to Mr. B. Whitaker of Westlake Companies (ESP File No. LU3874), the MDNR stated that cleanup levels submitted in the Closure Report were not acceptable because coarse soil and sand is present. The MDNR requested information to include the name, address, and telephone number of the EPA Agent who was heading an EPA investigation regarding low levels of radioactive materials in groundwater. The MDNR noted that the goal to implement an interim remedial system indicated a positive step towards controlling the migration of remaining contamination, but that aggressive measures should be taken to complete the characterization. The MDNR requested submittal of an investigation report by the end of January 1994.

In a February 15, 1994 letter from C. Dean Martin of MDNR to Mr. B. Whitaker of Westlake Companies (ESP File No. LU3874), the MDNR noted that it had not received the December 1993 investigation report or other information requested in the January 10, 1994 letter. The MDNR noted it had been informed that Westlake Companies intended to cease operations as of December 31, 1993, but that as former owner and last operator of the closed tanks, it was the responsibility of Westlake Companies to clean up contamination.

In a February 15, 1994 letter from Pat Reeves of ADR to Anita Schroeter of MDNR, Mr. Reeves noted that severe weather conditions during the past few months (below freezing temperatures and periods of ice and snow) had presented problems with attempting to develop reliable field data. Mr. Reeves stated that the Westlake Quarry and Material Company site did not involve activity associated with the low-level radionuclide investigation, and that a preliminary screening was conducted for the presence of radioactive materials in the work site areas, the results of which indicated "no elevated levels" above normal background readings.

Under cover of a March 18, 1994 letter, Mr. Pat Reeves of ADR submitted to Ms. Schroeter of MDNR a topographic map depicting the locations of four recently installed monitoring wells, borehole logs, and analytical summary tables of soil and water. The analytical summary tables indicated TPH results at Well #4 (located near the asphalt plant UST location; Former Tank #7) of 661,935 mg/l during drilling, and 748,593 mg/l in a sample collected on December 22, 1993. These compared to soil results of 13,326 mg/kg in the Closure Report and 26,225 mg/kg in a drilling sample.

In an April 1, 1994 letter from C. Dean Martin of MDNR to B. Whitaker of Westlake Companies (ESP File No. LU3874), the MDNR noted that it was looking forward to a proposal to define the nature and extent of soil and groundwater contamination. The MDNR further reiterated that efforts should be taken to capture any free product in the vicinity of Well #4.

In a May 12, 1994 UST Flood Impact Assessment Form for Westlake Quarry & Material Company (LU#03874), 10 tanks were noted as formerly present at the site, with the ninth tank removed in December of 1993 and one tank purchased by Laidlaw and out of service but in ground. No flooding was noted, with no visible damage caused by flood.

In a June 28, 1994 letter, Mr. Alan Reinkemeyer of the MDNR requested that Mr. B. Whitaker provide an update for the Westlake site (ESP File No. LU#3874). The letter requested submittal of a project status report focused on efforts made to define the extent of soil and groundwater contamination.

Mr. Pat Reeves of ADR submitted to Ms. Schroeter of MDNR a report dated July 26, 1994 which provided a project status update. The July 26, 1994 report noted that corrective action was implemented at Well #1 (former Tank #6, near the landfill office) by means of re-excavating the former UST area. The July 26, 1994 report stated that activities would be focused on further investigation of the existing conditions at Well #4 (former Tank #7, near the asphalt plant).

In an August 22, 1994 letter from Mr. Alan Reinkemeyer of MDNR to Mr. B. Whitaker of Westlake Companies (ESP File No. LU#3874), the MDNR noted excessive TPH contamination in the vicinity of Well #4. The MDNR stated that the contaminant concentrations warranted further investigation to include downgradient sampling and subsequently a corrective action plan. The MDNR requested submittal, within 30 days, of a proposal to define the extent of contamination.

An October 12, 1994 report from Schreiber, Grana & Yonley, Inc. titled "Subsurface Environmental Site Investigation Work Plan, Maryon Industries, Inc. Westlake Asphalt Plan, LU #3874" (Work Plan) was addressed to Mr. Vincent Jones, President, Maryon Industries. The Work Plan included a proposal to drill four soil borings to depths of about 35 feet below ground surface, install four groundwater monitoring wells, and collect and analyze soil and groundwater samples for purposes of identifying the extent of impact, potential sources, and need or scope of additional work.

A November 19, 1994 fax cover sheet from Schreiber, Grana & Yonley, Inc. to Mr. Dave Bellamy provided a figure noting free product in monitoring well MW-1A, located south/southeast of the former Tank #7 location.

In a November 22, 1994 letter from Mr. Alan Reinkemeyer of MDNR to Mr. B. Whitaker of Westlake Companies (ESP File No. LU#3874), the MDNR stated that the reported free product/contamination warranted further investigation to delineate the horizontal and vertical extent of the plume, and inquired whether or not the tank pit was a direct conduit to groundwater. The letter further noted that an initial free product recovery report was required within 45 days of confirming the release, and that the initial free product recovery report should be followed by monthly written reports providing information on free product recovery activities and any changes made to enhance the rate of recovery.

In a December 9, 1994 letter from Pat Reeves of ADR to Mr. Bellamy with the MDNR, Mr. Reeves noted that of 80 gallons collectively removed from Well #4, less than 5 gallons was recognized as recovered product.

In a January 10, 1995 letter from Mr. Alan Reinkemeyer of MDNR to Mr. B. Whitaker of Westlake Companies (ESP File No. LU#3874), the MDNR noted that it had not received the required free product recovery reports pertaining to monitoring well No. 1A, as mandated by 10CSR20-10.064. The MDNR stated that since the initial free product recovery and monthly reports have missed their suspense dates, the LUST unit will require a status update covering all site activities. The requested information was to be supplied to the MDNR within 15 days of receipt of the January 10, 1995 letter.

In a January 11, 1995 letter, Mr. Edward Shepard Jr. of Schreiber, Grana & Yonley, Inc. provided a free product notification letter to Mr. Dave Bellamy of the MDNR and summarized the results of investigatory activities at the site. The January 11, 1995 letter noted that anticipated soil cleanup objectives for BTEX would be 1/5/10/10 ppm, respectively, and the TPH cleanup objective would be 200 ppm. The soil cleanup objectives were based on the MDNR's "Leaking Underground Storage Tank Soil Cleanup Guidelines". The letter noted that the soil cleanup objective for xylenes was exceeded at MW-1A, and the soil cleanup objective for TPH was exceeded in MW-1A and MW-4A. Utilizing the MDNR's "Underground Storage Tank Closure Guidance Document" dated January 1992, groundwater cleanup objectives for BTEX were listed as 0.050/0.150/0.320/0.320 ppm, respectively; the groundwater cleanup objective for total BTEX was 0.750 ppm, and the groundwater cleanup objective for TPH was 10 ppm. The January 11, 1994 letter stated that the TPH cleanup objective was exceeded in the sample collected from MW-4A, and MW-1A was not sampled due to the presence of free product in the well. One additional monitoring well was proposed to further delineate BTEX and TPH. A figure attached to the January 11, 1995 letter indicated that the additional well was to be installed southeast of MW-1A, and was to be called MW-5A.

A January 13, 1995 letter from Pat Reeves of ADR to D. Bellamy of the MDNR provided groundwater sample results for wells referred to as well #1 and well #2. The January 13, 1995 letter reiterated an understanding that the MDNR would allow closure of wells #1 and #2 provided that TPH analytical results for four quarterly sampling events remained below 10 parts per million.

In a February 7, 1995 letter from Mr. Alan Reinkemeyer of MDNR to Mr. Vince Jones of Maryon Industries, Inc. (ESP File No. LU#3874), the MDNR approved the additional monitoring well to determine the overall extent of the plume. However, the February 7, 1995 letter also stated that one additional monitoring well would not satisfy MDNR's overall site characterization of the soil and water requirements. The letter noted that the LUST unit would require Maryon Industries, Inc. to fully define, both vertically and horizontally, the extent of the contamination.

A February 7, 1995 report from Schreiber, Grana & Yonley, Inc. titled "Free Product Recovery Report, January 1995, Maryon Industries, Inc., MDNR ESP File No. LU3874" noted recovery of approximately 1.037 gallons of product from MW-1A during January 1995.

In a March 9, 1995 letter from Mr. Alan Reinkemeyer of MDNR to Mr. Vince Jones of Maryon Industries, Inc. (ESP File No. LU#3874), the MDNR requested submittal of a site characterization plan within 45 days of receipt of the letter.

A March 21, 1995 report from Schreiber, Grana & Yonley, Inc. titled "Free Product Recovery Report, February 1995, Maryon Industries, Inc., MDNR ESP File No. LU3874" noted recovery of approximately 0.550 gallons of product during February.

A May 1, 1995 report from Schreiber, Grana & Yonley, Inc. titled "Free Product Recovery Report, March 1995, Maryon Industries, Inc., MDNR ESP File No. LU3874" noted recovery of approximately 0.154 gallons of product during March. The May 1, 1995 referenced five monitoring wells, including MW-5A.

In a May 17, 1995 letter from Mr. Alan Reinkemeyer of MDNR to Mr. Vince Jones of Marion (sic) Industries, Inc. (ESP File No. LU#3874), the MDNR reiterated its request for a site characterization work plan, and requested submittal of the work plan within 30 days of receipt of the May 17, 1995 letter.

A June 6, 1995 letter from Schreiber, Grana & Yonley, Inc. titled "Free Product Recovery Report, April 1995, Maryon Industries, Inc., MDNR ESP File No. LU3874" noted recovery of approximately 0.85 gallons of product during April.

A June 7, 1995 letter from Schreiber, Grana & Yonley, Inc. titled "Free Product Recovery Report, May 1995, Maryon Industries, Inc., MDNR ESP File No. LU3874" noted recovery of 0.302 gallons of product during May.

A June 21, 1995 letter from Edward Shepard Jr. of Schreiber, Grana & Yonley, Inc. to Dave Bellamy of MDNR notified the MDNR of additional investigatory activities at the Maryon Industries, Inc., Westlake Asphalt Plant, UST #7 (MDNR #11), LU#3874. The June 21, 1995 letter stated that well MW-5A was installed on March 24, 1995, and of two soil samples analyzed one of them exceeded the MDNR soil cleanup objective for TPH. The June 21, 1995 letter noted that groundwater samples were collected from monitoring wells MW-1A through MW-5A, and TPH groundwater cleanup objectives were exceeded in wells MW-1A and MW-5A.

In a June 30, 1995 letter from Mr. Alan Reinkemeyer of MDNR to Mr. Vince Jones of Maryon Industries, Inc., the MDNR requested submittal of a corrective action plan based on excessive soil and groundwater contamination detected in the vicinity of MW-1A, MW-4A, and MW-5A. The MDNR requested submittal of the corrective action plan within 45 days of receipt of the June 30, 1995 letter.

In a March 5, 1998 letter from Mr. Jim Growney of the MDNR to Mr. Vince Jones of Maryon Industries, Inc., the MDNR requested a project status report within 45 days of receipt of the letter.

An April 22, 1998 letter from Schreiber Yonley & Associates to Mr. Marty Kasper of the MDNR provided a project status update. The April 22, 1998 letter noted that product recovery continued from MW-1, and that one groundwater sample was planned to be collected from each on-site monitoring well. Based on Product Recovery Logs attached to the April 22, 1998 letter, as much as 30 inches of product were measured in well MW-1A.

In a May 18, 1998 letter, Schreiber Yonley & Associates submitted to Mr. Marty Kasper of MDNR a scope of work for sampling on-site groundwater monitoring wells at the Maryon Industries, Inc. facility. The scope of work called for analysis of BTEX and MTBE.

In a May 20, 1998 letter from Mr. Jim Growney of MDNR to Mr. Vince Jones of Maryon Industries, MDNR noted that the amount of product observed in monitoring well MW-1 indicated the problem is not attenuating. The May 20, 1998 letter requested submittal of a corrective action plan within 60 days, selecting a more aggressive approach to product recovery.

In a letter dated November 13, 1998, Mr. Jim Growney of MDNR responded to the May 18, 1998 scope of work. Mr. Growney indicated to Mr. Vince Jones of Maryon Industries that the work plan was approved. The November 13, 1998 letter further noted that the extent of groundwater contamination to the east of MW-4A was not completely defined. The MDNR requested a work plan for further investigation of soil and groundwater contamination east of MW-4A, and also requested submittal of a corrective action plan for more aggressive product recovery from MW-1 as requested in the MDNR's letter dated May 20, 1998.

In a January 8, 1999 letter from Mr. William Werner of the Stolar Partnership to Mr. David Pate of Williams & Company, Mr. Werner discussed the eligibility of the tank closure for reimbursement under the Missouri Petroleum Storage Tank Insurance Fund. An attachment to the January 8, 1999 letter noted that MDNR Tank #11 exhibited multiple holes on endcaps and lower seams when excavated. A copy of the January 8, 1999 letter and attachments was apparently forwarded to Mr. Jim Growney of MDNR.

A January 13, 1999 letter from Mr. David Pate of the Missouri Petroleum Storage Tank Insurance Fund to Mr. Vince Jones of Maryon Industries stated that the site was eligible to receive benefits from the Petroleum Storage Tank Insurance Fund. The January 13, 1999 letter authorized the site to perform groundwater monitoring activities.

A June 14, 1999 report from Schreiber, Yonley & Associates titled "Quarterly Groundwater Monitoring Report, April 13, 1999, Maryon Industries, Inc., ST0013618, R0003874", prepared for Mr. Mike Jones of Maryon Industries, Inc. stated that liquid phase hydrocarbons were measured in MW-1A at a thickness of 3.71 feet. The report stated that groundwater TPH cleanup objective was exceeded in monitoring wells 1A, 4A, and 5A.

In a July 8, 1999 letter from Mr. Jim Growney of the MDNR to Mr. Vince Jones of Maryon Industries, the MDNR stated that significant contamination still existed in the area of monitoring wells MW-1A, MW-4A, and MW-5A. The MDNR further requested an explanation for the delay in submittal of a corrective action plan for more aggressive product recovery.

An August 16, 1999 letter from Amy Stewart of Screiber, Yonley & Associates to Mr. Hugh Murrell of MDNR requested a 30-day extension for submittal of a corrective action plan for aggressive product recovery from MW-1A.

An August 27, 1999 letter from Mr. Jim Growney of MDNR to Mr. Vince Jones of Maryon Industries approved a 30-day extension for submittal of a corrective action plan.

In a September 24, 1999 letter from Mr. Edward Shepard Jr. of Schreiber, Yonley & Associates to Mr. Hugh Murrell of MDNR, a scope of work for free product recovery was submitted. The scope of work included installation of a product recovery pump in MW-1A, along with submittal of monthly free product recovery reports, plus quarterly groundwater monitoring for TPH, BTEX, and MTBE.

In an October 12, 1999 letter from Mr. Jim Growney of MDNR to Mr. Vince Jones of Maryon Industries, the MDNR approved the September 24, 1999 Work Plan.

A December 15, 1999 letter from Mr. David Pate of the Missouri Petroleum Storage Tank Insurance Fund to Mr. Vince Jones of Maryon Industries stated that the site was eligible to receive benefits from the Petroleum Storage Tank Insurance Fund. The December 15, 1999 letter authorized free product recovery, free product recovery monitoring, and quarterly groundwater monitoring.

In a February 7, 2001 letter from Mr. Jim Growney of the MDNR to Mr. Vince Jones of Maryon Industries, the MDNR requested submittal of additional information within 30 days.

In a September 5, 2001 Letter of Warning from Mr. Jim Growney of MDNR to Mr. Vince Jones of Maryon Industries (ST0013618, R0003874), the MDNR noted that there was a February 7, 2001 letter requesting an update on the proposed free product recovery and quarterly groundwater monitoring that was approved by the department on October 12, 1999. The September 5, 2001 letter noted that to date, the department had not received any documentation that the work had been performed.

In a January 25, 2002 letter from Mr. Edward Shepard Jr. of Schreiber, Yonley & Associates to Mr. Terry Hawkins of MDNR, Schreiber, Yonley & Associates reiterated that a work plan dated September 24, 1999 was approved by MDNR, and that Maryon Industries was currently in the process of acquiring the free product recovery pump. In a table attached to the January 25, 2002 letter, a product thickness of 2.22 feet was noted in MW-1A based on October 30, 2001 measurements.

A July 19, 2002 letter from Mr. Bryan Elledge of Screiber, Yonley Associates to Mr. Terry Hawkins of MDNR discussed the project status. The July 19, 2002 letter noted that on July 16, 2002 the facility and operations of the asphalt plant were transferred to Simpson Construction Materials, LLC (Simpson), and they had assumed responsibility to continue the investigation and corrective action activities associated with the site. The July 19, 2002 letter indicated that a free product recovery and groundwater monitoring work plan was submitted in 1999, the MDNR approved the work plan in correspondence dated October 12, 1999, and that the Missouri Petroleum Storage Tank Insurance Fund approved the budget in correspondence dated December 15, 1999. The July 19, 2002 letter stated that the activities approved in the work plan would now be performed under the direction of Simpson.

In an August 19, 2002 letter from Mr. Fred Huston of MDNR to Mr. Mark Simpson of Simpson Construction Materials, LLC, the MDNR requested submittal of the groundwater monitoring and free product recovery report that was approved by the department.

In a September 1, 2004 letter from the MDNR (no signature provided) to Mr. Mark Simpson of Simpson Construction Materials, LLC, the MDNR requested submittal of the groundwater monitoring and free product recovery report that was approved by the department. The MDNR noted that it had previously requested submittal of the report in letters dated February 7, 2001 and August 19, 2002.

A February 1, 2005 letter from Edward Shepard of Schreiber, Yonley & Associates to Mr. David Fulbright of the Missouri Petroleum Storage Tank Insurance Fund provided a Work Plan for additional site characterization activities. The Work Plan was prepared to

provide information consistent with the Missouri Risk-Based Corrective Action guidance for site characterization at petroleum release sites.

In a March 29, 2005 letter from Mr. David Walchshauser of the MDNR to Mr. Mark Simpson of Simpson Construction Materials, the MDNR denied the February 1, 2005 Work Plan. The denial was based on incompleteness and failure to provide basic information required to complete a review of the plan. The MDNR requested resubmittal of the Work Plan within 60 days.

May 5, 1993 Letter from MDNR to
ADR Environmental

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

May 5, 1993

ESP FILE NO.
#LU3874

Mr. Pat Reeves
ADR Environmental
P.O. Box 182
St. Charles, MO 63302

Dear Mr. Reeves:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources has received and reviewed Spill Report #04223-KT-1612 and based on the information provided, a petroleum release has occurred. The LUST Unit will require a site assessment report to be submitted within 45 days.

If you have any questions, please do not hesitate to contact Greg Bennett at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

Larry P. Coen, CHMM, CPG
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

LPC:jlh

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office

3874

MISSOURI DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL EMERGENCY RESPONSE REPORT

Distribution:
SLRO
LUST

04223-KT -1612
Spill Number

04/22/93
Date Closed

County: ST. LOUIS

04/22/93

COPY

Dist. Date: 5 /11/93

16:12
Time

REPORTER CODE: Spiller TYPE (X-CODE): Petroleum - Fixed fac.

NAME	ORGANIZATION	ADDRESS	PHONE
EER Called by A: PAT REEVES	ADR	ST. LOUIS, MO	
Reported to A by B:			- - 0
Reported to B by C:			- - 0
			- - 0

RESPONSIBLE PARTY

COMPANY: WESTLAKE COMPANY CONTACT NAME:

STREET: 13570 ST. CHARLES CITY/COUNTY: BRIDGETON

STATE: MO ZIP: TELEPHONE - AREA CODE: 314 7 DIGIT: 947-9963

Actual Spill? Y Incident Type: Ug Tank Project No:

Incident Date: / / Time: : 0 Discovery date: 04/22/93 Time: : 0

Incident Location: 13570 ST. CHARLES ROCK ROAD

Incident City: BRIDGETON Incident County: ST. LOUIS State: MO

Primary Mat. Involved: Waste Oil Amt. Spilled: 0 unknown qty

Exact Name or Other Materials Involved: GAS, DIESEL, WASTE OIL

SUMMARY INFORMATION

INCIDENT DESCRIPTION	INCIDENT RESPONSE
ENVIRONMENTAL FIRM FOR RP REPORTS A RELEASE WAS DISCOVERED DURING UNDER-GROUND TANK CLOSURES.	EER REFERRED TO THE LUST UNIT FOR INVESTIGATION.

Notifications:

RESPONDING AGENCY: MDNR
ON-SCENE RESPONSE?: (Y/N) : N
BY:

DUTY OFFICER: KENNETH R. TEETER

signature

June 14, 1993 Closure Report

ADR

ST. LOUIS

P.O. Box 182 St. Charles, MO 63302 314-947-9963

COPY

RECEIVED [redacted] 7 1993 DS

DEPARTMENT OF Natural Resources
ESP Division- Anita Schroeter
P.O. Box 176
Jefferson City,Mo. 65102

June 14,1993
RE: LU 3874

Ms. Schroeter,

Per the department's request, we are submitting the enclosed report. The Closure Report provides a substantial amount of data regarding the site and serves as the baseline for developing the appropriate response assessment.

Westlake Companies has presently authorized additional site investigation work. However, it is my recommendation to delay an assessment, until the department has had the opportunity to review the material enclosed.

Following your initial review, a conference or telephone call, would be appreciated, to discuss the investigation requirements and/or appropriate action regarding this unique site.

If you should have any questions regarding the report or site activities, please contact me directly. As always, we are grateful for the departments ability to resolve many of the time constraints to achieve closure, with their recommendations.

Respectfully,

Patrick Reeves

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

May 5, 1993

ESP FILE NO.
#LU3874

Mr. Pat Reeves
ADR Environmental
P.O. Box 182
St. Charles, MO 63302

? WE ARE STILL ADR/ST. LOUIS

Dear Mr. Reeves:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources has received and reviewed Spill Report #04223-KT-1612 and based on the information provided, a petroleum release has occurred. The LUST Unit will require a site assessment report to be submitted within 45 days.

If you have any questions, please do not hesitate to contact Greg Bennett at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

Larry P. Coen, CHMM, CPG
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

LPC:jlh

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM

UST CLOSURE REPORT PART A (PAGE 2)

COPY

SECTION VII SLUDGE/RINSATE DISPOSAL

1,750 gallons of sludge/rinsate were removed and disposed of by:

Hazardous waste disposal firm: Gateway Petroleum — Kiesel Oil Company

Address: 7200 W. Main, Belleville, Il. — 4801 Fyler, St. Louis, Mo.

500 gl. — 750 gl.

Attach appropriate documentation of waste disposal

SECTION VIII RESULTS OF SOIL ANALYSIS

(Report all results in ppm and attach lab results)

Sample ID	TPH	Benzene	Toluene	E-Benzene	Xylene	Heavy Metals*
		See Schedule & Analytical Data				

Attach chain of custody documentation

* For waste oil USTS only. List any results above detection limits.

SECTION IX LOCATION SKETCH

Attach a sketch of the location which includes:

- size and contents of all USTs and piping and lengths of pipe runs
- locations of all fuel lines and pump islands
- location of the tank pit boundaries

Attached

Indicate scale of the sketch in feet

Designate each sample location on the sketch using the specified labeling format

SECTION X PHOTOGRAPHS

Attach color photographs of the following:

- each side of the removed UST, if the UST is removed X
- each wall of the excavation pit, if UST is removed X
- each sealed vent or pipe line
- sealed UST, if closed in-place

Attached

Comments: See General Summary & Supplementary Data

I certify that the information in this report is true and complete

Party performing closure: [signature] Date 6-14-93

Owner/operator: [signature] Date 6/14/93

MAILING ADDRESS

If TPH < 25 ppm, total BTEX < 1 ppm, and Benzene < 0.5 ppm AND the amount of soil excavated is less than (# of tanks x 100 cubic yards), complete Part A of the UST Closure Report and submit it to:

Missouri Department of Natural Resources
Attn: UST Coordinator
P.O. Box 176
Jefferson City, Missouri 65102

XXX If any of the preceeding conditions have been exceeded complete both Parts A and B of the UST Closure Report and submit it to:

Missouri Department of Natural Resources
Environmental Services Program
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, Missouri 65102

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM

UST CLOSURE REPORT PART A (PAGE 1)

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FOR MDNR USE ONLY

Date received _____ County St. Louis UT# 0013618 OW ID 10414

Region SLRO LSP# LU 3874

SECTION I FACILITIES INFORMATION

Facilities name Westlake Companies UT# 0013618

Address 13570 St. Charles Rock Road Latitude

County St. Louis City Bridgeton Zip code 63044 Longitude

Telephone 314-739-1122 Section, township, and range

Date of Project Initiation April 10, 1993 Date of Project Completion April 26, 1993

SECTION II USTs CLOSED

Tank #	Capacity (gal)	Age	Date Removed from Service (use)	UST Construction Material	Product Stored	Method of Closure *
1	2,000	11	4/93	STL	Unlead	Removed
2	10,000	12	1/92	STL	Unlead	Removed
4	10,800	21	3/93	STL	Diesel	Removed
5	10,000	21	1/92	STL	Diesel	Removed
6	10,000	16	3/93	STL	Diesel	Removed
8	1,000	33	3/93	STL	Waste Oil	Removed
11	10,000	25	3/93	STL	Diesel	Removed

Attach Documentation of Tank Cleaning X

* Removal, In-place

SECTION III UST OWNER INFORMATION

Name Westlake Companies

Address 12976 St. Charles Rock Road

County St. Louis City Bridgeton Zip Code 63044

Contact Person B. Whitaker Telephone 314-739-1122

SECTION IV INFORMATION ON PARTY PERFORMING CLOSURE

Name ADR/St. Louis

Address P.O. Box 182

County St. Charles City St. Charles Zip Code 63302

Contact Person Patrick Reeves Telephone 314-947-9963

SECTION V TANK DISPOSAL INFORMATION

Tanks were transported to Kiesel Oil Company (name)

Branch Street Facility, St. Louis, Mo. (address)

for: [X] recycle (salvage) or [ ] landfill or [ ] unregulated use

Attach appropriate documentation of tank disposal X

SECTION VI SOIL DISPOSAL INFORMATION

_____ cubic yards of soil excavated See Supplementary Data: Excavated soils returned to pit.

_____ cubic yards of non-contaminated soil returned to pit

_____ cubic yards of contaminated soil disposed or treated at _____

Attach appropriate documentation of soil disposal or treatment

Attach copy of "Virgin Product Disposal Form" or "Special Waste Form", as appropriate N/A

COPY

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM

UST CLOSURE REPORT PART B

SECTION XI INFORMATION ON POSSIBLE RECEPTORS (Attach completed Figure 3 matrix)

Depth to groundwater 350 ft

Distance to streams N/A ft

Distance to water wells N/A ft

Distance to lakes .5 mi. ft (that are within 0.5 miles of site) See Supplementary Data

SECTION XII ADDITIONAL INFORMATION ON EACH LOCATION

Add the following information to the location sketch:

X - all above ground tanks and associated piping on the site, plus the size and content of each

N/A all underground utilities within 100 ft of the site (sanitary sewers, power lines, storm sewers,

N/A utility trenches, water lines, pipelines, etc.)

- direction and degree of slope in area Identified in Supplementary Data

X - depth to bottom of each tank

SECTION XIII SOIL INFORMATION

Types of soil encountered during excavation and depth to each:

(or attach a drilling log with this information or a sketch of a side wall)

Type	Depth
Limestone (crushed)	Grade
Limestone rock	3-5'
Clay Soils	3-10'
Clay silts/gravel	9-20'

Additional information provided in Supplementary Data

COPY

Figure 3
Leaking Underground Storage Tank Soil Cleanup Guidelines for Undisturbed Soil

WESTLAKE COMPANIES UT 0013618

Site Features	Score 15 if True		Score 10 if True		Score 5 if True		Score 0 if True	
Groundwater potable?	No	XXX	Unknown		Poor		Yes	
Depth to groundwater?	> 100 ft	XXX	51-100 ft		25-50 ft		< 25 ft	
Natural fractures present?	None		Unknown	XXX	Present		Predominant	
Man-made vertical conduits?	None	XXX	Unknown		Present		Predominant	
Man-made horizontal conduits?	None	XXX	Unknown		Present		Predominant	
Coarse soil or sand present?	None		Unknown	XXX	Present		Predominant	
Water wells nearby?	> 1000 ft away	XXX	501-1000 ft away		100-500 ft away		< 100 ft away	
Background levels present?	Above action levels		Unknown	XXX	Below action level		Nondetectable	
Subtotals		75		30				
						Total Score =	105	

	XXXXXX	Soil Cleanup (ppm)		
Total Score	101-120	71-100	41-70	40 or less
BTEX =	2/10/50/50	1/5/10/10	0.5/1/2/2	B + T + E + X < 2
TPH =	500	200	100	50

COPY

JUNE 14,1993

UST CLOSURE REPORT & ESP RESPONSE

SITE: WESTLAKE COMPANIES, UT0013618
13570 St.Charles Rock Road
Bridgeton, Mo. 63044

OWNER: WESTLAKE COMPANIES, OW10412
12976 St.Charles Rock Road
Bridgeton, Mo. 63044

ESP FILE # LU3874

COPY

UT 0013618

June 14,1993

CLOSURE RESPONSE INDEX

SECTION I

MDNR Closure Format Forms
Supplementary Information Report
Authorization Notice
Disposal Documents

SECTION II

Analytical Compilation Schedule
Laboratory Results
Chain of Custody Forms

SECTION III

Topographic/Locator Map
Site Drafts
Photographs

COPY

SUPPLEMENTARY INFORMATION

1.0 Area/Location

2.0 Background

3.0 Preliminary Site Inspection

4.0 UST Identification

5.0 Mechanical Removal

6.0 UST Inspection

7.0 Soil Sample & Screening Methods

8.0 Topography & Soils

9.0 Groundwater/Aquifers

1.0 AREA / LOCATION

The referenced site is located approximately one mile due north of the Mark Twain Expressway (Highway 70) and the I-270 Bypass junction, west of St. Louis,Missouri. Access to the property is thru the northeast perimeter traveling south off of highway 115 (St. Charles Rock Road), and is recognized as part of the local jurisdiction within the city of Bridgeton,Missouri. A topographic section and locator map are provided elsewhere in this report.

The general vicinity is relatively limited in development, with some industrial and commercial operations. Agricultural areas are predominant, outside the immediate adjoining parcels of property.

2.0 BACKGROUND

Prior to 1988, Westlake Companies owned the present site which included all immediate surrounding land parcels located south of Highway 115. With various business concerns, primary activities were divided by mining/quarry operations on the eastern parcels and operating a landfill on the western side. Production plants for material screening, asphalt batching, and mixing concrete were maintained in the central access area between the two primary operations, on what is recognized as the southern portion of the current property.

In 1988, the surrounding land parcels were acquired from Westlake Companies by Laidlaw Waste Systems,Inc., to conduct landfill operations. The various operating plants, have since been purchased from Westlake Companies. With the reduction in property and sale of the plants, use of the underground tanks has ceased. In compliance with the current UST laws, removal and closure were implemented.

COPY

3.0 PRELIMINARY SITE INSPECTION

During March of 1993, a site inspection was conducted regarding the status and condition of underground storage tanks (UST's) located at the referenced facility. A work plan was established for removal of six ust's and Notice of Removal issued to the MDNR.

Removal of three tanks would involve working in the immediate area of structural pylon footings, thus limiting directional access and presenting potential risk to the integrity of the foundations. Other tanks were located in areas directly adjacent to traffic thoroughfare of heavy equipment providing limited working space.

Based on inspection, four of the ust's have been out of service for some time. Only two tanks scheduled for removal were active,(Waste Oil & 10,000 Unlead).

4.0 UST IDENTIFICATION

During the course of removal, a numerical reference was established in chronological order. Subsequently all activity including the tank reference and associated data collection continue to reflect this sequence, throughout this report.

In order to substantiate a relation between the numerical reference and the current UST registration/Closure Notice, we have produced the following table.

Removal	Description	MDNR
# 1	10,800 gl. Diesel	# 4
# 2	10,000 gl. Diesel	# 6
# 3	10,000 gl. Diesel	# 5
# 4	2,000 gl. Waste Oil	# 8
# 5	2,000 gl. Unlead	# 1
# 6	10,000 gl. Unlead	# 2
# 7*	10,000 gl. Diesel	# 11

*This tank was added to the removal project after completing the first six tanks.

COPY

5.0 General Comments

Removal was conducted in accordance with recommended industry practices. Gateway Petroleum provided removal of tank fluids prior to project initiation. Electrical service was disconnected and pump units (when required) were removed. Supply lines (where applicable) were drained of any remaining product. Monitoring for explosive vapors was conducted during each phase of work. Excavation was directed to provide adequate clearance for the tank(s) to be lifted freely. A significant problem encountered with these removals is due to the low cohesion properties of the subsurface materials,in the initial 5 foot range and resulted in frequent excavation collapse. Compounded with structure integrity and thoroughfares, excavations were backfilled almost immediately following removal and sample acquisition.

Tank #1

Initiated with removal of surface soils. No existing supply line was evident, indicating a non-service status. Removal of this tank presented a structural threat to the footing and pylon for an overhead conveyor. Action was taken to minimize disturbance of the surrounding base. As seen in the photographs of removal, soils were migrating from the base, and backfill was immediately conducted. In order to obtain soil samples, a GEO-PROBE tm, was utilized for acquiring representative samples covering a vertical span of 2 feet (18-20' below grade) in two areas.

Tank #2

Initiated with removal of surface soils. No existing supply line was evident, indicating a non-service status. Removal of this tank was not as threatening as tank #1, However, based on the proximity and soil conditions, the excavation was limited and upon securing soil samples,was immediately backfilled.

Tank #3

Same as tank #1 & 2, with respect to soils at grade and the absence of piping. This tank was located directly below the conveyor, between two smaller footings. The clearance from tank end-caps to footings was less than 3.5 feet total space and required the excavation be drawn at a 45° angle to remove the tank. Upon securing the tank bed samples, the excavation was backfilled. As shown in the photographs, the tank was drawn/removed in a roll-out fashion.

MECHANICAL / REMOVAL cont.

COPY

Tank #4

Initiated with surface soils removal. Drain piping was intact, requiring isolation. Excavation was expanded due to repeated falling of surrounding fill material. As shown in the photographs, the excavation had expanded to within a foot of the foundation wall for the building. Upon tank removal and sample acquisition, the pit was backfilled.

Tank #5

Initiated with electrical disconnect and removal of the suction pump. This system had been out of service for some time, However, explosive vapors were detectable and proper purging was conducted prior to continuance. Appropriate removal of grade cover and the tank bulkhead allowed the tank to be removed with little difficulty.

Tank #6

Conducted simultaneously with #5. The increase in area excavation provided undermining problems with the traffic thoroughfare surface along the southeast wall. Upon removal and sample collection, the excavation was backfilled.

Tank #7

Access for this removal was limited by the close proximity of above-ground tanks and operating equipment associated with the asphalt batching plant. In addition, repeated collapse of the excavation walls occurred during equipment operation each time the plant went into batch production. As shown in the photographs, distinct voids were noted in the foundation area along with the fallen excavation walls. The excavation was immediately filled following sample acquisition.

6.0 UST INSPECTION

Upon mechanical removal, tanks were secured on grade and inspected for cracks, corrosion and leaks. As identified in photodocumentation, confirmations were identified with each tank.

#1 Corrosion pits in two areas, 1 hole on each endcap.
#2 Corrosive pit and small hole on tank bottom.
#3 Multiple holes in Endcap and corroded seam.
#4 Multiple holes on endcaps
#5 Multiple holes on lower portion of endcaps and bottom.
#6 Holes 1"Ø, on encaps, seam corrosions and holes on bottom.
#7 Multiple holes on endcaps,lower seams.

COPY

7.0 SOIL SAMPLING & SCREENING

Soil samples for tank #2 thru #7, were obtained by use of the excavator to collect soil from native soils beneath the tank bed area. Representative samples were labeled and identified using the recommended format provided by MDNR in the 1992 guidelines. Ice was used to preserve samples during storing and transport to American Technical & Analytical Services (ATAS), where samples were analyzed in accordance with regulatory protocol and requirements.

Acquisition of the samples for tank #1, were performed using a GEO-PROBE unit to collect a representative sample from two locations at a vertical depth covering 18 to 20 feet below grade surface.

Two independent field screening techniques were utilized in examining excavated soils, a Photo-Ionization Detector (PID) and calibrated sampling tubes (SYN-TEC). No significant or detectable levels were observed with the excavated soils.

8.0 TOPOGRAPHY/SOILS

As provided with in the Closure Report section,there are no substantial elevation changes regarding the immediate site. Elevation has been determined as 460 feet above mean sea level (MSL). Existing slope contours on the property have been made over the past two decades,attributed to the traffic thoroughfare and operating areas. The grade surface is crushed rock and silts with variable depths to eight feet below grade. The underlying soils in the southern property area appear to be clay, clayey gravel and clay silts overlying bedrock formation. Limestone bedrock has been observed in depths from surface to twenty feet below grade and extend in depth in excess of 200'. Soil conditions in the northern area appear to be a mix of clayey sands, sand and gravel overlying a shallow bed of sand-silt. Bedrock is located in depths from 20 to 60 feet below grade and extend 200 to 250 feet.

COPY

9.0 GROUND WATER/AQUIFER

Groundwater has been established below the bedrock areas approximately 350 feet below grade. There is no evidence of a conduit pertaining to the property, such as the emergence of a stream or creek. Three lagoons on the property are on the southern area where bedrock is visible at grade. With the recent rains, no outfall from the lagoons has occurred.

The Missouri River is two miles west of the property and flows in a northern direction. Cowmire Creek is located east of the site and flows in a northern direction.

A comparison of various ponds and lakes in the region would offer the potential for an aquifer to be in the area. However, based on the topographic elevations and the known formation of bedrock, the potential is greatly limited with respect to developing a flow without a primary feed. Recent precipitation may influence the ability of perched water or high saturation areas near the bedrock surfaces, however,no investigation or characterization has been conducted under this scope of work.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM
UST CLOSURE NOTICE

FILE COPY

COPY

FOR STATE AGENCY USE ONLY

Date received 3-26-93 County St. Louis UTI 0013618 OWID 0W0104012

Region SLRO

SECTION I FACILITIES INFORMATION

Facilities name Westlake Quarry & Materials Co. UTI 13618

Address 13570 St Charles Rock Rd.

County St. Louis City Bridgeton Zip code 63044

Telephone 314-739-1122

Estimated Date of Project Initiation: 4/20/93 Estimated Date of Project Completion: 4/25/93

SECTION II USTs CLOSED

Tank #	Capacity (gal)	Year Installed	Date Removed from Service (use)	UST Construction Material	Product Stored	Method of Closure*
1	2000	82	3-93	STEEL	UNLEAD	R
2	10,000	81	1-92	"	UNLEAD	R
4	10,000	72	3-93	"	DIESEL	R
5	10,000	72	1-92	"	DIESEL	R
6	10,000	77	3-93	"	DIESEL	R
8	7,000	60	3-93	"	USE OIL	R

Attach additional sheets if necessary

*Removal, In-place

SECTION III USTs REGISTRATION

Are USTs registered? [X] Yes [ ] No

If no, attach completed notification of UST form

Are or were USTs in use on or after August 28, 1989? [X] Yes [ ] No

If yes, has $100 fee per UST been paid? [X] Yes [ ] No

If no, attach $100/UST check

SECTION IV UST OWNER INFORMATION

Name Westlake Quarry & Material Co.

Address 12976 St. Charles Rock Rd.

County St Louis City Bridgeton Zip Code 63044

Contact Person B. Whitaker Telephone 739-1122

SECTION V PARTY PERFORMING CLOSURE

Name ADR/St Louis

Address P.O. Box 182

County St Charles City St Charles Zip Code 63302

Contact Person Pat Ritchies Telephone 947-7763

SECTION VI CERTIFICATION OF PROPER CLOSURE

I (name) Pat Ritchies (please print) certify that API-1604 and MDNR procedures will be followed for safety, excavation, handling and disposal of soils and of other materials, and that soils from beneath the tanks, distribution lines and pump islands will be analyzed in accordance with the requirements outlined in the Underground Storage Tank Closure Guidance Document.

SIGNATURE OF RESPONSIBLE PARTY Pat Ritchies DATE 5/25/93

SECTION VII CLOSURE DATE

Closure may be completed on or after (Date) April 26, 1993

Signature of authorized MDNR representative James Harris (Date) 3/30/93

SECTION VIII WAIVER OF 30-DAY PERIOD

Alternative date of planned closure completion

Authorized MDNR representative [illegible] Date 4-7-93 Regional Office SLRO

State Agency Use Only

State Agency Use Only

24 HR.
PHONE: 314-421-0328
FAX: 314-351-0894
EASYLINK: 62561520

THE KIESEL COMPANY
SINCE 1896

COPY

4801 FYLER AVENUE • ST. LOUIS, MISSOURI 63116
(314) 351-5500

May 18, 1993

ADR/Westlake Quarry
12976 St. Charles Rock Road
Bridgeton, Missouri 63044

Gentlemen:

This letter is to provide you with information as to the disposal of seven underground storage tanks that were removed on April 22, 23 and 26th 1993 from Westlake Quarry in Bridgeton. The tanks were taken to Branch Street where they were steam cleaned and cut up and disposed of as scrap. The 750 gallons of sludge and the wash water was collected and disposed of according to EPA regulations.

If I maybe of further assistance, please do not hesitate to contact me.

THE KIESEL COMPANY

Kathryn K. Cole

Kathryn K. Cole

ENVIRONMENTAL ASSISTANT

KKC: kb

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 , SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12 pitch) typewriter.) EPA Form 8700-22 (Rev. 9-88) Form Approved.OMB No. 2050 0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD092358548

Manifest Document No.

2. Page 1 of 1

Information in the shaded areas is not required by Federal law but is required by Illinois law.

3. Generator's Name and Mailing Address — Location If Different

GATEWAY PETROLEUM CO., INC.
7200 West Main St. : Belleville, IL : 62223

4. Generator's Phone (618) 271-0880

A. Illinois Manifest Document Number: IL 37 [illegible] COPY

Fee Paid, If Applicable

B. Illinois Generator's ID: 1 6 3 0 4 5 0 0 3 2

5. Transporter 1 Company Name: GATEWAY PETROLEUM CO., INC.

6. US EPA ID Number: ILD092358548

C. Illinois Transporter's ID: 0 1 5 3

D. (618 271-0880 Transporter's Phone

7. Transporter 2 Company Name

8. US EPA ID Number

E. Illinois Transporter's ID

F. ( ) Transporter's Phone

9. Designated Facility Name and Site Address

GATEWAY PETROLEUM CO., INC.
3000 Missouri Avenue
East St. Louis, IL 62205

10. US EPA ID Number: ILD092358548

G. Illinois Facility's ID: 1 6 3 0 4 5 0 0 3 2

H. Facility's Phone: (618) 271-0880

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE OIL - NON-FLAMMABLE	1	T T	2160		EPA HW Number: XX; Authorization Number: 9 9 5 4 0 1
b.					EPA HW Number: XX; Authorization Number:
c.					EPA HW Number: XX; Authorization Number:
d.					EPA HW Number: XX; Authorization Number:

J. Additional Descriptions for Materials Listed Above

MO Dept. of Natural Resources:
Generator I.D. # A-1837-4725 :
Hauler # H-1063 : Site # RR-05

K. Handling Codes for Wastes Listed Above in Item # 14

1 = Gallons 2 = Cubic Yards

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: R. Odenwald, Jr. Signature: [signature] Date: Month Day Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Philip Schaefer Signature: Philip Schaefer Date: Month Day Year 04 12 93

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name Signature Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Tom Jackson Signature: [signature] Date: Month Day Year 4 12 93

This Agency is authorized to require, pursuant to Illinois Revised Statutes, Chapter 111½ Section 21, that this information be submitted to the Agency. Failure to provide the information may result in a civil penalty against the owner or operator of not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

COPY 1. TSD MAIL TO GENERATOR COPY

MISSOURI DEPARTMENT OF NATURAL RESOURCES
P.O. BOX 176, JEFFERSON CITY, MISSOURI 65102
314-751-3176

FORM DNR HWT-10 — WASTE OIL DAILY LOG

INSTRUCTIONS ON BACK

THIS FORM IS TO BE USED FOR WASTE OIL ONLY

OTHER HAZARDOUS WASTES MUST BE MANIFESTED SEPARATELY

COPY

PART I:

A. GENERATOR'S NAME: ADDRESS: CITY, STATE, ZIP:	PLEASE PRINT OR TYPE	B. MISSOURI GENERATOR I.D. NO.	C. WASTE OIL GALLONS RECEIVED	TO BE COMPLETED BY GENERATOR. PRINT NAME, SIGNATURE DATE OF TRANSACTION
1. West Lake Quarry & Materials Co. 13570 St. Charles Rock Rd. Bridgeton, Mo 63044			500	Patrick Reeves 4-12-93
2.			300	K. Beers 4-12-93
3.			150	Bill Franklin 4-12-93
4.			50	Larry Brown 4-12-93
5.			280	Richard Murphy 4-12-93
6.			250	Tony Aiello 4-12-93
7.			100	Craig Slattery 4-12-93
8.			370	Jeff Moses 4-12-93
9.			250	Doug Johnson 4-12-93
	D. WASTE OIL GALLONS (TOTAL THIS PAGE)		2160	

E. PAGE NUMBER 1 OF 1 WASTE OIL DAILY LOG PAGES FOR THIS SHIPMENT.

F. MANIFEST NUMBER ▶ A-18374725 G. MISSOURI TRANSPORTER I.D. NUMBER ▶ H-1063

I. TRANSPORTER CERTIFICATION: This is to certify that the waste oil listed above (as defined in 10 CSR 25-11.010) was collected, a signature was obtained from an authorized representative of the generator listed, that the above information is correct to my best knowledge and belief and that this shipment is in compliance with the applicable regulations of the MDNR, DOT, and EPA.

SIGNATURE OF DRIVER	DATE	PRINT OR TYPE NAME OF DRIVER
Philip Schaefer	4-12-93	Philip Schaefer

MO 780-0024 (3-89) DISTRIBUTION: WHITE/DEPT. FINAL COPY CANARY/TRANSPORTER FINAL COPY

GATEWAY PETROLEUM
7200 WEST MAIN ST.
BELLEVILLE, ILLINOIS 62223
EMERGENCY NUMBER 618-271-0880 • 314-231-2756

ENTERED

20899

LAKE QUARRY & MATERIALS CO.

13570 St. Charles Rock Road
Bridgeton, MO 63044

4/9/93

314-739-1122

Ray Klinger

Route: North Route# 170

Stop# 30

P.U. last year: 4

Ave. Gal. Last Year: 625

Tank size : 2000

Interval : 90

2/5/92 Amt. 200

12/12/92 Amt. 200

COPY

~~WATER~~	~~GALLONS:~~
OIL # Diesel	GALLONS: 500

COMMENTS: Monday 4/12/93. 5 underground tanks in same area with Laid Law Send Reporting Copies to ADR. (M200) (100 Demurge) Billing to West Lake

SIGNATURE: [signature]
The above signed certifies that their petroleum material has not been mixed with a substance considered hazardous under RCRA, Section 3001 and/or CERCLA, Section 102

DATE: 4-12-93 DRIVER: Phil #5

Thank You For Your Business OFFICE COPY

COPY

UT0013618

WESTLAKE COMPANIES

13570 St.Charles Rock Road
Bridgeton,Missouri

RE: Analytical Data Compilation For UST Removals.
Results are converted to Parts Per Million

This cover page represents the detectable levels for analytical results developed by American Technical & Analytical Services,Inc. from samples taken during the UST Removal project,conducted during April 1993. The required action level is based on Figure 3, of the UST Closure Guidelines,1992, provided by MDNR.

Sample I.D.	Benz	Toul	Eben	Xyln	BTEX	TPH
T1-19	ND	.004	.006	.034	.044	477
T2-16	ND	ND	.002	.009	.011	130
T2-20	ND	.010	.048	.277	.335	ND
T3-16	ND	ND	ND	.004	.004	19
T4-12*	ND	ND	.160	.700	.860	2753
T4-Fill*	ND	ND	ND	ND	ND	ND
T5-10	ND	ND	ND	ND	ND	16
T5-6	ND	ND	ND	ND	ND	ND
T6-18	1.5	11.0	10.1	75.	97.6	128
T6-10	.002	.003	.003	.019	.027	7
EXC-MAT	ND	ND	ND	ND	ND	27
RET-STP	ND	ND	ND	ND	ND	167
T7-15	.131	.240	4.04	4.26	8.67	13,327
Soil A/L	2.0	10.0	50.0	50.0	112.	500

* Waste Oil -required additional tests	12 / fill
TCLP Toxicity, Detected Barium	2.4 / .082
VOA,Volatile Organics:	
Methylene Chloride	.03/ ND
Acetone	ND / .03

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: ~~650401B1~~(168)

DATE : 05-04-93

SAMPLE MATRIX : SOIL
ATAS # : 6584.01
DATE SUBMITTED: 04-20-93
PROJECT : BRIDGETON
SAMPLE ID : T1-19-SB

PARAMETER	REPORTING LIMIT	UNIT	RESULTS	DATE ANALYZED	METHOD REFERENCE
GAS CHROMATOGRAPHY					
BENZENE	1.0	ug/Kg	ND	04-22-93	SW 8020
TOLUENE	1.0	ug/Kg	3.5	04-22-93	SW 8020
ETHYLBENZENE	1.0	ug/Kg	6.7	04-22-93	SW 8020
XYLENES	1.0	ug/Kg	33.9	04-22-93	SW 8020
TOTAL BTEX		ug/Kg	44.1		

QA/QC SURROGATE RECOVERY

BROMOFLUOROBENZENE (65-135%) 76 %

* = OUTSIDE QC LIMIT ON BOTH ORIGINAL AND RERUN
ND = NOT DETECTED ABOVE REPORTING LIMIT
ug/Kg = PARTS PER BILLION(PPB)

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 658402BX(168)

DATE : 05-04-93

SAMPLE MATRIX : SOIL
ATAS # : 6584.02
DATE SUBMITTED: 04-20-93
PROJECT : BRIDGETON
SAMPLE ID : T2-16

PARAMETER	REPORTING LIMIT	UNIT	RESULTS	DATE ANALYZED	METHOD REFERENCE
GAS CHROMATOGRAPHY					
B[illegible]ZENE	1.0	ug/Kg	ND	04-22-93	SW 8020
T[illegible]JENE	1.0	ug/Kg	ND	04-22-93	SW 8020
[illegible]HYLBENZENE	1.0	ug/Kg	1.5	04-22-93	SW 8020
[illegible]LENES	1.0	ug/Kg	9.2	04-22-93	SW 8020
TOTAL BTEX		ug/Kg	10.7		

QA/QC SURROGATE RECOVERY

BROMOFLUOROBENZENE (65-135%) 92 %

* = OUTSIDE QC LIMIT ON BOTH ORIGINAL AND RERUN
ND = NOT DETECTED ABOVE REPORTING LIMIT
ug/Kg = PARTS PER BILLION(PPB)

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 658403BX(168)

DATE : 05-04-93

SAMPLE MATRIX : SOIL
ATAS # : 6584.03
DATE SUBMITTED: 04-20-93
PROJECT : BRIDGETON
SAMPLE ID : T2-20

PARAMETER	REPORTING LIMIT	UNIT	RESULTS	DATE ANALYZED	METHOD REFERENCE
GAS CHROMATOGRAPHY					
BE[illegible]ENE	5.0	ug/Kg	ND	04-22-93	SW 8020
T[illegible]ENE	5.0	ug/Kg	10.1	04-22-93	SW 8020
[illegible]YLBENZENE	5.0	ug/Kg	47.5	04-22-93	SW 8020
X[illegible]ENES	5.0	ug/Kg	277	04-22-93	SW 8020
TOTAL BTEX		ug/Kg	334.6		

QA/QC SURROGATE RECOVERY

BROMOFLUOROBENZENE (65-135%) 111 %

* = OUTSIDE QC LIMIT ON BOTH ORIGINAL AND RERUN
ND = NOT DETECTED ABOVE REPORTING LIMIT
ug/Kg = PARTS PER BILLION(PPB)

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 658404BX(168)

DATE : 05-04-93

SAMPLE MATRIX : SOIL
ATAS # : 6584.04
DATE SUBMITTED: 04-20-93
PROJECT : BRIDGETON
SAMPLE ID : T3-16

PARAMETER	REPORTING LIMIT	UNIT	RESULTS	DATE ANALYZED	METHOD REFERENCE
GAS CHROMATOGRAPHY					
BENZENE	1.0	ug/Kg	ND	04-22-93	SW 8020
TOLUENE	1.0	ug/Kg	ND	04-22-93	SW 8020
ETHYLBENZENE	1.0	ug/Kg	ND	04-22-93	SW 8020
XYLENES	1.0	ug/Kg	4.1	04-22-93	SW 8020
TOTAL BTEX		ug/Kg	4.1		

QA/QC SURROGATE RECOVERY

BROMOFLUOROBENZENE (65-135%) 93 %

* = OUTSIDE QC LIMIT ON BOTH ORIGINAL AND RERUN
ND = NOT DETECTED ABOVE REPORTING LIMIT
ug/Kg = PARTS PER BILLION(PPB)

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 658405VA(168)

DATE : 05-04-93

SAMPLE MATRIX : SOIL
ATAS # : 6584.05
DATE SUBMITTED: 04-20-93
DATE ANALYZED : 04-22-93
METHOD REF. : SW846-8240, EPA METHODOLOGY
PROJECT : BRIDGETON
SAMPLE ID : T4-12

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

VOLATILES	R.L.	RESULTS	VOLATILES	R.L.	RESULTS
CHLOROMETHANE	50	ND	1,1,2,2-TETRACHLOROETHANE	25	ND
B[illegible]OMETHANE	50	ND	1,2-DICHLOROPROPANE	25	ND
V[illegible]L CHLORIDE	50	ND	TRANS-1,3-DICHLOROPROPENE	25	ND
[illegible]LOROETHANE	50	ND	TRICHLOROETHENE	25	ND
[illegible]THYLENE CHLORIDE	25	32	DIBROMOCHLOROMETHANE	25	ND
ACETONE	50	ND	1,1,2-TRICHLOROETHANE	25	ND
CARBON DISULFIDE	25	ND	BENZENE	25	ND
1,1-DICHLOROETHENE	25	ND	CIS-1,3-DICHLOROPROPENE	25	ND
1,1-DICHLOROETHANE	25	ND	BROMOFORM	25	ND
TOTAL-1,2-DICHLOROETHENE	25	ND	2-HEXANONE	50	ND
CHLOROFORM	25	ND	4-METHYL-2-PENTANONE	50	ND
1,2-DICHLOROETHANE	25	ND	TETRACHLOROETHENE	25	ND
2-BUTANONE	50	ND	TOLUENE	25	ND
1,1,1-TRICHLOROETHANE	25	ND	CHLOROBENZENE	25	ND
CARBON TETRACHLORIDE	25	ND	ETHYLBENZENE	25	160
VINYL ACETATE	50	ND	STYRENE	25	ND
BROMODICHLOROMETHANE	25	ND	TOTAL XYLENES	25	700

QA/QC SURROGATE RECOVERIES

TOLUENE-d8(81-117) 109% BROMOFLUOROBENZENE(74-121) 103%
1,2-DICHLOROETHANE-D4(70-121) 95%

= ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.
RL = REPORTING LIMIT
ND = NOT DETECTED ABOVE REPORTING LIMIT

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COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 658406VA(168)

DATE : 05-04-93

SAMPLE MATRIX : SOIL
ATAS # : 6584.06
DATE SUBMITTED: 04-20-93
DATE ANALYZED : 04-23-93
METHOD REF. : SW846-8240, EPA METHODOLOGY
PROJECT : BRIDGETON
SAMPLE ID : T4-FILL

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

VOLATILES	R.L.	RESULTS	VOLATILES	R.L.	RESULTS
CHLOROMETHANE	10	ND	1,1,2,2-TETRACHLOROETHANE	5	ND
BROMOMETHANE	10	ND	1,2-DICHLOROPROPANE	5	ND
VINYL CHLORIDE	10	ND	TRANS-1,3-DICHLOROPROPENE	5	ND
CHLOROETHANE	10	ND	TRICHLOROETHENE	5	ND
METHYLENE CHLORIDE	5	ND	DIBROMOCHLOROMETHANE	5	ND
ACETONE	10	30	1,1,2-TRICHLOROETHANE	5	ND
CARBON DISULFIDE	5	ND	BENZENE	5	ND
1,1-DICHLOROETHENE	5	ND	CIS-1,3-DICHLOROPROPENE	5	ND
1,1-DICHLOROETHANE	5	ND	BROMOFORM	5	ND
TOTAL-1,2-DICHLOROETHENE	5	ND	2-HEXANONE	10	ND
CHLOROFORM	5	ND	4-METHYL-2-PENTANONE	10	ND
1,2-DICHLOROETHANE	5	ND	TETRACHLOROETHENE	5	ND
2-BUTANONE	10	ND	TOLUENE	5	ND
1,1,1-TRICHLOROETHANE	5	ND	CHLOROBENZENE	5	ND
CARBON TETRACHLORIDE	5	ND	ETHYLBENZENE	5	ND
VINYL ACETATE	10	ND	STYRENE	5	ND
BROMODICHLOROMETHANE	5	ND	TOTAL XYLENES	5	ND

QA/QC SURROGATE RECOVERIES

TOLUENE-d8(81-117) 93% BROMOFLUOROBENZENE(74-121) 87%
1,2-DICHLOROETHANE-D4(70-121) 80%

= ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.
RL = REPORTING LIMIT
ND = NOT DETECTED ABOVE REPORTING LIMIT

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COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 659901BX(167)

DATE : 04-29-93

SAMPLE MATRIX : SOIL
ATAS # : 6599.01
DATE SUBMITTED: 04-22-93
PROJECT : BRIDGETON
SAMPLE ID : T5-10

PARAMETER	REPORTING LIMIT	UNIT	RESULTS	DATE ANALYZED	METHOD REFERENCE
GAS CHROMATOGRAPHY					
BENZENE	1.0	ug/Kg	ND	04-24-93	SW 8020
TOLUENE	1.0	ug/Kg	ND	04-24-93	SW 8020
ETHYLBENZENE	1.0	ug/Kg	ND	04-24-93	SW 8020
XYLENES	1.0	ug/Kg	ND	04-24-93	SW 8020
TOTAL BTEX		ug/Kg	ND		

QA/QC SURROGATE RECOVERY

BROMOFLUOROBENZENE (65-135%) 67 %

* = OUTSIDE QC LIMIT ON BOTH ORIGINAL AND RERUN
ND = NOT DETECTED ABOVE REPORTING LIMIT
ug/Kg = PARTS PER BILLION(PPB)

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COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 6599U2BX(167)

DATE : 04-29-93

SAMPLE MATRIX : SOIL
ATAS # : 6599.02
DATE SUBMITTED: 04-22-93
PROJECT : BRIDGETON
SAMPLE ID : T5-DG-6'

PARAMETER	REPORTING LIMIT	UNIT	RESULTS	DATE ANALYZED	METHOD REFERENCE
GAS CHROMATOGRAPHY					
BENZENE	1.0	ug/Kg	ND	04-24-93	SW 8020
TOLUENE	1.0	ug/Kg	ND	04-24-93	SW 8020
ETHYLBENZENE	1.0	ug/Kg	ND	04-24-93	SW 8020
XYLENES	1.0	ug/Kg	ND	04-24-93	SW 8020
TOTAL BTEX		ug/Kg	ND		

QA/QC SURROGATE RECOVERY

BROMOFLUOROBENZENE (65-135%) 72 %

* = OUTSIDE QC LIMIT ON BOTH ORIGINAL AND RERUN
ND = NOT DETECTED ABOVE REPORTING LIMIT
ug/Kg = PARTS PER BILLION(PPB)

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COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 659903BX(167)

DATE : 04-29-93

SAMPLE MATRIX : SOIL
ATAS # : 6599.03
DATE SUBMITTED: 04-22-93
PROJECT : BRIDGETON
SAMPLE ID : T6-18'

PARAMETER	REPORTING LIMIT	UNIT	RESULTS	DATE ANALYZED	METHOD REFERENCE
GAS CHROMATOGRAPHY					
BENZENE	1250	ug/Kg	1500	04-24-93	SW 8020
[illegible]JENE	1250	ug/Kg	11000	04-24-93	SW 8020
[illegible]YLBENZENE	1250	ug/Kg	10100	04-24-93	SW 8020
LENES	1250	ug/Kg	75000	04-24-93	SW 8020
TOTAL BTEX		ug/Kg	97600		

QA/QC SURROGATE RECOVERY

BROMOFLUOROBENZENE (65-135%) 103 %

* = OUTSIDE QC LIMIT ON BOTH ORIGINAL AND RERUN
ND = NOT DETECTED ABOVE REPORTING LIMIT
ug/Kg = PARTS PER BILLION(PPB)

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COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 659904BX(167)

DATE : 04-29-93

SAMPLE MATRIX : SOIL
ATAS # : 6599.04
DATE SUBMITTED: 04-22-93
PROJECT : BRIDGETON
SAMPLE ID : T6-DG10'

PARAMETER	REPORTING LIMIT	UNIT	RESULTS	DATE ANALYZED	METHOD REFERENCE
GAS CHROMATOGRAPHY					
BENZENE	1.0	ug/Kg	1.6	04-26-93	SW 8020
TOLUENE	1.0	ug/Kg	3.1	04-26-93	SW 8020
ETHYLBENZENE	1.0	ug/Kg	3.3	04-26-93	SW 8020
XYLENES	1.0	ug/Kg	19.2	04-26-93	SW 8020
TOTAL BTEX		ug/Kg	27.2		

QA/QC SURROGATE RECOVERY

BROMOFLUOROBENZENE (65-135%) 75 %

* = OUTSIDE QC LIMIT ON BOTH ORIGINAL AND RERUN
ND = NOT DETECTED ABOVE REPORTING LIMIT
ug/Kg = PARTS PER BILLION(PPB)

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COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 662401BX (168)

DATE : 05-03-93

SAMPLE MATRIX : SOIL
ATAS # : 6624.01
DATE SUBMITTED: 04-26-93
PROJECT : BRIDGETON, MO
SAMPLE ID : T7-15

PARAMETER	REPORTING LIMIT	UNIT	RESULTS	DATE ANALYZED	METHOD REFERENCE
GAS CHROMATOGRAPHY					
BENZENE	125	ug/Kg	131	04-29-93	SW 8020
T[illegible]ENE	125	ug/Kg	240	04-29-93	SW 8020
E[illegible]LBENZENE	125	ug/Kg	4040	04-29-93	SW 8020
[illegible]ENES	125	ug/Kg	4260	04-29-93	SW 8020
TOTAL BTEX		ug/Kg	8671		

QA/QC SURROGATE RECOVERY

BROMOFLUOROBENZENE (65-135%) 96 %

* = OUTSIDE QC LIMIT ON BOTH ORIGINAL AND RERUN
ND = NOT DETECTED ABOVE REPORTING LIMIT
ug/Kg = PARTS PER BILLION(PPB)

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COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 659905BX(167)

DATE : 04-29-93

SAMPLE MATRIX : SOIL
ATAS # : 6599.05
DATE SUBMITTED: 04-22-93
PROJECT : BRIDGETON
SAMPLE ID : EXC. MATERIAL

PARAMETER	REPORTING LIMIT	UNIT	RESULTS	DATE ANALYZED	METHOD REFERENCE
GAS CHROMATOGRAPHY					
BENZENE	1.0	ug/Kg	ND	04-24-93	SW 8020
T 'ENE	1.0	ug/Kg	ND	04-24-93	SW 8020
F..YLBENZENE	1.0	ug/Kg	ND	04-24-93	SW 8020
.ENES	1.0	ug/Kg	ND	04-24-93	SW 8020
TOTAL BTEX		ug/Kg	ND		

QA/QC SURROGATE RECOVERY

BROMOFLUOROBENZENE (65-135%) 63 % *

* = OUTSIDE QC LIMIT ON BOTH ORIGINAL AND RERUN
ND = NOT DETECTED ABOVE REPORTING LIMIT
ug/Kg = PARTS PER BILLION(PPB)

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COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 659906BX(167)

DATE : 04-29-93

SAMPLE MATRIX : SOIL
ATAS # : 6599.06
DATE SUBMITTED: 04-22-93
PROJECT : BRIDGETON
SAMPLE ID : RET. STP.

PARAMETER	REPORTING LIMIT	UNIT	RESULTS	DATE ANALYZED	METHOD REFERENCE
GAS CHROMATOGRAPHY					
B[illegible]ZENE	1.0	ug/Kg	ND	04-26-93	SW 8020
T[illegible]JENE	1.0	ug/Kg	ND	04-26-93	SW 8020
[illegible]HYLBENZENE	1.0	ug/Kg	ND	04-26-93	SW 8020
[illegible]LENES	1.0	ug/Kg	ND	04-26-93	SW 8020
TOTAL BTEX		ug/Kg	ND		

QA/QC SURROGATE RECOVERY

BROMOFLUOROBENZENE (65-135%) 76 %

* = OUTSIDE QC LIMIT ON BOTH ORIGINAL AND RERUN
ND = NOT DETECTED ABOVE REPORTING LIMIT
ug/Kg = PARTS PER BILLION(PPB)

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COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: ~~6584TPH(~~168)

DATE : 05-04-93

SAMPLE MATRIX : SOIL
ATAS EPISODE : #6584
DATE SUBMITTED: 04-20-93
DATE ANALYZED : 04-22-93
PROJECT : BRIDGETON
METHOD REF. : 418.1 (MISSOURI MODIFIED)

RESULTS REPORTED IN mg/Kg OR PARTS PER MILLION(PPM)

TOTAL PETROLEUM HYDROCARBONS

CLIENT ID	ATAS ID	REPORTING LIMIT	RESULTS
T1-19-SB	6584.01	50	477
T2-16	6584.02	5	130
2-20	6584.03	5	ND
T3-16	6584.04	5	19
T4-12	6584.05	125	2753
T4-FILL	6584.06	5	ND

ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 6599TPH(167)

DATE : 04-29-93

SAMPLE MATRIX : SOIL
ATAS EPISODE : #6599
DATE SUBMITTED: 04-22-93
DATE ANALYZED : 04-22-93
PROJECT : BRIDGETON
METHOD REF. : 418.1 (MISSOURI MODIFIED)

RESULTS REPORTED IN mg/Kg OR PARTS PER MILLION(PPM)

TOTAL PETROLEUM HYDROCARBONS

CLIENT ID	ATAS ID	REPORTING LIMIT	RESULTS
T5-10	6599.01	5	16
T5-DG-6'	6599.02	5	ND
6-18'	6599.03	5	128
T6-DG10'	6599.04	5	7
EXC. MATERIAL	6599.05	5	27
RET. STP.	6599.06	5	167

ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 6624TPH(168)

DATE : 05-03-93

SAMPLE MATRIX : SOIL
ATAS EPISODE : #6624
DATE SUBMITTED: 04-26-93
DATE ANALYZED : 04-27-93
PROJECT : BRIDGETON, MO
METHOD REF. : 418.1 (MISSOURI MODIFIED)

RESULTS REPORTED IN mg/Kg OR PARTS PER MILLION(PPM)

TOTAL PETROLEUM HYDROCARBONS

CLIENT ID	ATAS ID	REPORTING LIMIT	RESULTS
T7-15	6624.01	500	13326

ND = NOT DETECTED ABOVE REPORTING LIMIT

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COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 658405MT(168)

DATE : 05-04-93

SAMPLE MATRIX : SOIL
ATAS # : 6584.05
DATE SUBMITTED: 04-20-93
DATE EXTRACTED: 04-21-93
PROJECT : BRIDGETON
SAMPLE ID : T4-12

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
TCLP TOXICITY METALS					
ARSENIC	0.05	mg/L	ND	04-26-93	SW 6010
BARIUM	0.005	mg/L	0.82	04-26-93	SW 6010
CADMIUM	0.003	mg/L	ND	04-26-93	SW 6010
CHROMIUM	0.005	mg/L	ND	04-26-93	SW 6010
LEAD	0.05	mg/L	ND	04-26-93	SW 6010
SILVER	0.01	mg/L	ND	04-26-93	SW 6010
SELENIUM	0.1	mg/L	ND	04-26-93	SW 6010
MERCURY	0.002	mg/L	ND	04-26-93	SW 7470

mg/L = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

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COPY

CLIENT: WESTLAKE QUARRY
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044
ATTN: BILL WHITAKER

REPORT: 658406MT(168)

DATE : 05-04-93

SAMPLE MATRIX : SOIL
ATAS # : 6584.06
DATE SUBMITTED: 04-20-93
DATE EXTRACTED: 04-21-93
PROJECT : BRIDGETON
SAMPLE ID : T4-FILL

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
TCLP TOXICITY METALS					
ARSENIC	0.05	mg/L	ND	04-26-93	SW 6010
BARIUM	0.005	mg/L	2.4	04-26-93	SW 6010
CADMIUM	0.003	mg/L	ND	04-26-93	SW 6010
CHROMIUM	0.005	mg/L	ND	04-26-93	SW 6010
LEAD	0.05	mg/L	ND	04-26-93	SW 6010
SILVER	0.01	mg/L	ND	04-26-93	SW 6010
SELENIUM	0.1	mg/L	ND	04-26-93	SW 6010
MERCURY	0.002	mg/L	ND	04-26-93	SW 7470

mg/L = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS

AMERICAN TECHNICAL ANALYTICAL SERVICES, IN

P.O 903002

CHAIN OF CUSTODY RECORD

J. NO.

ATAS CLIENT NAME: WESTLAKE - BRIDGETON

M COMPLETED BY: REEVES

LOCATION:

ANALYSIS

LM 4/21/93 2A1-1K1

PLE ID	DATE	TIME	MATRIX	GRAB	COMP	PRES	NO. OF CONTAINERS	8020	418.1 MD	8270-VOA	1311-1610 TCLP	REMARKS	LAB NO.
19-5B	4/20	1 pm	SOIL		✓		1	✓	✓			STD TURN AROUND	6584.01
16	4/19	2 pm	SOIL	✓			1	✓	✓			RESULTS TO ADR - ST LOUIS 947-9963	02
-20	4/19	2 pm	SOIL	✓			1	✓	✓				03
-16	4/20	10 AM	SOIL	✓			1	✓	✓				04
-12	4/20	1 pm	SOIL	✓			1		✓	✓	✓		05
-fill	4/20	1 pm	SOIL	✓			1		✓	✓	✓	10 day TAT ✓ per Pat Reeves P Winker 4/20/93	06

COPY

LINQUISHED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME	RECEIVED BY:	DATE/TIM
Reeves	4/20/93 3 pm	Lake Reeves	4/20/93 3:05 pm	Lake Reeves	4/20/93 4:08	Lawton Mauerberg	4/20/93 16:08

ATAS

AMERICAN TECHNICAL ANALYTICAL SERVICES, INC.

CHAIN OF CUSTODY RECORD

J. NO.

ATAS CLIENT NAME: Westlake

M COMPLETED BY: R Reeves

LOCATION: Bridgeston

ANALYSIS: 8020 BTEX, 418.1 MO-TPH

WD 4-22-93 1K6-2B1

PLE ID	DATE	TIME	MATRIX	GRAB	COMP	PRES	NO. OF CONTAINERS	8020 BTEX	418.1 MO-TPH	REMARKS	LAB NO.
- 10	4/21/93	3:00 pm	soil	✓			1	✓	✓		6599.01
-DG-6'	4/21/93	3:00 pm	soil	✓			1	✓	✓		02
-18'	4/22	11:00 am	soil	✓			1	✓	✓		03
- DG10	4/22	11:00 am	soil	✓			1	✓	✓		04
Material	4/22/93	12:00 pm	soil	✓			1	✓	✓		05
Stp	4.22.93	12:00 pm	soil	✓			1	✓	✓		06

COPY

NQUISHED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
[illegible]	4/22/93 12:15 pm	[illegible]	2/22/93 12:15pm	[illegible]	4/22/93 12:37	[illegible]	4/22/93 12:37

TAS

AMERICAN TECHNICAL & ANALYTICAL SERVICES, IN .

CHAIN OF CUSTODY RECORD

NO.

ATAS CLIENT NAME: WESTLAKE Comp.

COMPLETED BY: Reents

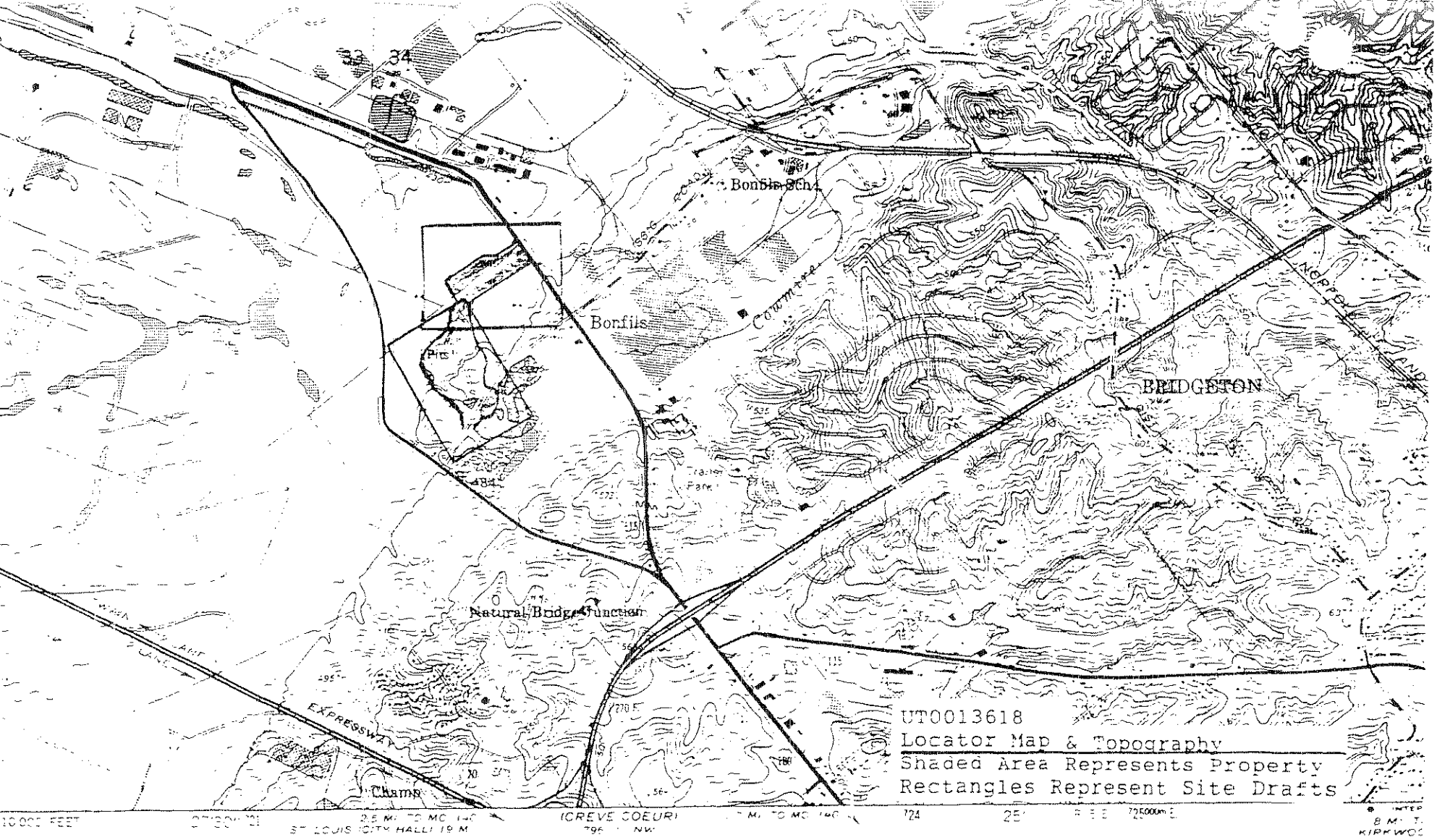
LOCATION: BRIDGETON, MO

ANALYSIS: WD 4-26-93 2B1 1Kg

E ID	DATE	TIME	MATRIX	GRAB	COMP	PRES	NO. OF CONTAINERS	VOC	8020	REMARKS	LAB NO.
-15	4/25/93	1:00 p.	SOIL	✓			1	✓	✓	Results to ADR & Lockie	6629.01

COPY

QUISHED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
Reents	4/26/93 12:45p	[illegible]	4/26/93 12:50				



SCALE 1:24 000

1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

MN
GN
1°36'
29 MILS
4°
71 MILS

AND 1974 MAGNETIC NORTH
ION AT CENTER OF SHEET

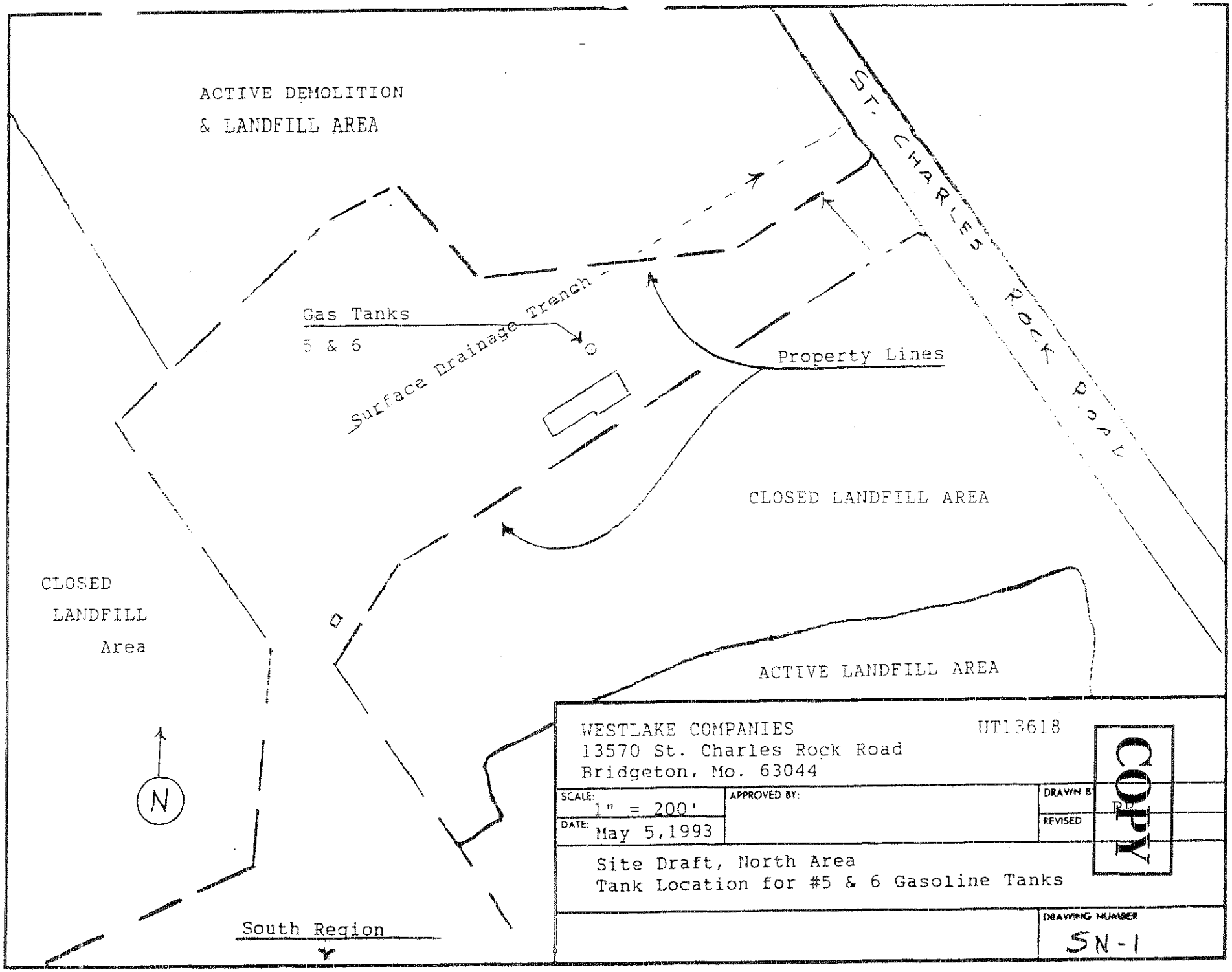
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
AND BY THE DIVISION OF RESEARCH AND TECHNICAL INFORMATION
MISSOURI DEPARTMENT OF NATURAL RESOURCES, ROLLA, MISSOURI 65401
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

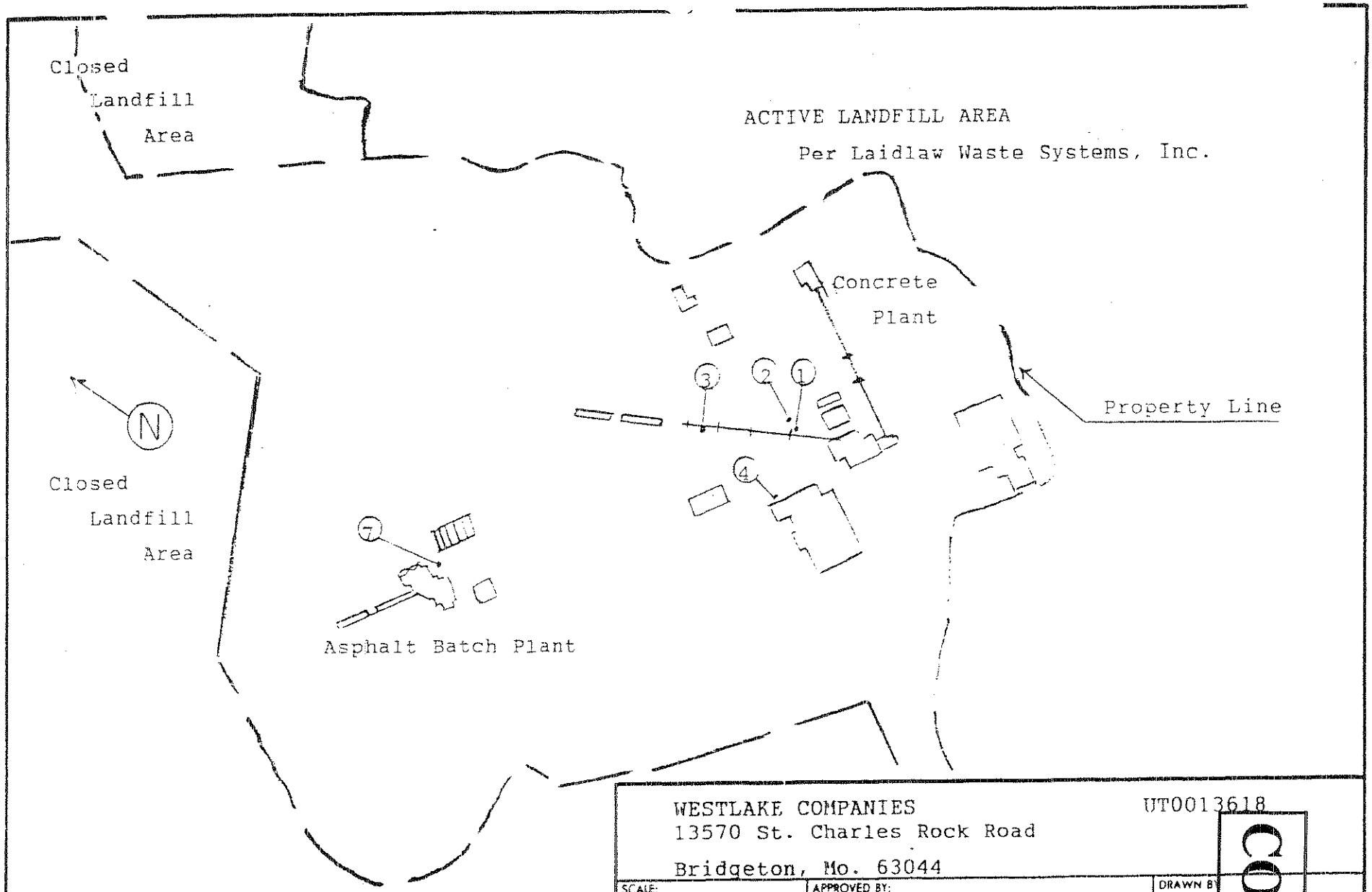
QUADRANGLE LOCATION

COPY

He
Me

To place on the predicted North American Datum 1983, move the projection lines 2 meters south and 9 meters east as shown by dashed corner ticks


ACTIVE DEMOLITION
& LANDFILL AREA
ST. CHARLES ROCK ROAD
Gas Tanks
5 & 6
Surface Drainage Trench
Property Lines
CLOSED LANDFILL AREA
CLOSED
LANDFILL
Area
ACTIVE LANDFILL AREA
N
South Region
WESTLAKE COMPANIES
13570 St. Charles Rock Road
Bridgeton, Mo. 63044
UT13618
SCALE: 1" = 200'
APPROVED BY:
DRAWN BY
DATE: May 5,1993
REVISED
Site Draft, North Area
Tank Location for #5 & 6 Gasoline Tanks
DRAWING NUMBER
5N-1
Copy



1,2,3,7 are 10K Diesel Tanks

4 is a 2K Waste Oil Tank

WESTLAKE COMPANIES
13570 St. Charles Rock Road
Bridgeton, Mo. 63044

UT0013618

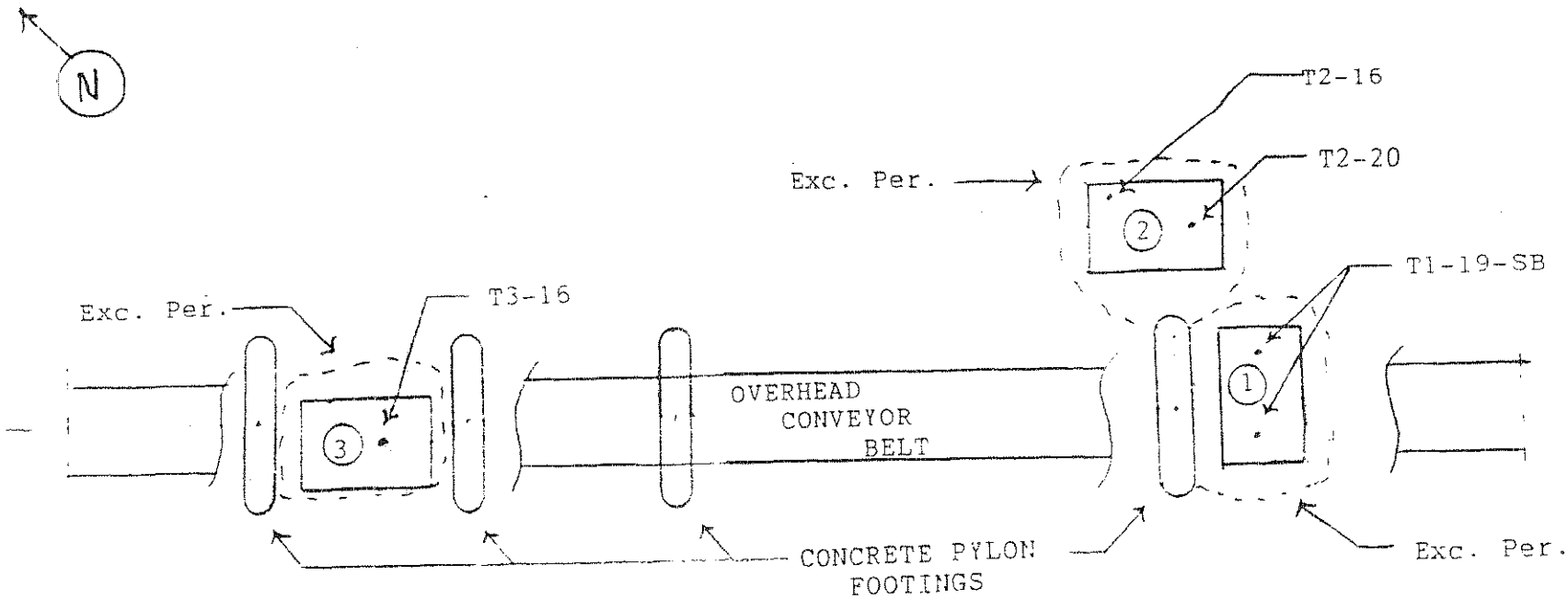
Copy

SCALE: 1" = 200'	APPROVED BY:	DRAWN BY: PF
DATE: May 5,1993		REVISED

Site Draft, South Area

Tank Locations 1,2,3,4 & 7

DRAWING NUMBER 55-2



Exc.PER- Excavation Perimeter at Grade Level.

See Supplementary Data:

Mechanical Removal

WESTLAKE COMPANIES UT 0013618

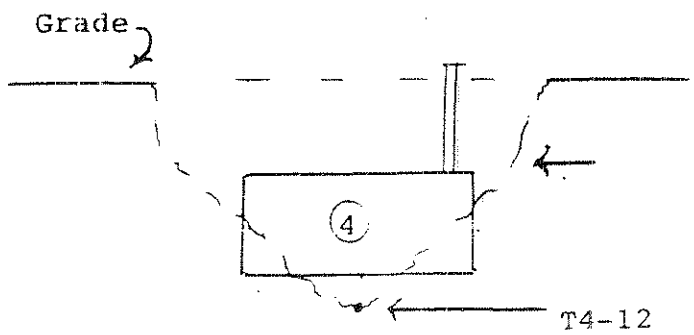
Tank Location & Sampling Reference

SCALE: 1" = 20'	APPROVED BY:	DRAWN BY:
DATE: May 5,1993		REVISED

Tanks # 1,2 & 3, By Order of Removal

DRAWING NUMBER ST-3

Copy



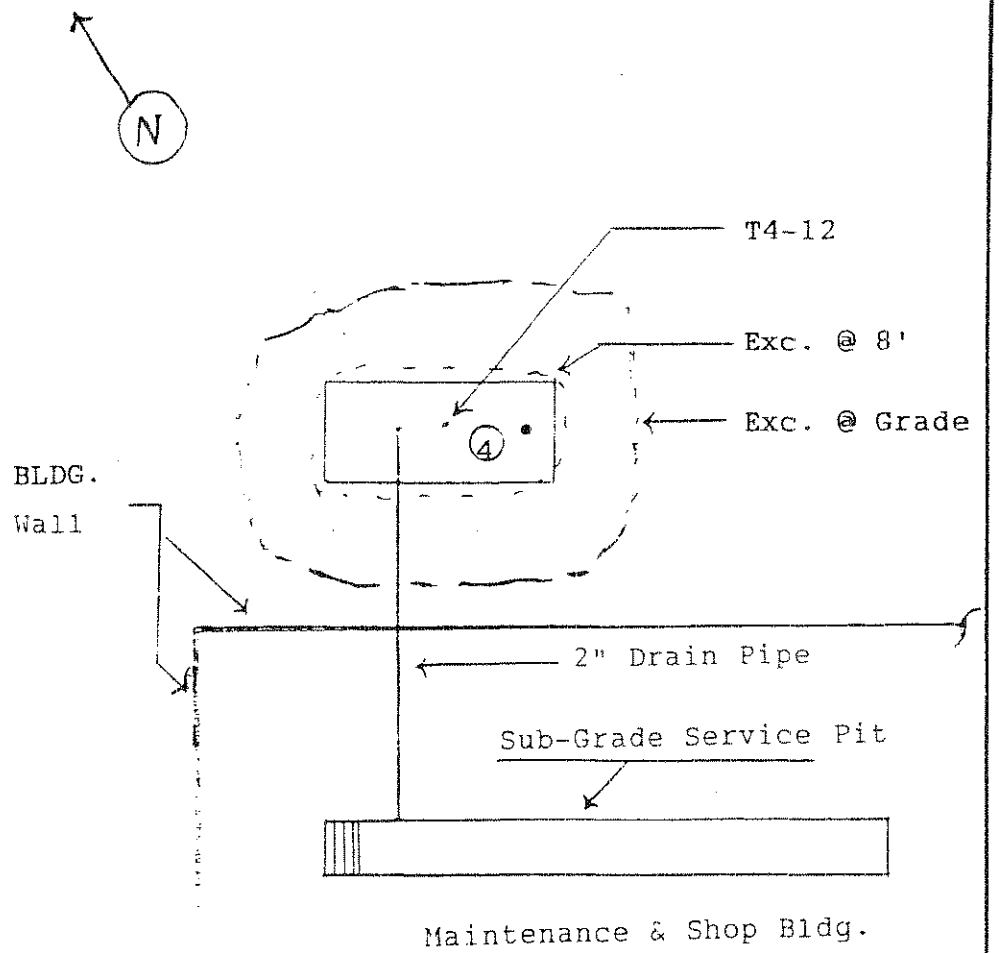
2K- Waste Oil Tank

SIDE VIEW TO NORTHEAST

T4-12 Soil Sample Extracted By Excavator.

T4-Fill Soil Sample extracted from the Tank Bed Material Returned to Excavation After Removal.

See Supplementary Data:
Mechanical Removal



WESTLAKE COMPANIES UT 0013618

Tank Location & Sampling Reference

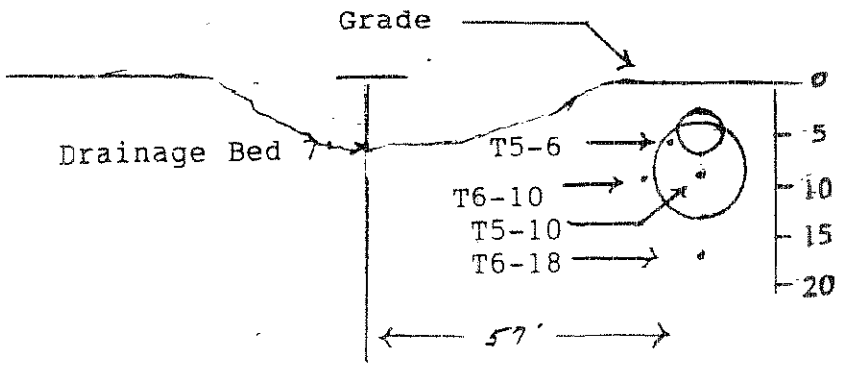
SCALE: 1" = 10'	APPROVED BY:	DRAWN BY PR
DATE: May 5, 1993		REVISED

#4 Tank by Order of Removal

2000 gallon, Waste Oil

DRAWING NUMBER ST-4

COPY



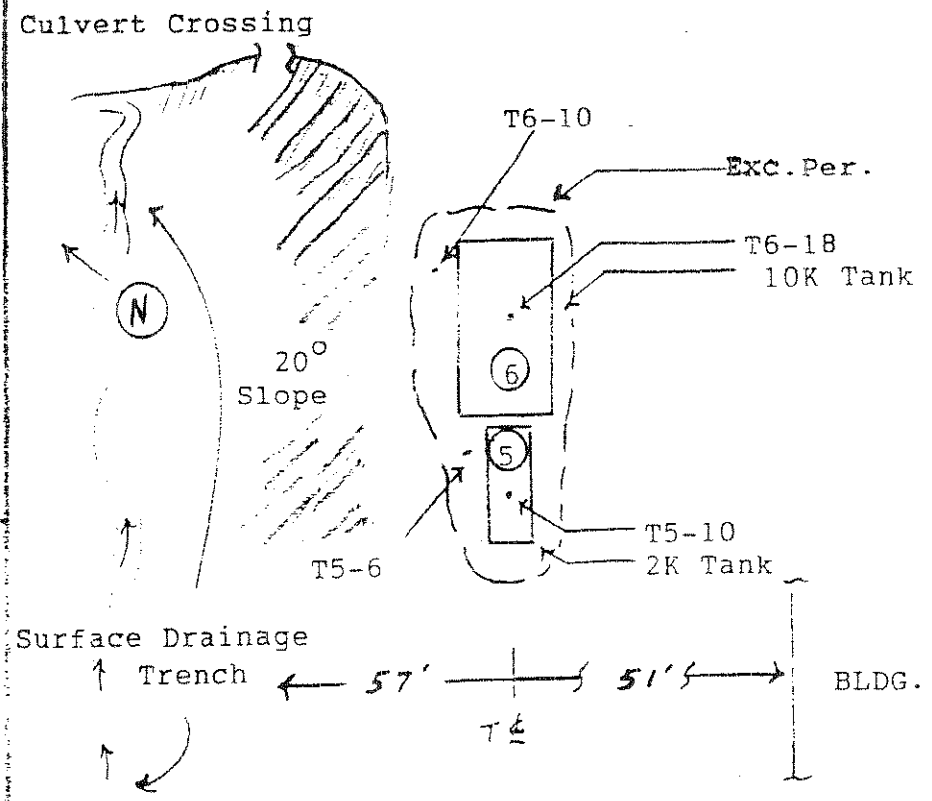
Northeast Elevation & Sampling Reference

Soils Excavated, were sampled and returned to tank pit following tank removal.

See Supplementary Data:
Mechanical Removal

Tank #5- 2000 gallon, Gas

Tank #6- 10000 gallon-Gas



Scale
1" = 20', Extended as detailed

WESTLAKE COMPANIES UT 0013618

Tank Location & Sampling Reference

SCALE: AS Noted	APPROVED BY:	DRAWN BY
DATE: May 5,1993		REVISED

Tanks #5 & 6, By Order of Removal

DRAWING NUMBER NT - 5

COPY

20K-A.G. Tanks

I/S- In Service
O/S- Out of Service

EXC @ Grade

T7-15

7

OIL TANK I/S

OIL TANK I/S

OIL TANK O/S

OIL TANK O/S

Storage SHED

Supply Lines

2K-Diesel, A.G.

SEE SUPPLEMENTARY DATA:
Mechanical Removal

ASPHALT BATCHING PLANT

N

SCALE HOUSE

Excavated Area

7

T7-15

NORTH/EAST VIEW-SUBGRADE

WESTLAKE COMPANIES

UT0013618

Tank Location & Sampling Reference

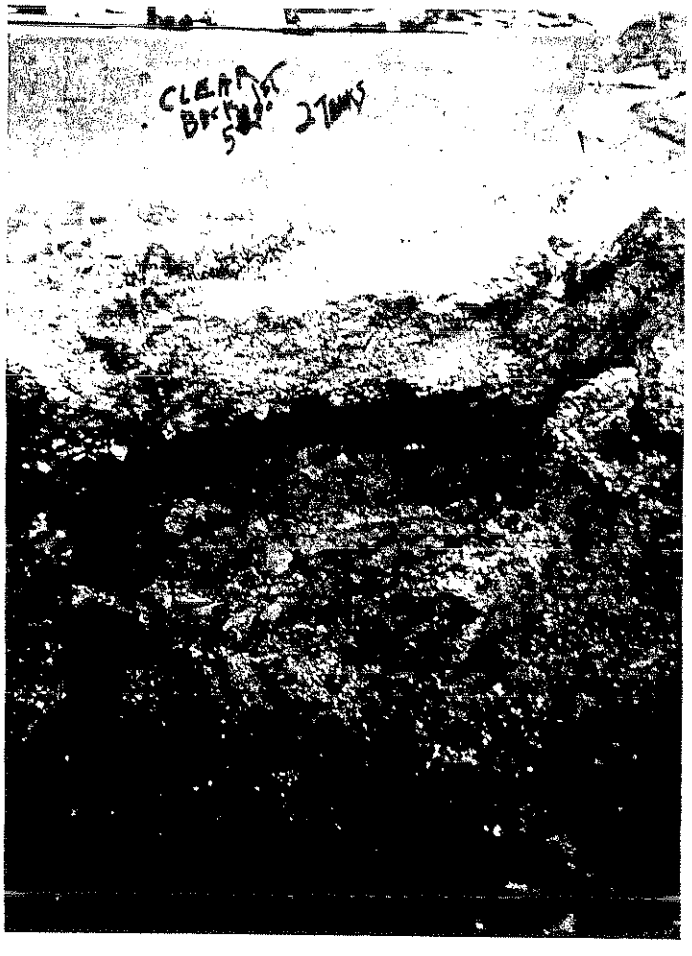
SCALE: 1" = 20'	APPROVED BY:	DRAWN BY
DATE: May 5, 1993		REVISED

Copy

#7 Tank by Order of Removal
10,000 Gl. Diesel Tank

DRAWING NUMBER
ST-6

COPY

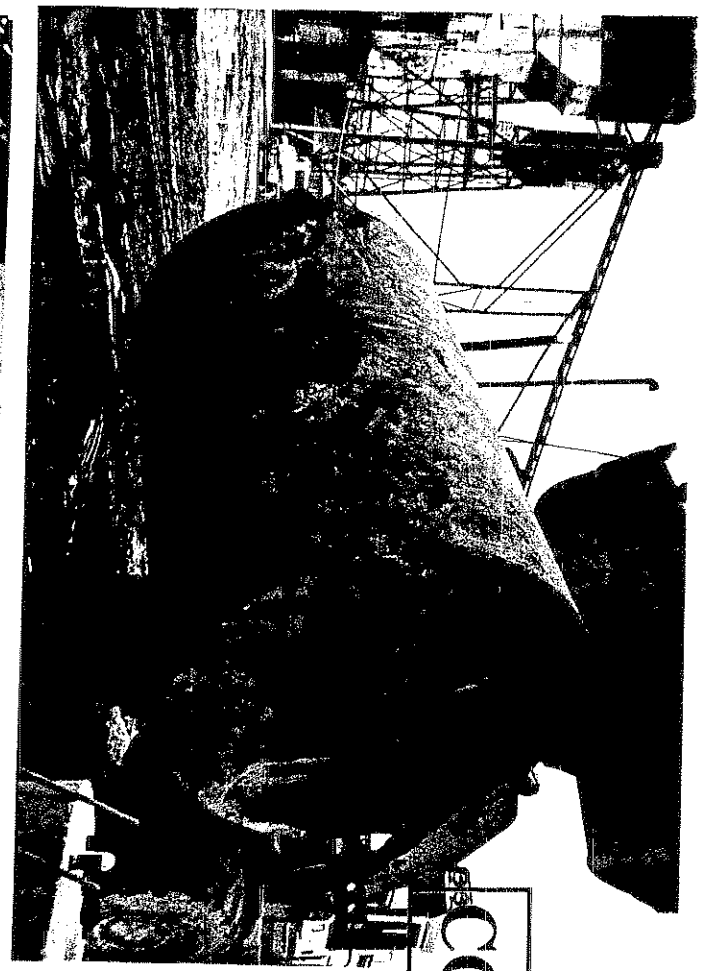


Tank #1 Excavation

A- West Wall & Bed

B- North Wall

Note: Collapse Under Footing.



COPY

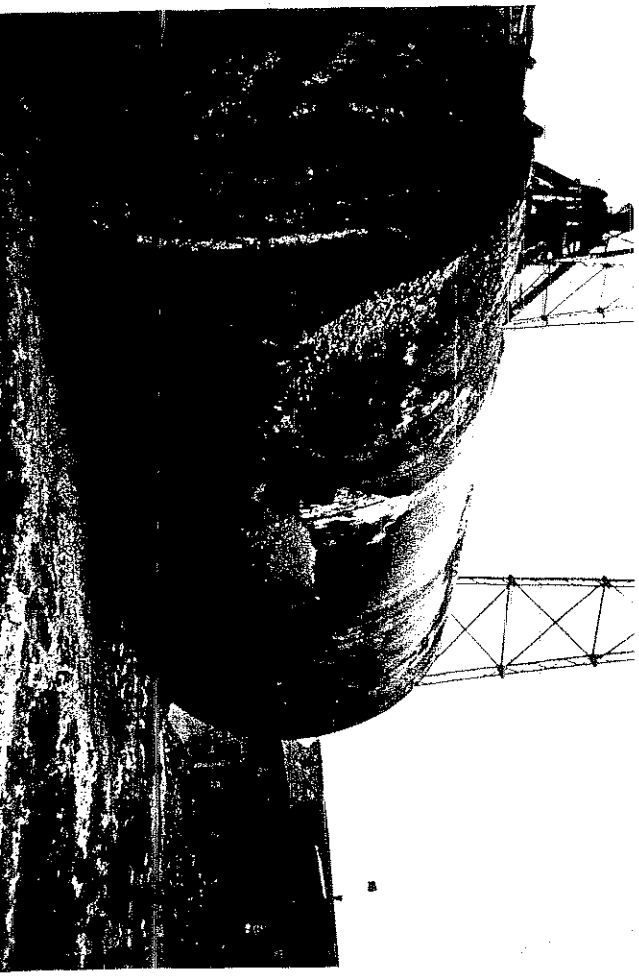
TANK # 1 Sidewalls, Endcaps & Bottom

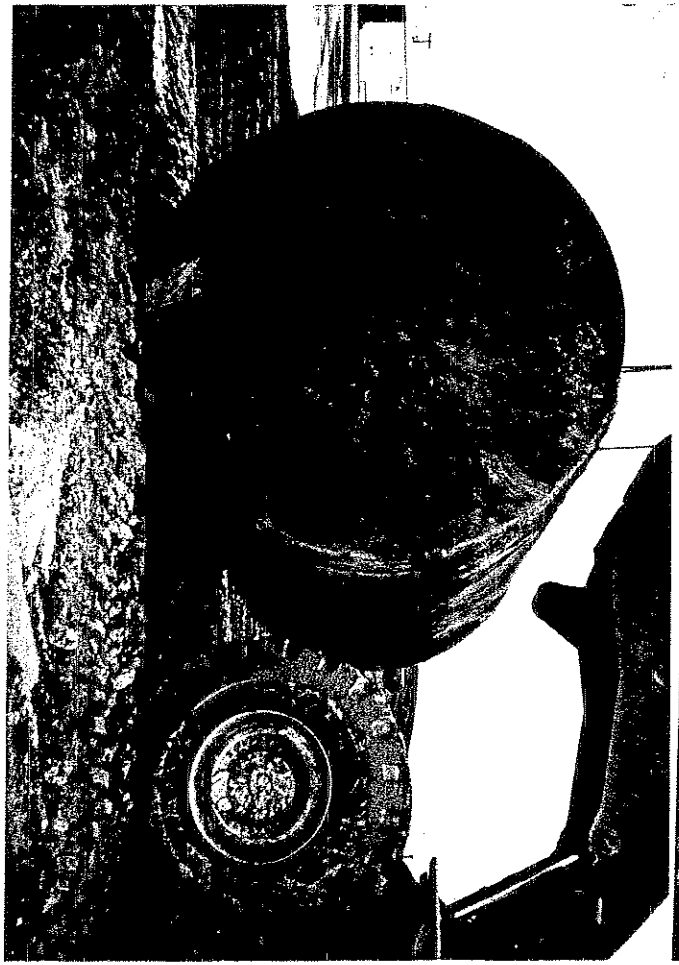
COPY

TANK # 2- Excavation Walls

WEST

NORTH





COPY

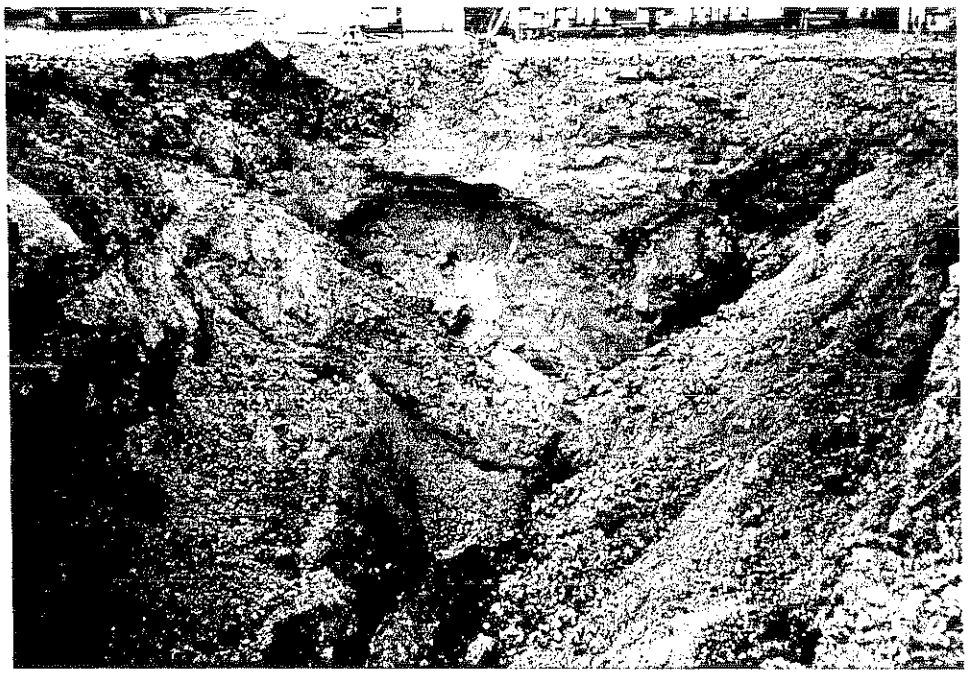
TANK # 2- Sidewalls,Endcaps & Bottom

COPY

EAST

TANK # 2 Excavation Walls

SOUTH



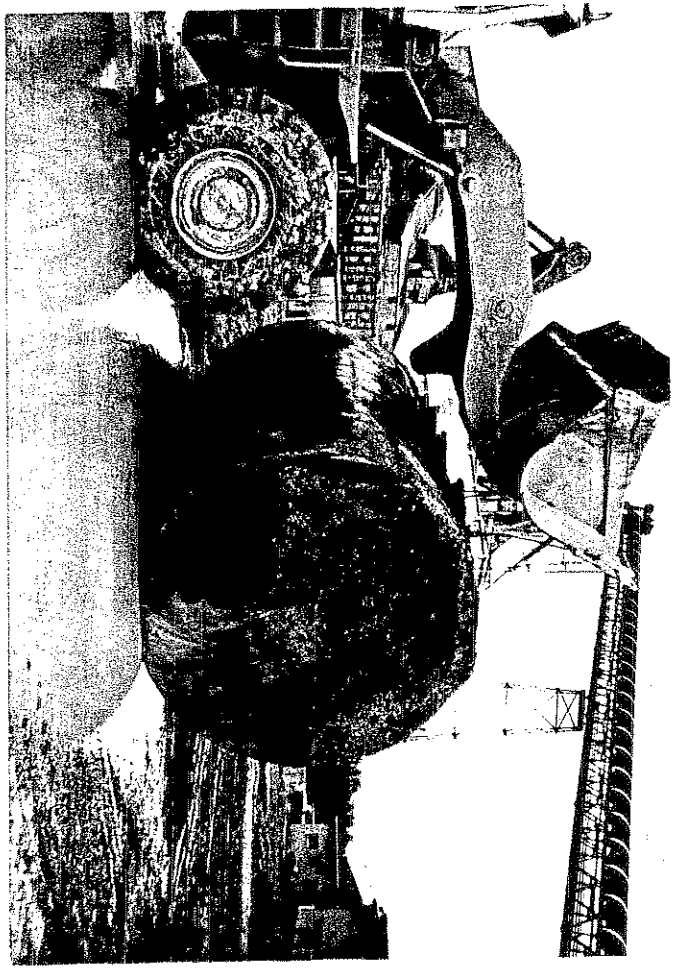
East/South Corner

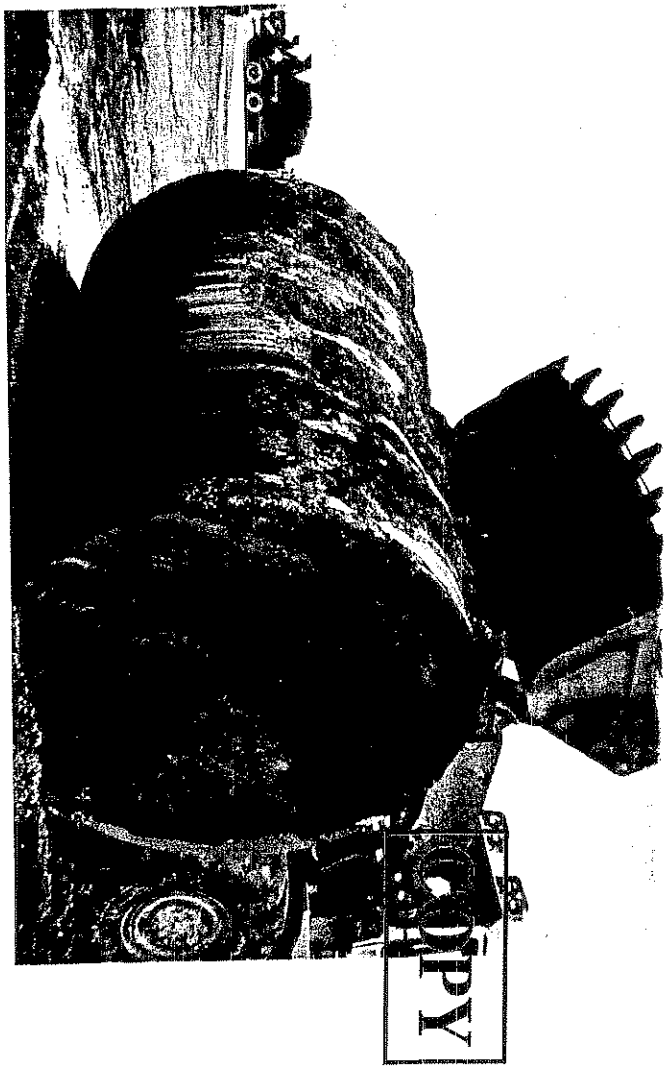
East/North Corner

Tank Bed

TANK # 3 - Excavation

COPY





Copy

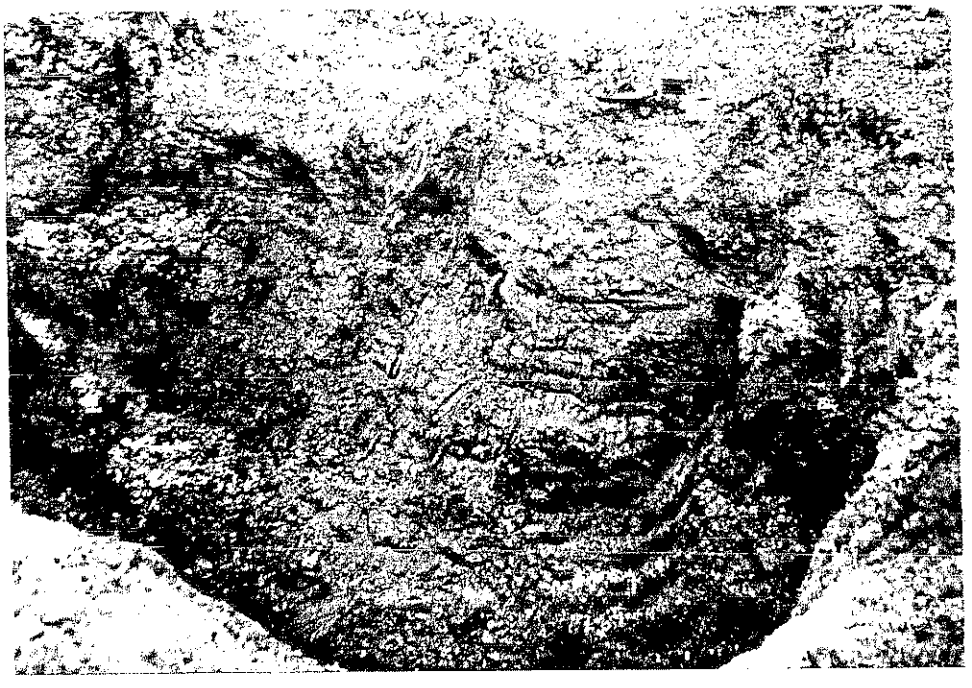
TANK # 3- Sidewalls,Endcaps & Bottom

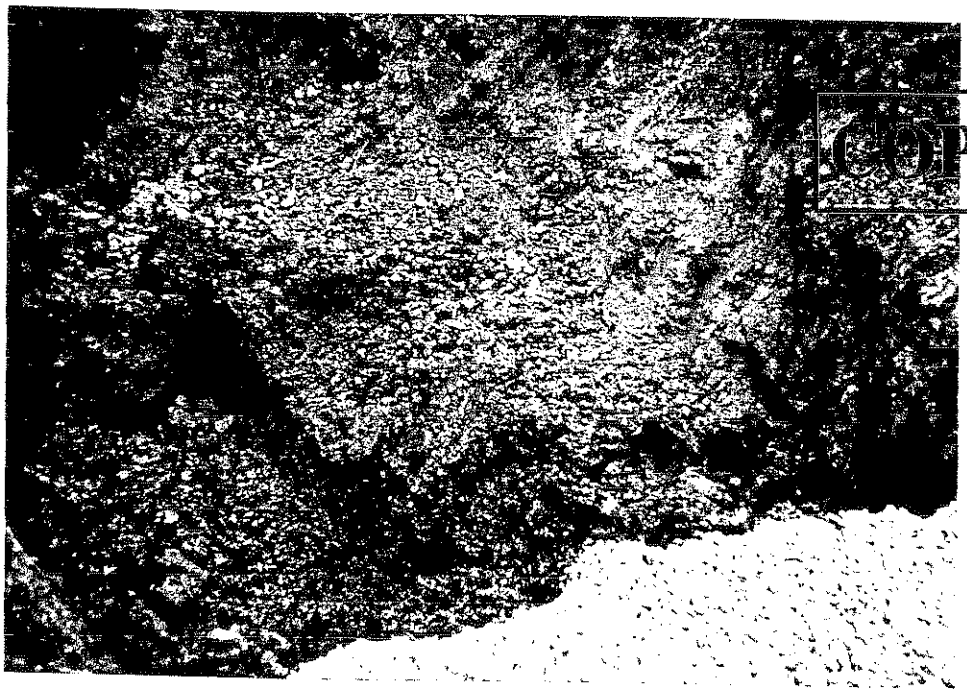
COPY

North/West

TANK # 4 - Excavation

West/South



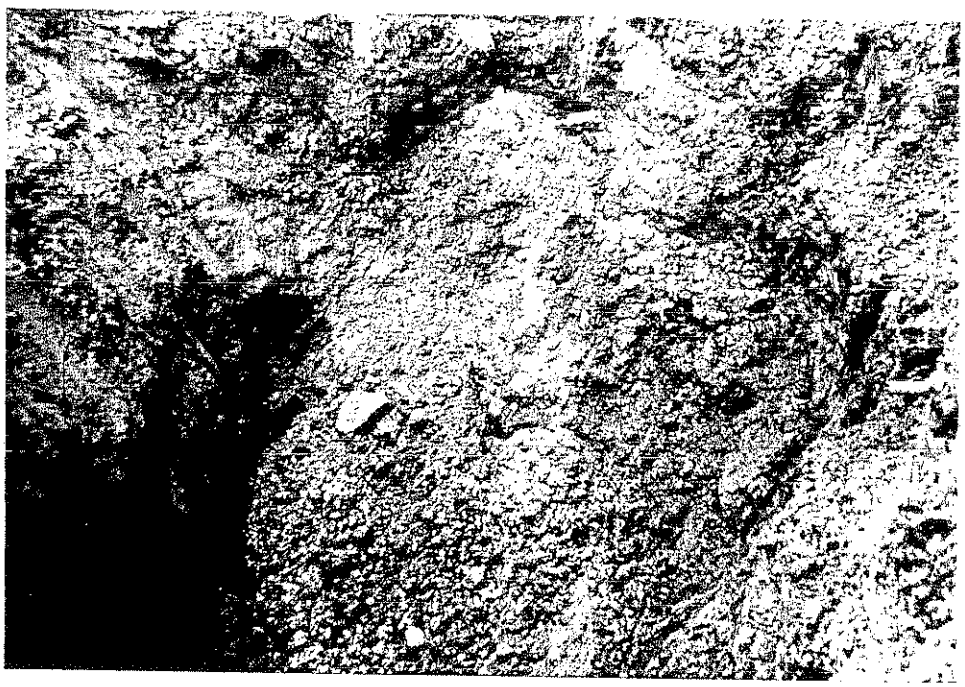


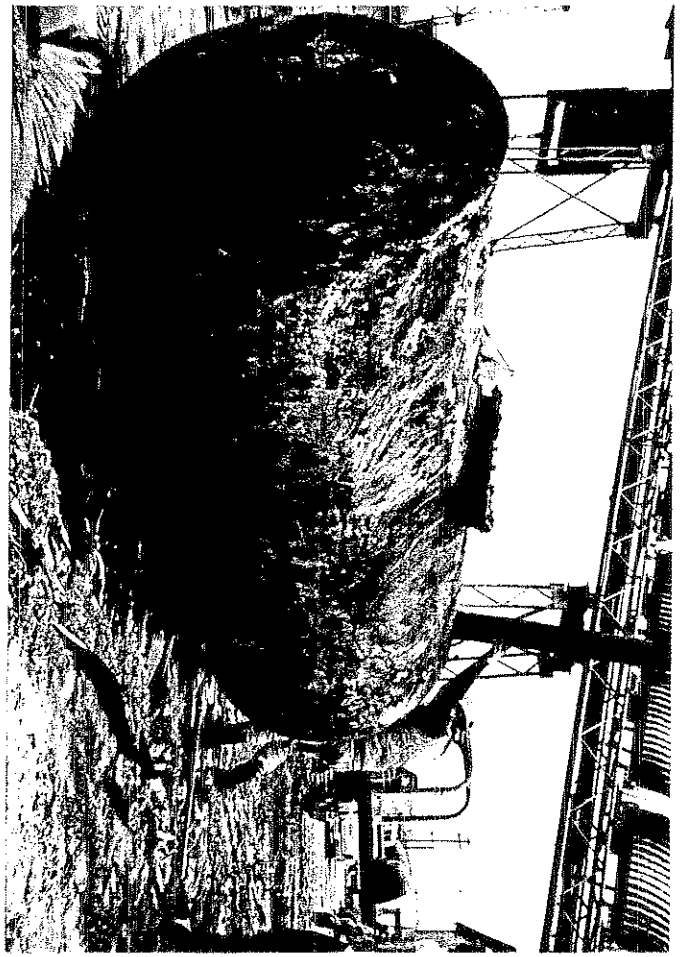
COPY

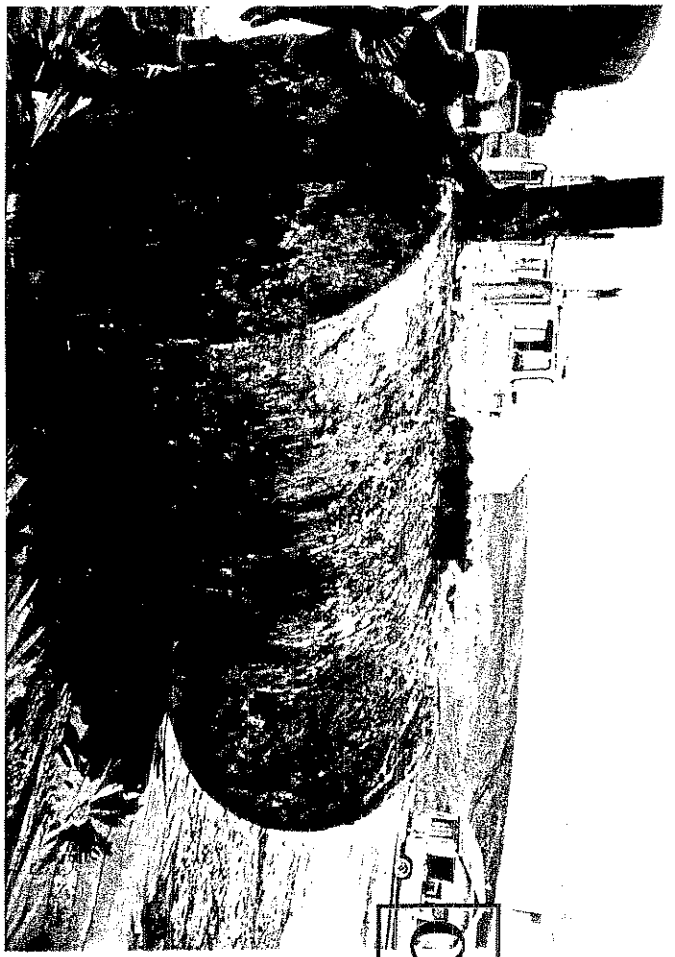
North/East

TANK # 4 Excavation

East/South







COPY

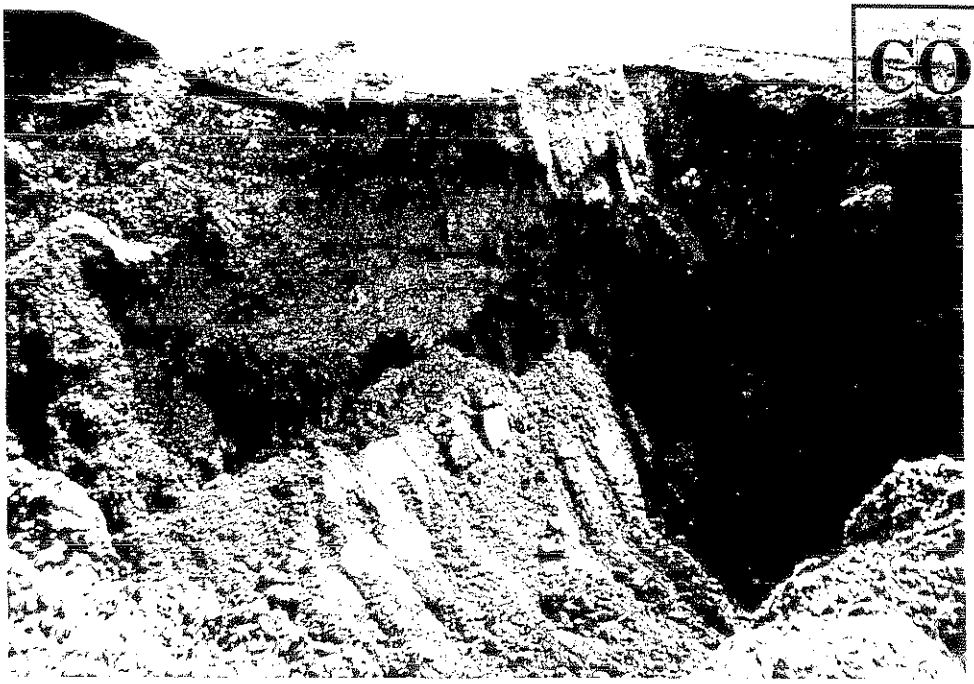
TANK # 4 Sidewalls, Endcaps & Bottom

Tank #1 Excavation

East Wall

South Wall

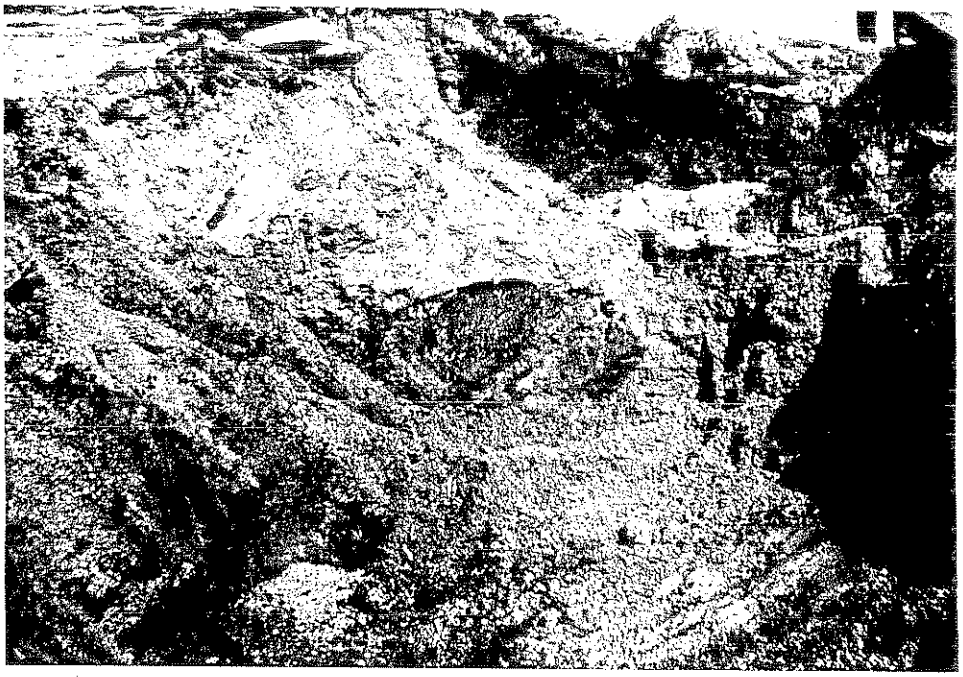
COPY



South

TANK # 5 Excavation

East

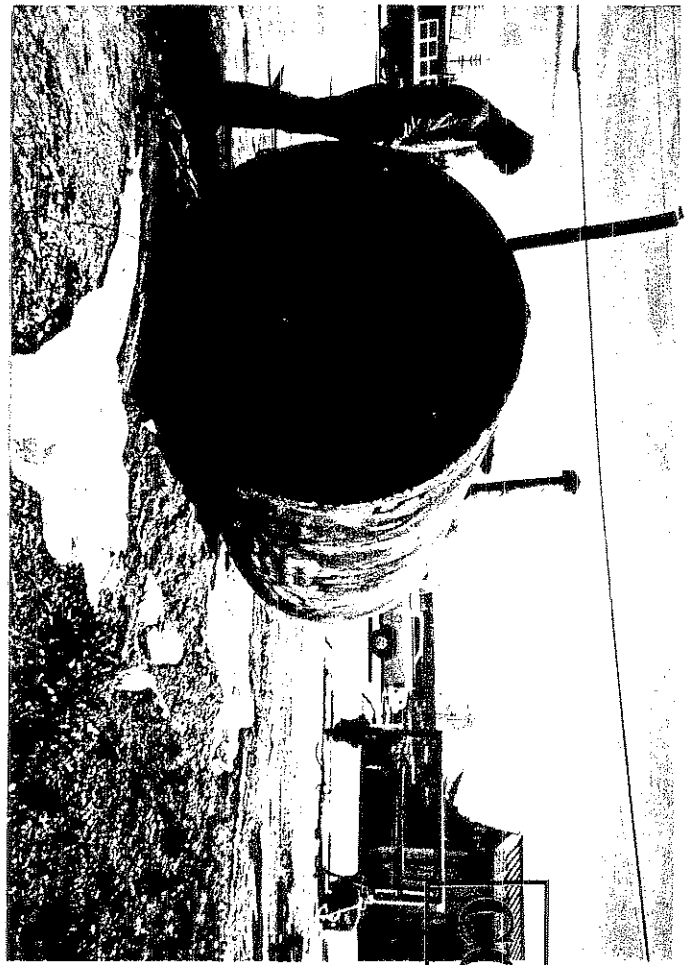


COPY

North

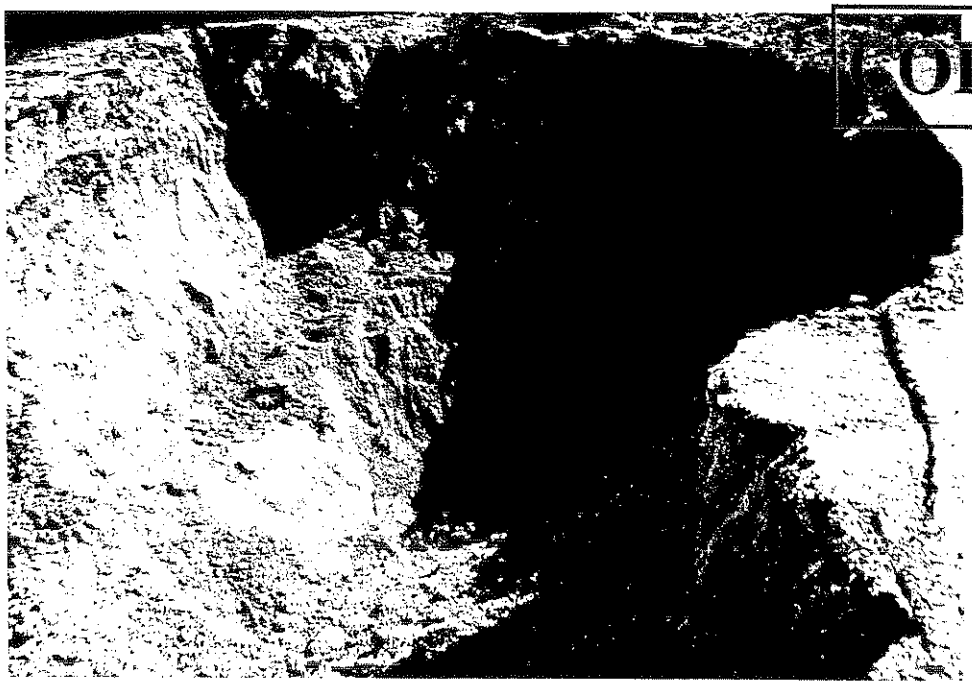
TANK # 5- Excavation

West



COPY

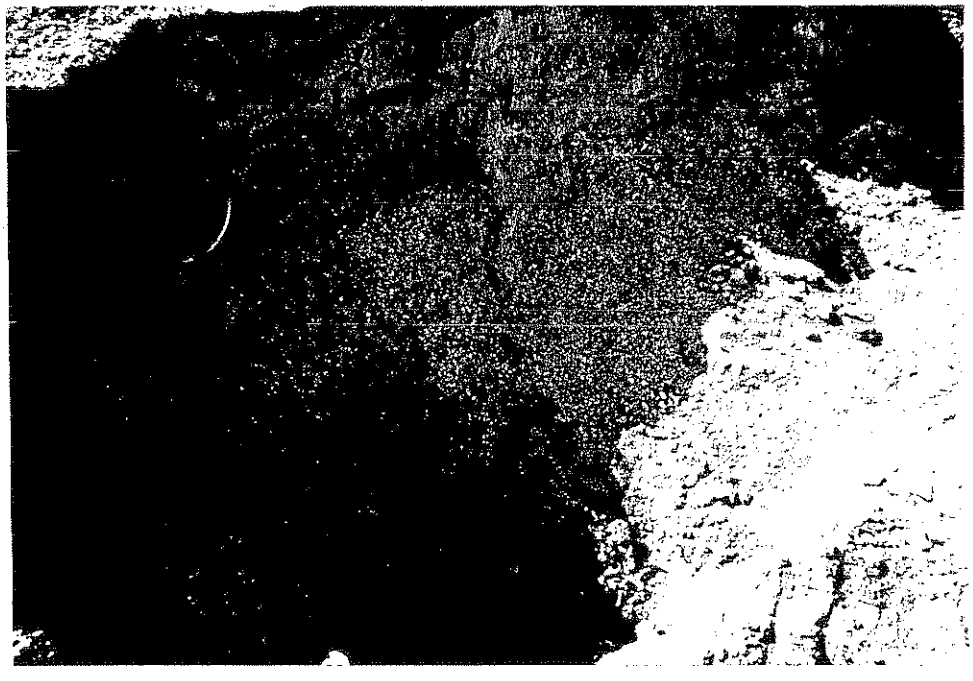
TANK # 5- Sidewalls, Endcaps and Bottom

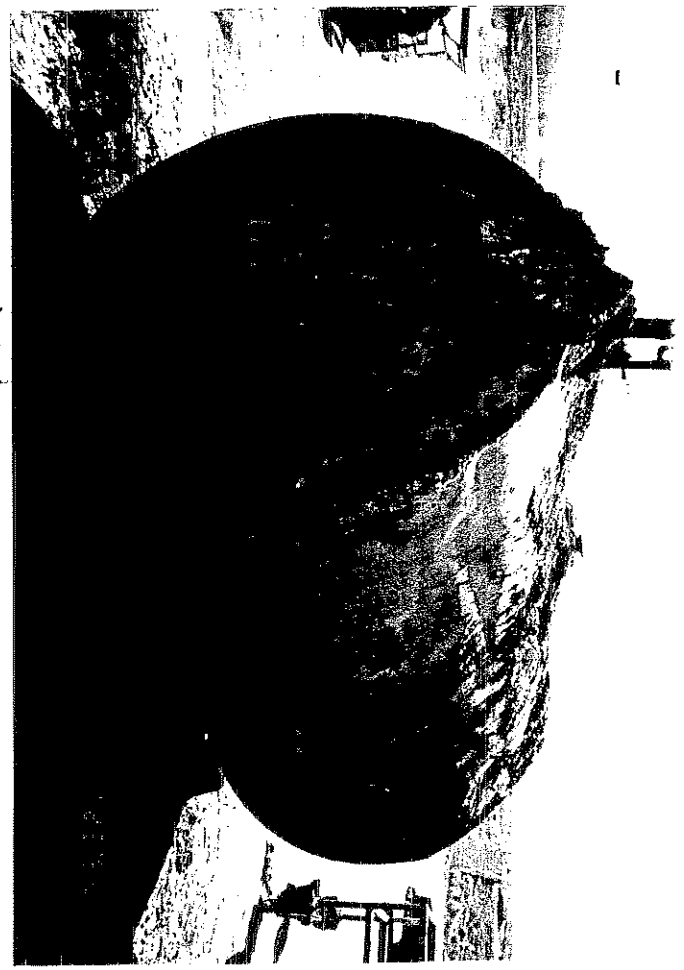


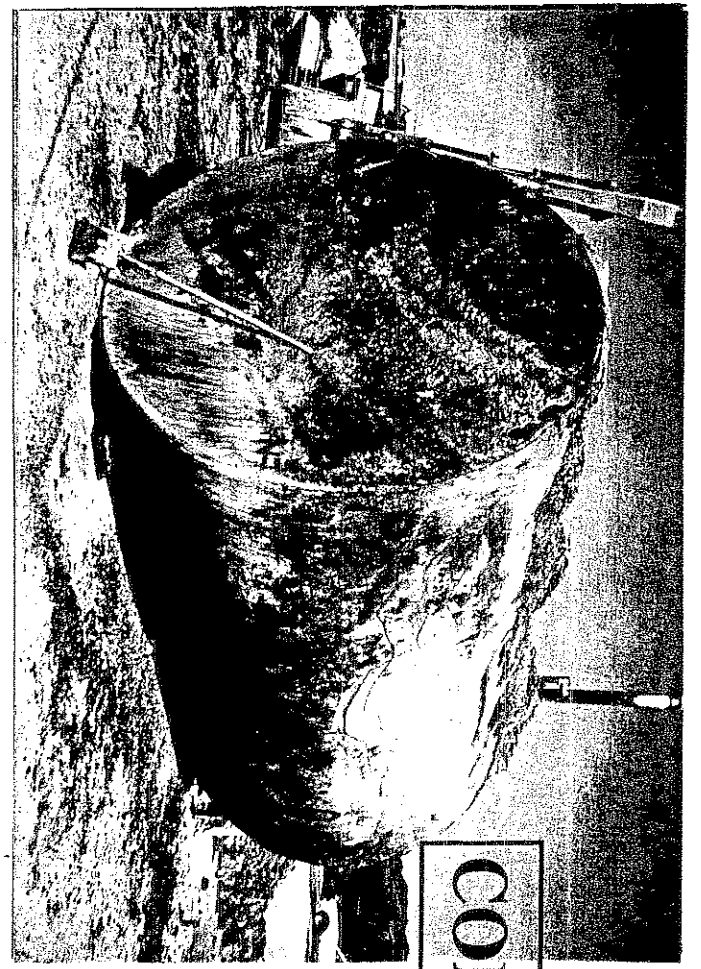
North Wall On Left, East in Center

TANK # 6- Excavation

South Wall On Left, West On Right







COPY

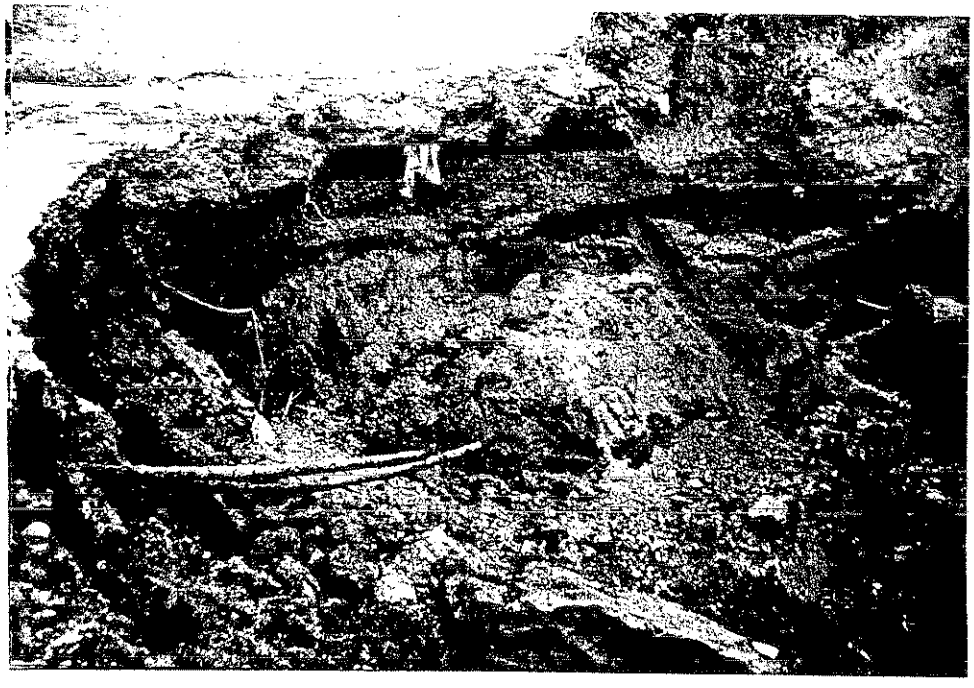
TANK # 6 - Sidewalls, Endcaps & Bottom

COPY

North

TANK # 7- Excavation

West



COPY

South

TANK # 7- Excavation

East

COPY

TANK # 7- Sidewalls, Endcaps & Bottom

June 25, 1993 Telephone Record From Steve Johnston with MDNR

MISSOURI DEPARTMENT OF NATURAL RESOURCES
TELEPHONE OR CONFERENCE RECORD

UU 3874

DATE 6/25/93

COPY

TELEPHONE ▶ ☒ INCOMING ☐ OUTGOING

CONFERENCE ▶ ☐ FIELD ☒ OFFICE

SUBJECT

Status of closure and resultant investigative procedures

PERSONS INVOLVED

NAME	REPRESENTATIVE
Pat Reeves	ADR (314) 947-9963
Steve Johnston	MDNR

SUMMARY OF CONVERSATION

Reviewed UST closure Documentation and possible remediation alternatives. We agreed that the most urgent issues were; (phone)

1.) A limited assessment in and around former tank excavations of T4 and T7 and,

2.) an investigation of the depth of gw in these areas to see if groundwater is or has been effected.

3.) and to sample T7 (former excavation backfill) to determine contamination levels.

ACTION TAKEN

ADR will prepare an assessment plan proposal and send to us very soon.

FINAL RESULTS

SIGNATURE S Johnston

DATE 6/25/93

MO 780-0657 (11-92)

July 6, 1993 Letter From Mr. Larry Coen of the MDNR
to Mr. Pat Reeves of ADT/St. Louis

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

July 6, 1993

ESP FILE NO.
#LU3874

Mr. Pat Reeves
ADR/St. Louis
P.O. Box 182
St. Charles, MO 63302

Dear Mr. Reeves:

RE: Westlake Companies, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources has received and reviewed the UST Closure Report document relevant to the Westlake Companies site referenced above.

The LUST Unit looks forward to reviewing ADR's Assessment Plan Proposal to follow in the upcoming weeks.

If you have any questions, please do not hesitate to contact Steve Johnston at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

Ron Sheeley for L.C.

Larry P. Coen, CHMM, CPG
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

LPC:daw

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office

RECYCLED PAPER

November 17, 1993 Telephone Record from Anita Schroeter of the MDNR with Pat Reeves

MISSOURI DEPARTMENT OF NATURAL RESOURCES
TELEPHONE OR CONFERENCE RECORD

FILE: LU3874

DATE: 11/17/93

TELEPHONE ▶ ☑ INCOMING ☐ OUTGOING

CONFERENCE ▶ ☐ FIELD ☐ OFFICE

COPY

SUBJECT: Position Westlake is considering

PERSONS INVOLVED

NAME: Pat Reeves

REPRESENTATIVE: ADR

SUMMARY OF CONVERSATION

Reeves indicated that Sheeley of ESP had been onsite and expressed concern for 3 of the 7 tanks removed. Also Sheeley had indicated the 500 ppm TPH cleanup level from the diagram. For the high TPH contamination a soil washing is being considered.

He spoke of requesting a health risk assessment. Also he spoke of this possibly being classified into the category classification for DOE radioactive site. Uranium has been found in the groundwater. ~~with~~ Relatively low levels were found.

ACTION TAKEN

FINAL RESULTS

SIGNATURE: Anita M. Schroeder

DATE: 11/17/93

MO 780-0657 (11-92)

Recycled Paper

December 6, 1993 Letter from Pat Reeves pf ADR to Ms. Schroeder (sic) of the MDNR

ADR

ST. LOUIS

P.O. Box 182 St. Charles, MO 63302 314-947-9963

DEC 22 1993 COPY

Department of Natural Resources
E.S.P. Division- Ms. Schroeder
P.O. Box 176
Jefferson City, Mo.
65102

RE: ESP File
LU 3874

December 6, 1993

Ms. Schroeder,

Per our telecon of November, regarding the referenced ESP file;

Westlake Companies has authorized our firm to initiate current data compilation for possible interim remedial and site characterization. Based on the information provided in the Closure Report (June 14, 1993), the scope of our work is directed towards Tank # 4,6 and 7, which indicate levels in excess of the soil clean-up levels of Figure Three rating.

As previously discussed, a mutual interest with your department is to exclude the four tanks, 1,2,3 and 5 from further action, unless there exists new information which may be determined during the interim investigation, as a basis for additional requirements.

During this month, a preliminary baseline of information regarding soil matrix, groundwater, the presence of petroleum hydro-carbons and bedrock location will be prepared. We shall forward a preliminary report with the new information sometime during the early part of January (94).

12/06/93 LU3874

COPY

Our initial approach to current investigation shall be to conduct soil and water sampling for each of the designated tank sites, by means of split-spoon sampling with a hollow-stem auger. Upon completion of sampling, a 4" PVC monitoring well shall be placed to access water samples and/or monitor the vadose zone, during the course of future remedial efforts.

Based on the previously developed information and new data acquired during this phase of the project, an interim action effort may be developed to reduce existing levels below the established clean-up guidelines. However, we will make no assumptions on which criteria shall be utilized, until such time as the newly acquired information supports or revises the current site conditions, as the case may be.

We anticipate on-site activities to commence during the early part of December allowing adequate time to implement any reasonable effort towards the interim remedial action as may be required in discovery.

If you should have additional inquiry at this time, please contact me directly. Thank you again,for the continued efforts and assistance which have resulted in achieving compliance for our clients, involved in the UST program.

Sincerely,

Patrick Reeves

PR/pr

December 20, 1993 Telephone Record from Anita Schroeter of the MDNR with Pat Reeves

MISSOURI DEPARTMENT OF NATURAL RESOURCES
TELEPHONE OR CONFERENCE RECORD

FILE: LH3874

DATE: 12/20/93

TELEPHONE ▶ ☑ INCOMING ☐ OUTGOING

CONFERENCE ▶ ☐ FIELD ☐ OFFICE

COPY

SUBJECT: Receipt of their letter of December 6, 1993

PERSONS INVOLVED

NAME: Pat Reeves

REPRESENTATIVE: ADR

SUMMARY OF CONVERSATION

They have constructed some monitoring wells. The groundwater fluctuates by 10'. He believes it is because of a sewer plant. In one of the monitoring wells there was free product. Marion Industries a current lessee may assist in some of the cleanup.

If the letter is not received by 12/28 we should contact him.

ACTION TAKEN

FINAL RESULTS

SIGNATURE: Anita M. Schroeter

DATE: 12/20/93

MO 780-1557 (11-92)

Recycled Paper

January 10, 1994 Letter from C. Dean Martin of the MDNR to MR. B. Whitaker of Westlake Companies

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

January 10, 1994

ESP FILE NO.
#LU3874

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank Unit of the Missouri Department of Natural Resources has recently received and reviewed a letter dated December 6, 1993, form Pat Reeves of ADR/St. Louis. The cleanup levels submitted in the closure report are not acceptable at this time because coarse soil and sand is present. However, based on previous telephone conversations with Mr. Reeves, unusual groundwater conditions exist at this site. It has been indicated that this site might be incorporated into an EPA investigation regarding low levels of radioactive materials in groundwater. Please supply additional information on this matter as well as a name, address, and telephone number for the EPA Agent who is heading their investigation.

The only areas that may be excluded, as described in the December 6, 1993, letter from ADR/St. Louis, at this time is around tanks #2, #3, and #5.

The goal to implement an interim remedial system does indicate a positive step towards controlling the migration of remaining contamination. However, aggressive measures should be taken to complete the characterization of the site contaminants. Enclosed, for your assistance, is an order form available from MDNR that may assist you in this matter. Also, before a remedial system is implemented, a corrective action plan should be provided to this unit for approval.

In Missouri, a permit is required for almost every activity that can have an impact on the environment or the health of the state's citizens. Most activities associated with the remediation of leaking underground storage tanks may require at least one of the following permits: Air Pollution Permit (on-site treatment), Hazardous Waste Permit and Manifests (tank contents), Solid Waste Permit (waste oil), or Water Pollution (NPDES) Permit (for any site excavation or treatment). Before issuance of final closure, evidence must be presented that appropriate permits have either been issued or waived. Evidence may consist of a copy of the permit, a copy of the permit application, or a copy of the waiver letter. Permits may be obtained at the

RECYCLED PAPER

COPY

appropriate MDNR Regional Office. Please refer to the enclosed map for specific addresses and telephone numbers. If you have any questions concerning Water Pollution Permits, please refer to the enclosed Technical Bulletin "Water Pollution Control Permits for Fuel Spill Cleanups." If you have any questions about other permit issues, please call the appropriate regional office staff as shown on the enclosed regional office map.

Please supply this unit with a copy of the report, which summarizes the December 1993 investigation, by the end of January. Included with this report should be the information requested in the body of this letter.

If you have any questions, please do not hesitate to contact Anita Schroeter at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

C. Dean Martin

C. Dean Martin
Acting Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

CDM:jlh

Enclosure

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. Pat Reeves, ADR/St. Louis, P.O. Box 182, St. Charles, MO 63302
Karl Fett, Environmental Specialist, Permits Section, Water Pollution Control Program

February 15, 1994 Letter from C. Dean of the MDNR
to Mr. B. Whitaker of Westlake Companies

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

February 15, 1994

ESP FILE NO.
#LU3874

CERTIFIED MAIL #P144 644 831
RETURN RECEIPT REQUESTED

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO 63044

The Leaking Underground Storage Tank Unit of the MDNR (Missouri Department of Natural Resources) has not received the December 1993 Investigation Report or the other information requested in the January 10, 1994, letter (copy enclosed). Being the former owner and last operator of the closed tanks, it is your responsibility to take the necessary steps to ensure that the contamination is cleaned up (10CSR20-10.053) in a manner and method approved by the MDNR (10CSR20-10.060-10CSR20-10.067).

Previously, we were informed that Westlake Companies intended to cease operation as of December 31, 1993. If Westlake Companies plans to file or has filed bankruptcy, please note, the MDNR believes that the site characterization and corrective action plan obligation at this site are considered outstanding obligations owed to the department and request that any notice of bankruptcy filed (or previously filed) be sent to the Missouri Department of Natural Resources, Bankruptcy Coordinator, Receipts and Reporting, P.O. Box 176, Jefferson City, MO 65102.

RECYCLED PAPER

COPY

Please respond to this request within 30 days. If you have any questions, please do not hesitate to contact Anita Schroeter at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

C. Dean Martin

C. Dean Martin
Acting Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

CDM:jlh

Enclosure

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Doug Nelson, Assistant Attorney General, Attorney General's Office
Karl Fett, Environmental Specialist, Permits Section, Water Pollution Control Program
Mr. Pat Reeves, ADR/St. Louis, P.O. Box 182, St. Charles, MO 63302

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

January 10, 1994

ESP FILE NO.
#LU3874

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank Unit of the Missouri Department of Natural Resources has recently received and reviewed a letter dated December 6, 1993, form Pat Reeves of ADR/St. Louis. The cleanup levels submitted in the closure report are not acceptable at this time because coarse soil and sand is present. However, based on previous telephone conversations with Mr. Reeves, unusual groundwater conditions exist at this site. It has been indicated that this site might be incorporated into an EPA investigation regarding low levels of radioactive materials in groundwater. Please supply additional information on this matter as well as a name, address, and telephone number for the EPA Agent who is heading their investigation.

The only areas that may be excluded, as described in the December 6, 1993, letter from ADR/St. Louis, at this time is around tanks #2, #3, and #5.

The goal to implement an interim remedial system does indicate a positive step towards controlling the migration of remaining contamination. However, aggressive measures should be taken to complete the characterization of the site contaminants. Enclosed, for your assistance, is an order form available from MDNR that may assist you in this matter. Also, before a remedial system is implemented, a corrective action plan should be provided to this unit for approval.

In Missouri, a permit is required for almost every activity that can have an impact on the environment or the health of the state's citizens. Most activities associated with the remediation of leaking underground storage tanks may require at least one of the following permits: Air Pollution Permit (on-site treatment), Hazardous Waste Permit and Manifests (tank contents), Solid Waste Permit (waste oil), or Water Pollution (NPDES) Permit (for any site excavation or treatment). Before issuance of final closure, evidence must be presented that appropriate permits have either been issued or waived. Evidence may consist of a copy of the permit, a copy of the permit application, or a copy of the waiver letter. Permits may be obtained at the

RECYCLED PAPER

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appropriate MDNR Regional Office. Please refer to the enclosed map for specific addresses and telephone numbers. If you have any questions concerning Water Pollution Permits, please refer to the enclosed Technical Bulletin "Water Pollution Control Permits for Fuel Spill Cleanups." If you have any questions about other permit issues, please call the appropriate regional office staff as shown on the enclosed regional office map.

Please supply this unit with a copy of the report, which summarizes the December 1993 investigation, by the end of January. Included with this report should be the information requested in the body of this letter.

If you have any questions, please do not hesitate to contact Anita Schroeter at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

C. Dean Martin

C. Dean Martin
Acting Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

CDM:jlh

Enclosure

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. Pat Reeves, ADR/St. Louis, P.O. Box 182, St. Charles, MO 63302
Karl Fett, Environmental Specialist, Permits Section, Water Pollution Control Program

February 15, 1994 Letter from Pat Reeves of ADR to Anita Schroeter of MDNR

ADR

ST. LOUIS

P.O. Box 182 St. Charles, MO 63302 314-947-9963

RECEIVED FEB 18 1994 COPY

Department of Natural Resources
E.S.P. - Anita Schroeter
P.O. Box 176
Jefferson City, MO. 65102

February 15,1994
RE: LU 3874 Westlake Quarry & Material Company

Ms. Schroeter,

As you are aware, the severe weather conditions during the past few months have presented problems with attempting to develope reliable field data. The temperatures below freezing and periods of ice and snow have delayed our preliminary investigation and interim action.

With respect to your request of the EPA investigation, as previously reported, the site is adjacent to property under their investigation. However, as the Westlake Quarry and Material Company site does not involve activity associated to the low-level radionuclide investigation, we are not in a position to provide such data. A preliminary screening was conducted for the presence of radio-active materials in the work site areas which indicated "no elevated levels" were detected above normal background readings.

During December, four monitoring wells were installed . A boring log with relative data developed from the activity is presently being recorded to submit with our preliminary confirmation of previous site information or amendments as may be discovered , which substantially, provides the basis for our scope of work associated to the interim activity.

Provided the weather conditions do not continue to delay us, we will resume field investigation activities during the latter part of February. In any event, an update of available information will be sent to your office by March 18,1994.

Should you have any immediate inquiry, please contact me directly.

Respectfully,

Patrick Reeves

March 18, 1994 Letter from Mr. Pat Reeves of ADR to Mrs. Schroeter of the MDNR

ADR

ST. LOUIS

P.O. Box 182 St. Charles, MO 63302 314-947-9963

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Department of Natural Resources
ESP DIVISION : Anita Schroeter
P.O. BOX 176
Jefferson City, MO. 65102

March 18,1994
Re: LU3874 WESTLAKE Quarry & Material Co.

Ms. Schroeter,

Per our previous conversation, the enclosed material is submitted for the Departments update regarding the recent environmental investigation activity.

During the early part of December 1993, four wells were installed in the excavation pits for tanks # 1,4,6 & 7. In order to provide a continuity with the current activity, the wells have been identified as follows:

1 WELL = Former Tank # 6
2 WELL = Former Tank # 4
3 WELL = Former Tank # 1
4 WELL = Former Tank # 7

A topographic page identifying the locations is provided. Additionally, the schedule of the analytical summary data compiled from the well installations is included.

As previously indicated in our correspondence of February, activities have been delayed due to the adverse weather. Respectively, the data accumulation and proper statistical review, remains in the "developing stages". We will continue to conduct on-site activities to complete the supportive data and documentation required for producing a responsive remedial plan.

The Department may expect additional submittals within 30 days. If you should have any questions regarding the enclosed information, please contact my office directly.

Respectfully,

Patrick Reeves

RE: LU 3874

COPY

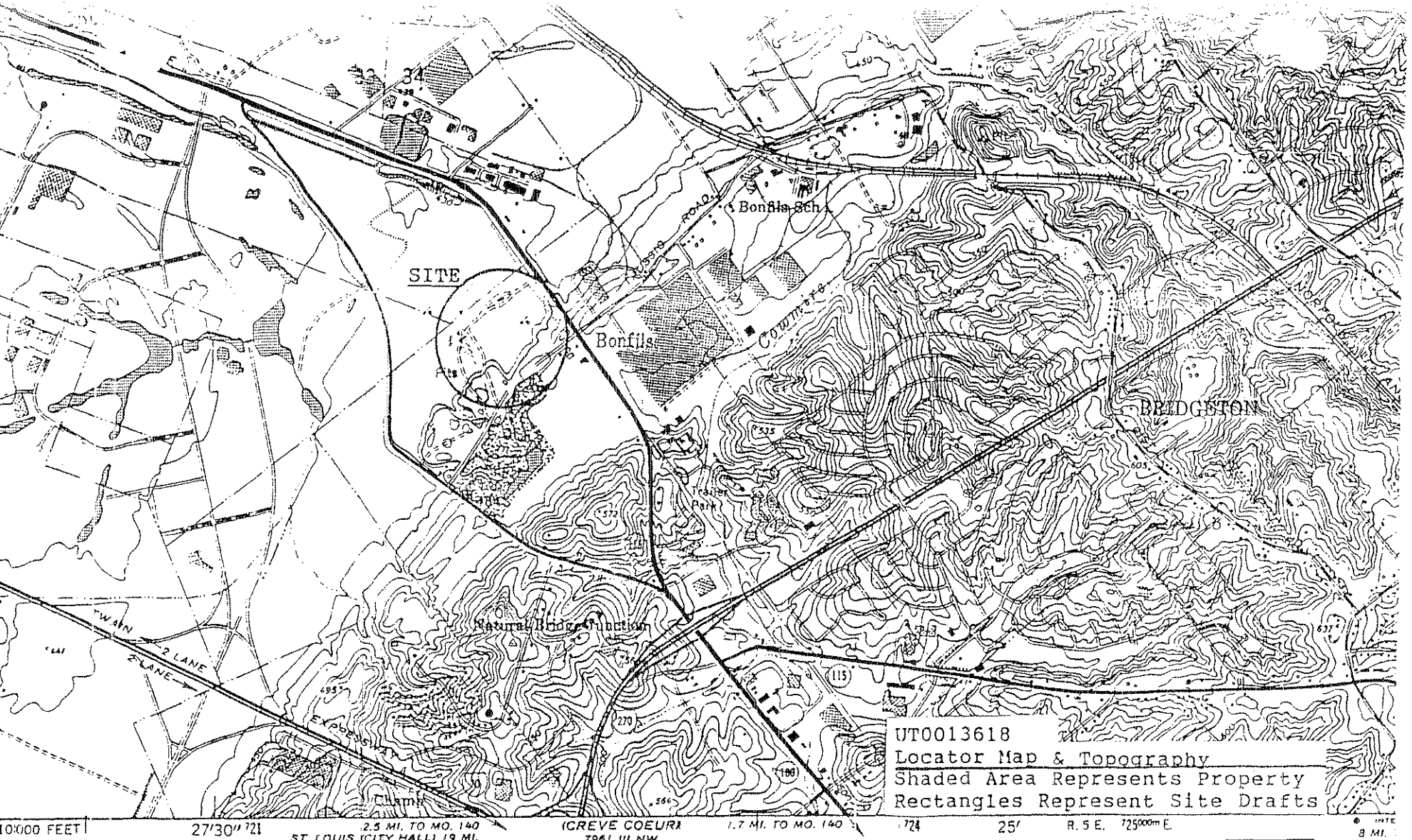
Ms. Schroeter,
As indicated, several areas of our characterization are presently being compiled. I am sure you can agree with the reasonable basis of delay.

The reports being presented to your office by April 18,1994 will reflect the following:

Preliminary Assessment Observations
Drilling and Sampling Observations
Well Pump-Test Results
Well Level Monitoring Report
Well to MSL Comparison Report
1st Quarter Analytical Data
Investigation Protocol Intent
Viable Remedial Options Assessment
Pilot Study /Bench Test Schedules
General Project Overview Report.

Respectfully,

Patrick Reeves



10000 FEET 27'30" 721 2.5 MI. TO MO. 140 ST. LOUIS (CITY HALL) 19 MI. (CREVE COEUR) 7961 III NW 1.7 MI. TO MO. 140 724 25' R. 5 E. 725000m E. 8 MI. KIRKWO

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
NATIONAL GEODETIC VERTICAL DATUM OF 1929

MN GN 1°36' 29 MILS 4° 71 MILS

AND 1974 MAGNETIC NORTH
ION AT CENTER OF SHEET

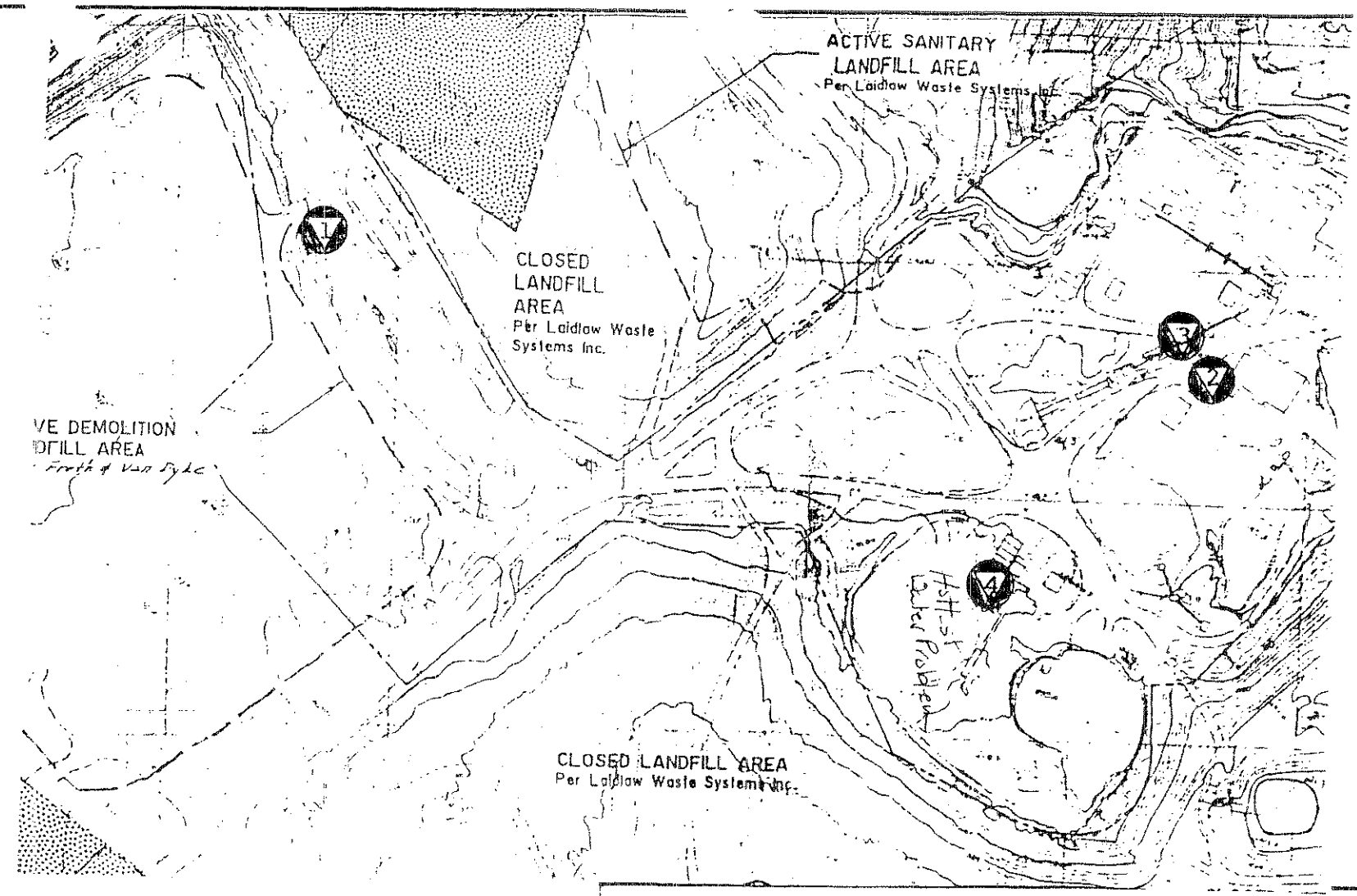
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
AND BY THE DIVISION OF RESEARCH AND TECHNICAL INFORMATION
MISSOURI DEPARTMENT OF NATURAL RESOURCES, ROLLA, MISSOURI 65401
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

COPY

MISSOURI #7

QUADRANGLE LOCATION

To place on the predicted North American Datum 1983, move the projection lines 2 meters south and



WESTLAKE COMPANIES
13570 St. Charles Rock Road
Bridgeton, Mo. 63044

SCALE:	APPROVED BY:	DRAWN BY	
DATE 12/20/93		REVISED P/R	

INTERIM MONITORING WELL LOCATIONS

DRAWING NUMBER

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LU 3874
Westlake Quarry & Material Company

Analytical Summary

	Mtx	BZ	TL	EB	XY	TBTX	TPH
Well # 1							
CR	S	1.5	11.0	10.1	75.	97.6	128
DR	S	N/D	N/D	N/D	N/D	N/D	6
DR	S	.065	.055	.037	.094	.251	9
15	W	.082	.061	.052	.256	.451	N/D
22	W	.076	.050	.037	.175	.338	N/D
Well # 3							
CR	S	N/D	.003	.006	.033	.044	477
15	W	N/D	N/D	N/D	N/D	N/D	N/D
22	W	N/D	N/D	.002	.007	.009	N/D

Abbreviations

CR	Closure Report
DR	Drilling Sample
15	Sample Date December 15,1993
22	Sample Date December 22,1993
MTX	Matrix (soil /water)
TPH	Total Petroleum Hydrocarbons
BZ	Benzene
TL	Toluene
EB	Ethylbenzene
XY	Xylene
TBTX	Total BETX

All data has been converted to parts per million (ppm).

COPY

LU 3874
Westlake Quarry & Material Company

Analytical Summary

	Mtx	BZ	TL	EB	XY	TBTX	TPH
Well # 2							
CR	S	N/D	N/D	.160	.700	.860	2753
DR	S	N/D	N/D	N/D	N/D	N/D	2354
DR	W	N/D	N/D	.005	.020	.025	27
15	W	N/D	N/D	N/D	.012	.012	19
15	S	.003	.016	.007	N/D	.027	26
22	W	N/D	N/D	.002	.007	.009	N/D
Well # 4							
CR	S	.131	.240	4.04	4.26	8.67	13,326
DR	S	.140	.030	3.94	.485	4.595	26,225
DR	W	140.	100.	1402.	952.	2595.	661,935
22	W	70.	65.	1222.	762.	2120.	748,593

Abbreviations

CR	Closure Report
DR	Drilling Sample
15	Sample Date December 15,1993
22	Sample Date December 22,1993
MTX	Matrix (soil /water)
TPH	Total Petroleum Hydrocarbons
BZ	Benzene
TL	Toluene
EB	Ethylbenzene
XY	Xylene
TBTX	Total BETX

All data has been converted to parts per million (ppm).

Layne-Western Company, Inc.

A Layne Company
2399 Cassens Drive • Fenton, Missouri 63026

FIELD BORING LOG

COPY

Boring No. [illegible]

Project [illegible] Job No. 61124 Date 12-8-93

Location [illegible] Crew [illegible]

Drilling Method: ☐ HSA ☐ CFA ☐ Rotary Wash ☐ Rock Coring ☐ Drilling Fluid

DEPTH, ft. From	DEPTH, ft. To	DESCRIPTION	Sample Type	Sample Depth, ft.	Sample Recovery	SPT Blows N/6"
0	2'	[illegible]	SS	18-20		1-3-4-7
2'	18'	[illegible]	SS	22-24		3-6-8-12
18'	22'6"	[illegible]	SS	26-28		1-6-19-24
22'6"	34	[illegible]	SS	28-30		6-5-11-11
		2-4"x 10' [illegible]	SS	30-32		1-1-2-6
		1-4"x 10' Riser	SS	32-34		2-5-16-19
		1-4"x 5' Riser				
		1-4" female Plug.				
		1-4" Locking Cap.				
		12 Bags Sand				
		½ Bag Bentonite				
		Cement Tomorrow				

WATER LEVEL OBSERVATIONS	NOTES
During Drilling _____ ft.	Piezometer Installed: ☐ No ☐ Yes - Depth 32' ft.
" Completion _____ ft.	
After _____ hrs. _____ ft.	
After _____ hrs. _____ ft.	
After _____ hrs. _____ ft.	

Layne-Western Company, Inc.

A Layne Company
2399 Cassens Drive • Fenton, Missouri 63026

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FIELD BORING LOG

Boring No. I 2 WD

Project Pat Lamm Job No. 66424 Date 12-9-93

Location West Lake Crew Tony + Pete

Drilling Method: ☐ HSA ☐ CFA ☐ Rotary Wash ☐ Rock Coring ☐ Drilling Fluid

DEPTH, ft. From	DEPTH, ft. To	DESCRIPTION	Sample Type	Sample Depth, ft.	Sample Recovery	SPT Blows N/6"
0	3'	Black Brace	SS	10-12		2-2-2-3
3'	10	Dark Brown Silt Clay	SS	12-14		1-2-2-4
10	26	Brown Silt Clay	SS	14-16		1-3-3-3
26	43½	Brown Silt	SS	16-18		2-5-8-10
	43½	Rock.	SS	18-20		2-3-4-4
		3-4" x 16' - 16 Slot Screen	SS	20-22		1-2-4-4
		1-4" x 5' - Riser	SS	22-24		3-3-5-5
		1-4" ≠ Female Plug	SS	24-26		1-4-2-6
		1-4" Locking Cap.	SS	26-28		33-5-8
		11 Bags Sand	SS	28-30		3-5-3-8
		1 Bag Bentonite	SS	30-32		2-4-11-11
		4 Bags Grout				

WATER LEVEL OBSERVATIONS	
During Drilling	16 ft.
At Completion	ft.
After hrs.	ft.
After hrs.	ft.

NOTES

Piezometer Installed: ☐ No ☐ Yes - Depth 43½ ft.

Layne-Western Company, Inc.

A Layne Company
2399 Cassens Drive • Fenton, Missouri 63026

FIELD BORING LOG

Boring No. T-3-D

COPY

Project Port Rennie — Job No. 661424 — Date 12-10-93

Location West Lake — Crew Sammy + Pete

Drilling Method: ☐ HSA ☐ CFA ☐ Rotary Wash ☐ Rock Coring ☐ Drilling Fluid

DEPTH, ft. From	DEPTH, ft. To	DESCRIPTION	Sample Type	Sample Depth, ft.	Sample Recovery	SPT Blows N/6"
0	4'	Rock Brace	SS	15-17		6-3-5-5
4	15	Dark Gray Silt clay	SS	17-19		4-6-4-7
15	25	Gray Clay	SS	19-21		3-4-6-7
25	29	Sand-Gravel	SS	21-23		3-4-6-7
			SS	23-25		5-2-7-9
		2-4"x10' - Wellscreen	SS	25-27		5-7-6-6
		1-4"x10' - Riser	SS	27-29		3-3-5-9
		1-4" female plug				
		1-4" Locking cap.				
		16 Bags Gravel				
		1 Bag Bentonite				
		3 Bags Cement				

WATER LEVEL OBSERVATIONS		
During Drilling		ft.
At Completion		ft.
After	hrs.	ft.
After	hrs.	ft.
After	hrs.	ft.

NOTES

Piezometer Installed: ☐ No ☐ Yes - Depth 25' ft.

LW-794 3/90

Layne-Western Company, Inc.

A Layne Company
2399 Cassens Drive • Fenton, Missouri 63026

FIELD BORING LOG

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Boring No. 7-4 D

Project Port Rowan Job No. 111424 Date 12-4-93

Location West Lake Crew [illegible]

Drilling Method: ☐ HSA ☐ CFA ☐ Rotary Wash ☐ Rock Coring ☐ Drilling Fluid

DEPTH, ft. From	DEPTH, ft. To	DESCRIPTION	Sample Type	Sample Depth, ft.	Sample Recovery	SPT Blows N/6"
0	4'	Rock [illegible]	SS	10-12		2-2-3-4
4	10'	Dark silt clay	SS	12-14		1-2-2-3
10	21'	Blue silt clay	SS	14-16		1-2-1-2
21	36'	Brown sand & silt	SS	16-18		1-2-2-3
36'	47'10"	Blue silt & silt	SS	18-20		1-3-5-7
	47'10"	Rock	SS	20-22		15-5-7
		2-4"-10' 10 slot screens	SS	22-24		2-3-4-4
		1-4"x5' 10 slot screen	SS	24-26		2-3-3-4
		1-4"x10 Riser	SS	26-28		5-9-8-8
		1-4" female plug	SS	28-30		3-4-5-6
		1-4" [illegible] cap	SS	30-32		3-3-5-5
		20 Bag sand				
		1 Bag bentonite				
		3 Bags cement				

WATER LEVEL OBSERVATIONS	NOTES
During Drilling _____ ft.	Piezometer Installed: ☐ No ☐ Yes - Depth 47'10" ft.
At Completion _____ ft.	
ter _____ hrs. _____ ft.	
After _____ hrs. _____ ft.	
After _____ hrs. _____ ft.	

LW-794 3/90

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SUMMARY OF RADIOLOGICAL SURVEYS PERFORMED AT WELL #1 AND WELL #2 WESTLAKE - UST DRILLING PROJECT BRIDGETON, MO.

R.M. WESTER & ASSOCIATES, INC.

215 INDACOM DRIVE • ST. PETERS, MISSOURI 63376

(314) 928-9628 • FAX 928-9857

"SPECIALIZING IN YOUR RADIATION SAFETY NEEDS"

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SUMMARY:

On December 8 and 9, 1993, the drilling of two sample wells was conducted on the Westlake property in Bridgeton, MO. Two nearby areas are known to be radioactively contaminated and because of the possibility of migration of contaminants through the soil, each well-site was monitored for radioactive contamination. The wells were being installed to monitor the soil in the immediate area, and sample corings were obtained at various levels throughout the placement of the wells. Each well was located in the area adjacent to where fuel/petroleum tanks had once been buried. Both tanks had been excavated and removed earlier.

Well #1 was placed approximately 350 yards from the entrance point at St. Charles Rock Road. Prior to the commencement of drilling operations, a radiological survey of the area of the well and the adjacent area was conducted to establish background levels. These results were:

5 - 6 μR/hr & 0.02 cpm

During drilling operations, all soil moved to the surface by the auger was surveyed periodically. In addition, samples were obtained at the following depths:

Sample #1	18-20 feet
Sample #2	22-24 feet
Sample #3	26-28 feet
Sample #4	28-30 feet
Sample #5	30-32 feet
Sample #6	32-34 feet

Each of these samples were also surveyed, and a small amount of each sample was added to a composite sample for later analysis in the lab.

After completion of the necessary drilling and sampling, a well was installed to allow future monitoring. All equipment used in the initial drilling and sampling and in the installation of the well was surveyed.

Results from all the surveys at the jobsite revealed no radiation or contamination above background levels. The composite of the soil removed and analyzed in the lab (MCA analysis) revealed energy levels and a spectrum consistent with known non-contaminated soil.

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Well #2 was placed to the north of an equipment maintenance building at the site. Prior to the commencement of drilling operations, a radiological survey of the area of the well and the adjacent area was conducted to establish background levels These results were:

3 - 4 μR/hr & 0.02 cpm

During drilling operations, all soil moved to the surface by the auger was surveyed periodically. In addition, samples were obtained at the following depths:

Sample #1	10-12 feet
Sample #2	12-14 feet
Sample #3	14-16 feet
Sample #4	16-18 feet
Sample #5	18-20 feet
Sample #6	20-22 feet
Sample #7	22-24 feet
Sample #8	24-26 feet
Sample #9	26-28 feet
Sample #10	28-30 feet
Sample #11	30-32 feet

Each of these samples were also surveyed, and a small amount of each sample was added to a composite sample for later analysis in the lab.

All equipment used in the initial drilling and sampling and in the installation of the well was surveyed.

Results from all the surveys at the jobsite revealed no radiation or contamination above background levels. The composite of the soil removed and analyzed in the lab (MCA analysis) revealed energy levels and a spectrum consistent with known non-contaminated soil.

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2810 Clark Avenue • St. Louis, MO 63103-2574 • (314) 531-8080 • FAX (314) 531-8085

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December 10, 1993
Invoice No. 35518
Lab No. 93D-0439

ADR Saint Louis
P.O. Box 182
Saint Charles, Missouri 63302

ATTENTION: Pat Reeves

REPORT OF ANALYSIS

SAMPLE IDENTIFICATION: Two (2) samples submitted as follows:

Sample #1 - WLG-C; Soil-sandy/silt and clay
Sample #2 - WLG-W; Water-translucent

RESULTS: Sample #1-mg/kg Sample #2-mg/L

EPA METHOD 8020

PARAMETER	Sample #1	Sample #2	MDL
Benzene	N.D.	0.065	0.002
Toluene	N.D.	0.055	0.002
Ethylbenzene	N.D.	0.037	0.002
m,p-Xylenes	N.D.	0.036	0.002
o-Xylene	N.D.	0.058	0.002

EPA METHOD 418.1

PARAMETER	Sample #1	Sample #2	MDL
TPH	6	9	5

N.D. - Analyte not detected
MDL - METHOD DETECTION LIMIT

Identification of tested specimens was provided by the customer.

John M. Gibson, Manager
Organic Chemistry

ACCREDITED

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MEMBERS

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St. Louis Testing Laboratories
INCORPORATED
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December 12, 1993
Invoice No. 35695
Lab No. 93D-0442

ADR Saint Louis
P.O. Box 182
Saint Charles, Missouri 63302

ATTENTION: Pat Reeves

REPORT OF ANALYSIS

SAMPLE IDENTIFICATION: Two (2) samples submitted as follows:

Sample #1 - WLWO-W, water, 12/10/93
Sample #2 - WLD-SC; clay-dirt, 12/10/93

RESULTS: Sample #1-mg/L; Sample #2-mg/kg

EPA METHODS 8240 (Sample #1) and 8020 (Sample #2)

PARAMETER	Sample #1	Sample #2	MDL
Benzene	N.D.	N.D.	0.002
Toluene	N.D.	N.D.	0.002
Ethylbenzene	0.005	N.D.	0.002
m,p-Xylenes	0.011	N.D.	0.002
o-Xylene	0.009	N.D.	0.002

EPA METHOD 418.1

PARAMETER	Sample #1	Sample #2	MDL
TPH	27	2354	5

N.D. - Analyte not detected
MDL - METHOD DETECTION LIMIT

Identification of tested specimens was provided by the customer.

John M. Gibson, Manager
Organic Chemistry

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ADR/Saint Louis
P.O. Box 182
Saint Charles, Missouri 63302

December 17, 1993
Invoice No. 35698
Lab No. 93D-0450
Site: Westlake Bridgeton

ATTENTION: Pat Reeves

REPORT OF ANALYSIS

SAMPLE IDENTIFICATION: Six (6) samples submitted as follows:

Sample #1 - MW1-20', water, 12/15/93
Sample #2 - MW2-20', water, 12/15/93
Sample #3 - MW3-22', water, 12/15/93
Sample #4 - MW4-17.5', product, 12/15/93
Sample #5 - WLWO-2, soil composite, 12/15/93
Sample #6 - MW4S, soil, 12/15/93

RESULTS: mg/L Samples #1 - #4; mg/kg Samples #5 & #6

EPA METHOD 8240

PARAMETER	#1	#2	#3	#4	#5	#6	MDL
Benzene	0.082	N.D.	N.D.	140.0	N.D.	0.140	0.002
Toluene	0.061	N.D.	N.D.	100.0	0.003	0.030	0.002
Ethylbenzene	0.052	N.D.	N.D.	1402.5	0.016	3.490	0.002
m,p-Xylenes	0.104	N.D.	N.D.	655.0	0.007	0.305	0.002
o-Xylenes	0.152	0.012	N.D.	297.5	N.D.	0.180	0.002

EPA METHOD 418.1

PARAMETER	#1	#2	#3	#4	#5	#6	MDL
TPH	N.D.	19	N.D.	661935	26	26225	5

N.D. - NOT DETECTED
MDL - METHOD DETECTION LIMIT
Identification of tested specimens was provided by the customer.

John M. Gibson, Manager
Organic Chemistry

ACCREDITED

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MEMBERS

Founded 1929 St. Louis Testing Laboratories INCORPORATED

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ADR/Saint Louis
P.O. Box 182
Saint Charles, Missouri 63302

December 23, 1993
Lab No. 93D-0458
Site: Westlake Bridgeton

ATTENTION: Pat Reeves

REPORT OF ANALYSIS

SAMPLE IDENTIFICATION: Four (4) samples submitted as follows:

Sample #1 - MW1-23', water
Sample #2 - MW2-25.5', water
Sample #3 - MW3-28', water
Sample #4 - MW4-30', product/water

RESULTS: mg/L

EPA METHODS 8020 (Samples #1-#3) and 8240 (Sample #4)

PARAMETER	#1	#2	#3	#4*	MDL
Benzene	0.076	N.D.	N.D.	70.0	0.002
Toluene	0.050	N.D.	N.D.	65.0	0.002
Ethylbenzene	0.037	0.002	0.002	1222.5	0.002
m,p-Xylenes	0.065	0.002	N.D.	530.0	0.002
o-Xylenes	0.110	0.005	N.D.	232.5	0.002

EPA METHOD 418.1

PARAMETER	#1	#2	#3	#4	MDL
TPH	N.D.	N.D.	N.D.	748593	5

* - All other 8240 parameters for this sample were N.D.

N.D. - NOT DETECTED
MDL - METHOD DETECTION LIMIT
Identification of tested specimens was provided by the customer.

John M. Gibson, Manager
Organic Chemistry

ACCREDITED

OFFICIAL COPIES OF TEST REPORTS WILL BE PROVIDED BY THIS LABORATORY ON REQUEST. DO NOT REPRODUCE.
NOT OFFICIAL WITHOUT THE RAISED SEAL OF ST. LOUIS TESTING LABORATORIES, INC.
SEE REVERSE FOR CONDITIONS.

MEMBERS

April 1, 1994 Letter from C. Dean Martin of the MDNR
to B. Whitaker of Westlake Companies

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

April 1, 1994

ESP FILE NO.
LU3874

B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear B. Whitaker:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Missouri Department of Natural Resources has received and reviewed the March 18, 1994, Update Report for the above referenced site. Analytical data contained in the report indicate excessive water contamination in the vicinity of Well #1, Well #2, and Well #4.

The Leaking Underground Storage Tank Unit will be looking forward to a proposal to define the extent of soil and groundwater contamination with the additional data you are intending to supply.

Efforts should be taken to capture any free product in the vicinity of Well #4. A report on the recovery activities should be provided within 45 days. The free product recovery should include the information described in the Corrective Action Guidance Document.

If you have any questions, please do not hesitate to contact Anita Schroeter at our department at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

C. Dean Martin

C. Dean Martin
Acting Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

CDM:gc

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office

RECYCLED PAPER

May 12, 1994 UST Flood Impact Assessment Form
for Westlake Quarry and Material Company

MAR-31-1994 09:50 DNR ENG SERVICES PROGRAM

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM
UST FLOOD IMPACT ASSESSMENT FORM

County St. Louis
UT#: 0013618
LU#: 03874

I. Facility Information

Name: West Lake Quarry & Material Co
Address: 13570 St. Charles Rock Road
City Bridgeton Zip 63044

Present condition of facility:
X Operating
___ Closed
___ Flooded

Contact Person: Bill Whitaker
Contact Phone: 314 / 739 - 1122

Number of USTs: 10
removed 9
one purchased by Laidlaw (out of service) but in ground

II. Assessment

GPS Coordinates: ___

Extent of flooding:
X None
___ Tanks submerged
___ Dispensers submerged
___ Vents submerged

Status of USTs:
___ Unknown ___ Empty
___ Full of product
___ Partly filled w/ product
___ Partly filled w/ water

Check if the following conditions are present:
___ Pavement disturbed/broken up
___ Water in USTs
___ Leak detection not operating
___ Vent lines damaged
___ Free product in monitoring wells
___ USTs floated
___ Dispensers damaged
___ Piping and/or fittings damaged
___ Other visible damage (specify)
___ Free product on site (specify)

Notes: had 10 tanks, but last one removed in December of 1993.

III. Evaluation

X No visible damage caused by flood
X No evidence of a release
___ Non-compliance w/ UST rules (explain)
___ Suspected release (explain)
___ Confirmed release (explain)

Explanation: ___

IV. Recommended Action

Guidance documents provided:
___ Closure guide
___ Corrective action plan
___ Site characterization
___ Leak detection methods
___ Controlling cleanup costs

Instructions: ___

Followup required? ___ Y X N

Copy of form provided? ___ Y X N

COPY

Inspected by Tim Bivins / Becky MacDonald

Date 5/12/94

ATTACHMENT 1

MISSOURI LEAKING UNDERGROUND STORAGE TANK UNIT
(LUST)

FLOOD SURVEY

FACILITY INFORMATION

Owner/Operator and Location

Facility Name: West Lake Quarry & Material Co.

Mailing Address: 13570 St. Charles Rock Road
Bridgeton, MO 63044

Facility Location* (Descriptive) from intersection of Hwy 270 & St. Charles Rock Rd. go North on St. Charles Rock ~1.5 to 2 miles; site on east side of road

Lat. __ ° __ ' __ " . __ Long. __ ° __ ' __ " . __

* The facility location needs to be described in terms that will enable someone reading it to be able to easily find the facility. In addition, the location of the facility can be determined using the global positioning system (GPS).

Current Owner: Name Laidlaw
Address
Phone ( ) -

Current Operator:
Name
Address
Phone ( ) -

Company Official Spoken With: Bill Whitaker - West Lake Quarry
had 10 tanks, 9 removed, one owned by Laidlaw

Previous Owner/Operator (if applicable): Name
Address
Phone

Date Collected: 5/12/94 By Tim Biggs - REACT

Signature T. Biggs

COPY

ATTACHMENT 2

IMPACT OF FLOOD AND RAIN QUESTIONNAIRE
MISSOURI LEAKING UNDERGROUND STORAGE TANK PROGRAM

FACILITY NAME: West Lake Quarry & Material Co.

LOCATION: 13570 St. Charles Rock Rd.
Bridgeton, MO 63044

MO UT# 0013618 MO LU# 03874

DATE: 5/12/94

1. Is this facility located within approximately 1/2 mile of a river, creek or stream? YES or NO? If YES, what is the name if known?

2. Are there any visual signs that the facility was affected by flood waters? Yes or NO? If YES, describe:

3. Was the facility damaged by the flood water or rain? YES, NO, or Unknown? If YES, generally describe the damage, if unknown, explain:

IF THE ANSWER TO QUESTION #3 IS NO, STOP HERE.

4. Were there any release of product or waste oil as a result of the flooding? YES or NO? If YES, describe:

5. If the answer to question 4 is YES, has remedial activity occurred to address the releases? YES or NO? If YES, describe:

6. Did water enter any of the tanks because of flooding or high groundwater?

7. Were there any circumstances such as design criteria, filling tanks, or other actions that the facility took that were useful in preventing potential releases? YES or NO? For the purpose of this question, we are looking for the "lessons learned" that may be useful in future guidance, etc. If YES, describe:

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June 28, 1994 Letter from Mr. Alan Reinkemeyer of the MDNR to Mr. B. Whitaker

Mel Carnahan, Governor • David A. Shorr, Director

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

ESP FILE NO.
LU#3874

June 28, 1994

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Missouri Department of Natural Resources would appreciate an update for the above referenced site. Please submit a project status report which focuses on efforts made to define the extent of soil and groundwater contamination within 30 days of receipt of this letter.

If you have any questions, please do not hesitate to call Anita Schroeter at our department at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:sla

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Pat Reeves, ADR/St. Louis, P.O. Box 182, St. Charles, MO 63302

July 26, 1994 Status Update Report

ADR

ST. LOUIS

P.O. Box 182 St. Charles, MO 63302 314-947-[illegible]

RECEIVED AUG 8 1994 COPY AS

Department of Natural Resources
ESP Division- Anita Schroeter
P.O. Box 176
Jefferson City, Missouri
65102

RE: LU 3874
Westlake Quarry & Material Co.

July 26,1994

Ms. Schroeter,

In accordance with our previous communications, regarding the referenced facility, this report is provided to advise the Department of our activities during the past six months. The information developed during the initial investigation was to be substantiated by our monitoring efforts during the first quarter. However, as previously noted, severe weather and the flooding conditions prevented confirmation of certain parameters with regards to the preliminary data compiled.

During the second quarter of 1994, activities were focused on recording the well levels and documenting characteristic patterns. Significantly, the Missouri River which is located due west of the property (1.5 miles), provides a definitive contrast in relation to the seasonal and periodic storm events.

During the month of May, corrective action was implemented at Well #1, by means of re-excavating the former UST area. Based on analytical data, the soil was classified as special waste for disposal. However, it should be noted, under the DNR's own guidelines regarding undisturbed soil clean-up (Figure 3,1992), this action was only necessary to provide positive determination regarding the suspect soil conditions existing.

In the present quarter, activities will be focused on further investigation of the existing conditions at Well # 4. Pending the response from your office, future activity associated with Well # 1 and # 2 will be limited to quarterly testing for TPH levels.

If you should have any questions regarding this submittal, please contact my office for clarification or comments.

Respectfully,

Patrick Reeves

COPY

WEST LAKE QUARRY & MATERIAL COMPANY

STATUS REPORT
JULY 28, 1994

ESP FILE # LU 3874

ADR ST. LOUIS

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WEST LAKE QUARRY & MATERIAL COMPANY

STATUS REPORT
JULY 28,1994

ESP FILE # LU 3874

COPY

WESTLAKE QUARRY & MATERIAL COMPANY
SUMMARY INFORMATION & STATUS REPORT

MDNR-ESP FILE LU 3874

Preliminary

The information provided in the Closure Submittal of June 1993 was based on the limited observations and data acquired during the UST removal process. Based on guidelines provided in the 1992 Closure Guidance Document (MDNR), four UST locations were subject to further investigation and/or remedial action. As indicated in our communication of December 6, 1993, additional investigation efforts were to be focused on three specific areas. Respectively, the MDNR requested information on four specific sites.

During December (1993), four monitoring wells were installed at the subject UST locations to confirm baseline information. A report was issued to the MDNR providing the information with respect to our initial activities, March 18,1994. During April, based on our submittal, MDNR agreed to allow exclusion of Well # 3 from further investigation. Although excluded from further investigation requirements, the monitoring well is included as source data for comparison during the second quarter.

With the first quarter monitoring data (1994), a significant variation was observed in relation to groundwater documentation. The irregularity was later determined to be attributed to flooding and proved accurate in data correlation. However, this activity resulted in our deferral of submitting a quarterly report and the well monitoring was continued.

This report reflects the available information developed during the first and second quarter of 1994. As provided in the general summary of this report, the scope of our current investigation is being directed to address the conditions remaining at Well # 4. Pending the MDNR's review and approval, activities associated to Well # 1 and Well # 2 shall be limited to quarterly testing for TPH levels.

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WEST LAKE QUARRY & MATERIAL COMPANY
MDNR-ESP FILE LU3874

SUMMARY STATUS REPORT

July 28, 1994

SECTIONS

I. General Site Information & Maps

II. Graphic Data for Monitoring Wells

III. Well #1 Excavation Details & Photographs

IV. Well # 4 , Investigation & Status

V. Analytical Data

VI. Soil Disposal Documents (for Section III)

VII. Field Monitoring Data

COPY

WEST LAKE QUARRY & MATERIAL COMPANY
MDNR-ESP FILE LU3874

COPY

General Site Information:

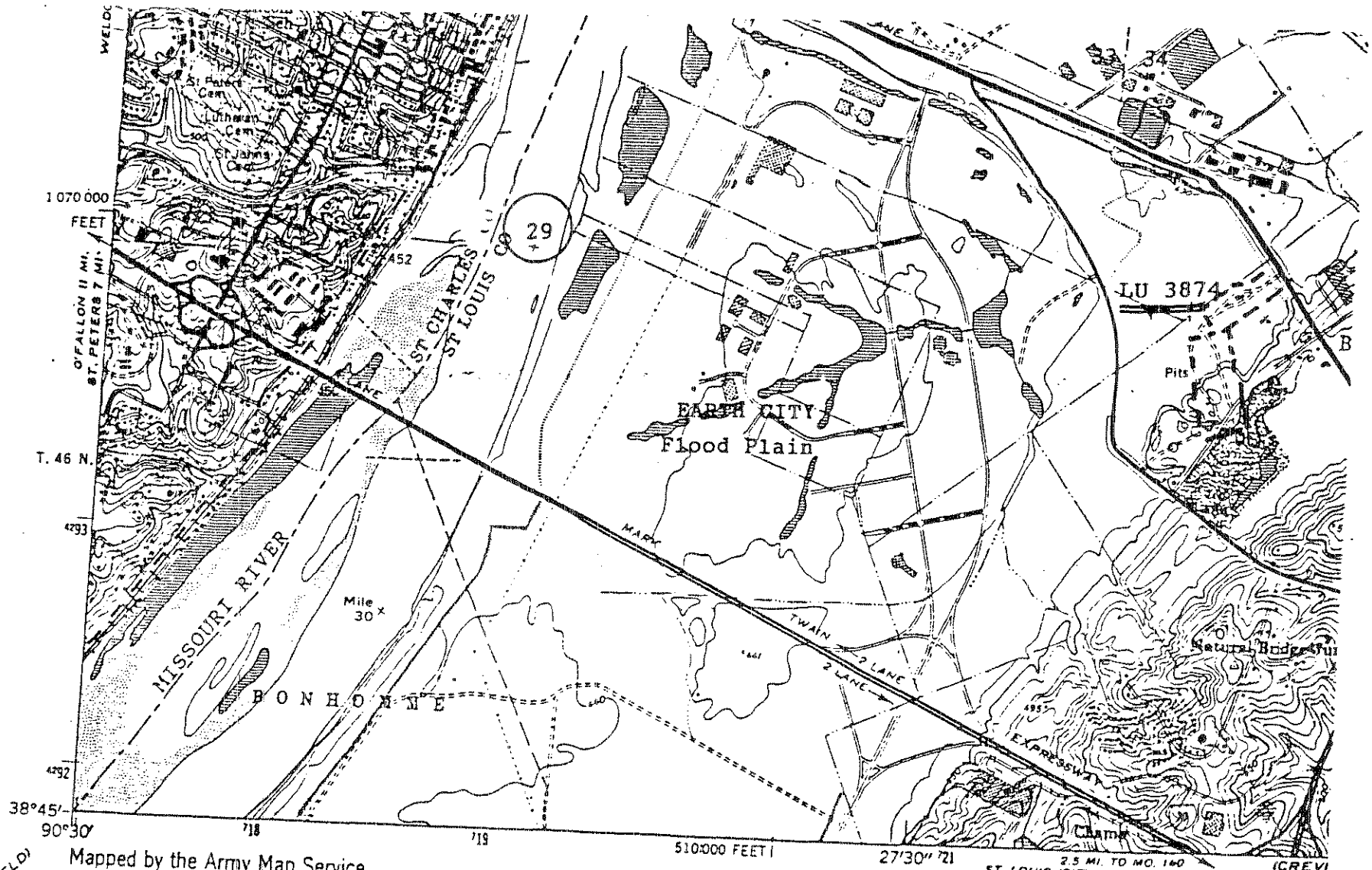
The referenced facility is located east of Earth City, Missouri, in St. Louis county. The site is separated from the adjoining reclaimed floodplain area by parcels owned and operated by Laidlaw Waste Systems, Inc. The parcels surrounding the site are closed and operating landfills which are regulated by MDNR's Waste Management Division. There has not been an indication of any off-site migration associated with the adjoining parcels frequent monitoring program.

"Marker # 29" is a referenced location for the river level used by the USGS and USWS in the St. Charles and Earth City area. The topographic map indicates the marker's specific location in relation to the site. The Missouri River flows North to North-East in this area.

The localized site plot indicates the location of the four wells installed during the December activity. As noted, the adjoining parcels contain several landfill areas which encompass the immediate property.

A graphic depiction of the original drillers log has been provided to reflect the various soil stratifications observed during December. The wells were placed to allow monitoring of the upper alluvium which bears some water in limited amounts. Based on the geological properties underlying Wells 2,3 &4 (St. Louis Limestone and overlying clay structure), there is a very limited potential for transient groundwater in the immediate area

West Lake Quarry & Material Company has leased or sold the operating plants presently occupying the site. West Lake remains as the property owner and continues to conduct other business activities. Respectively, under agreement with West Lake Quarry & Material Company , the current investigation will continue with respect to Well # 4.



Mapped by the Army Map Service
Published for civil use by the Geological Survey

Control by USGS, USC&GS, and USCE

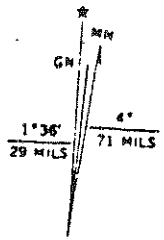
Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1952. Field check 1954

Polyconic projection. 1927 North American datum
10,000-foot grids based on Missouri coordinate system, east zone
1000-meter Universal Transverse Mercator grid ticks, zone 15, shown in blue

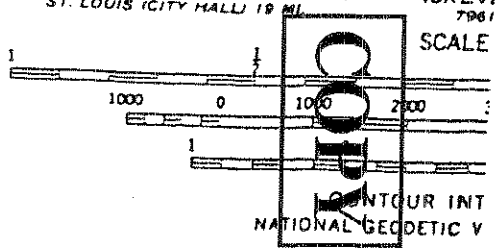
Red tint indicates area in which only landmark buildings are shown

Revisions shown in purple compiled by the Geological Survey from aerial photographs taken 1968 and 1974
This information not field checked

Purple tint indicates extension of urban



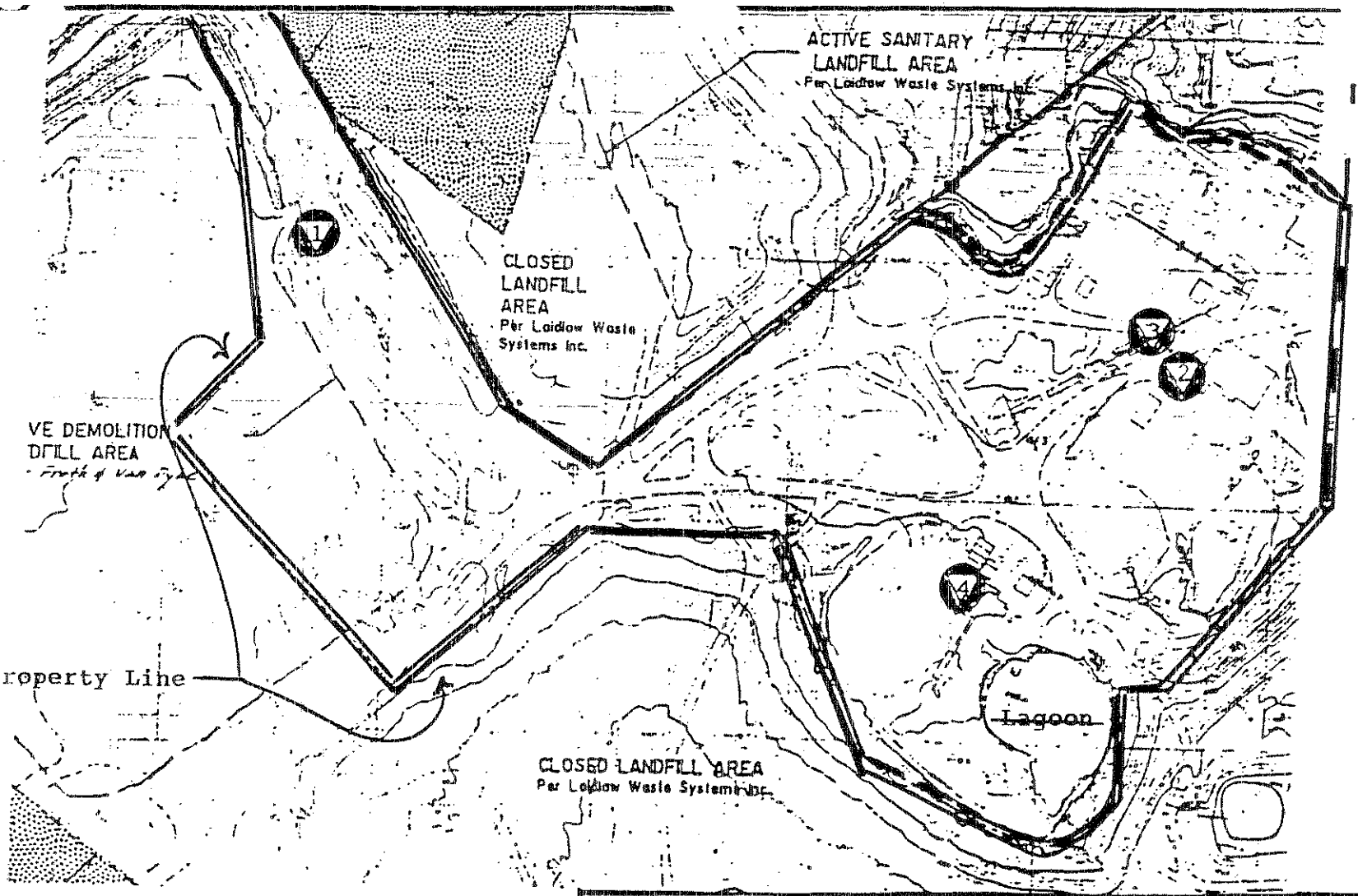
UTM GRID AND 1974 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



THIS MAP COMPLIES WITH NATI
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVE
AND BY THE DIVISION OF RESEAR
MISSOURI DEPARTMENT OF NATURAL
A FOLDER DESCRIBING TOPOGRAPHIC MAPS

Topographic Relation to Nearby Sites

LU 3874



N

- Monitoring Well

WESTLAKE QUARRY & MATERIAL COMPANY
13570 St. Charles Rock Road
Bridgeton, Mo. 63044

SCALE: 1"=280' apx	APPROVED BY:	DRAWN BY
DATE		REVISED P/R

Site Plot with Property Line
Adapted from previous submittal

COPY

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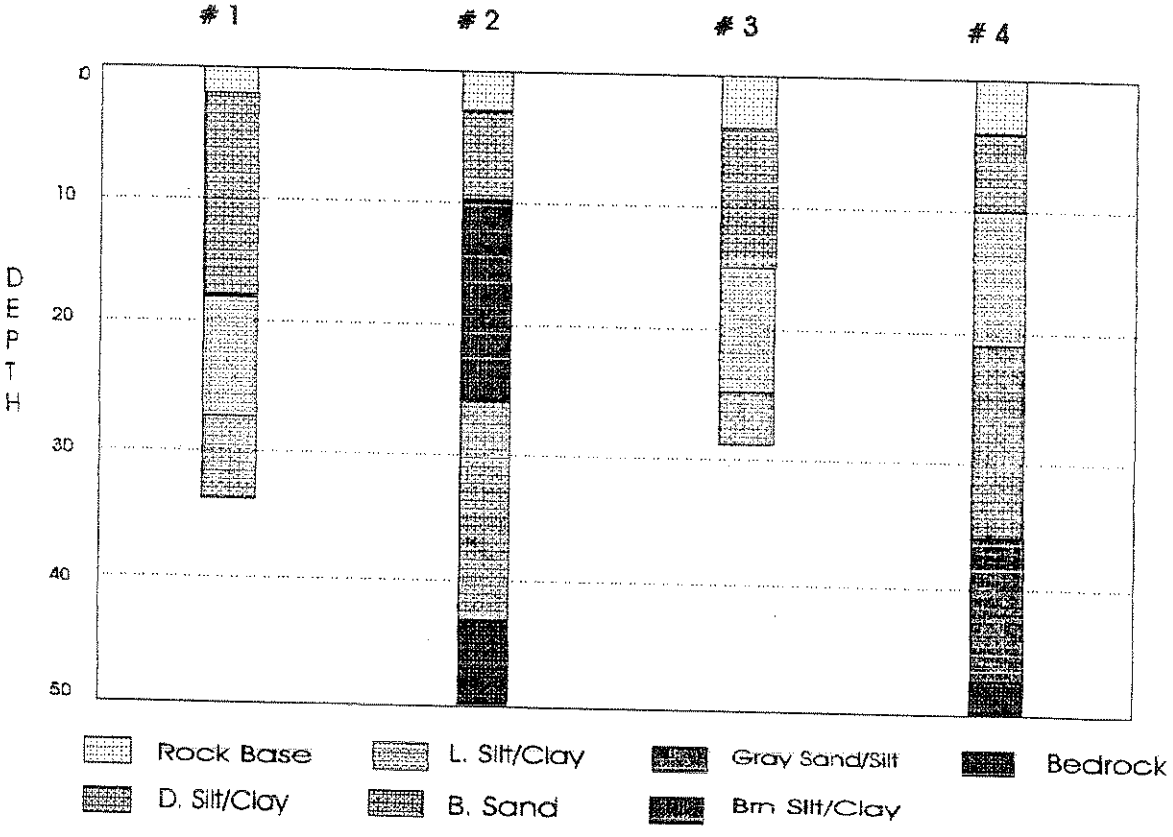
The Westlake site covers a general proximity of 13.5 acres. The previous topography submittal indicates the immediate area is divided between the Missouri River's alluvial deposits along the northern part and joins the St. Louis Limestone present along the southern area. This description is consistent with the information recorded on the driller's log during December 1993 and the previous information submitted in the closure report.

The stratification of surficial soil is relatively consistent with silt clays that vary in depth between 22 to 27 feet. Underlying the clays are brown sands over bedrock confirmed at 43 and 47 feet.

LU 3874

Drillers Log 12/93



Grade Elevation Reference (0)

Well #1 459.4 Well #2 458.0 Well #3 457.9 Well #4 463.9

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WEST LAKE QUARRY & MATERIAL COMPANY
MDNR-ESP FILE LU3874

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WELL MONITORING

During the past two quarters, well monitoring has involved recording the fluid level for each of the four wells. A schedule of the field records and subsequent conversions are provided in a separate section of this report.

The Bimonthly Averages indicate well levels which have been averaged to reflect a general pattern of the changes during the period. During the first quarter, the Missouri River level remained below the well levels. The heavy rains in eastern Missouri and Kansas are recognized in the flood event of February/March. However, the well levels did not reflect any significant change from the occurrence. In the second quarter, the seasonal patterns appear to be consistent with the river level varying in stronger frequency.

The Missouri River & Well Data graphs provide the recorded levels without averaging.

The December/January graph indicates the recorded levels for all four wells declined by approximately two feet. This would be considered a seasonal trend without abnormality. Missouri River levels were observed to follow the seasonal trend to a larger degree.

The February/March graph reflects the actual levels during the "flood" occurrence. As shown, the Missouri River actually exceeded the well levels for a temporary period. This provides a basis for determining the alluvial "groundwater" does not recharge the site, as would be expected.

The April/May graph reflects a general trend of the well levels during the seasonal rain period. There is a distinct factor recognized by examining Well # 1, as opposed to the consistent stability of the other wells. This condition is unique due to the storm water run-off that occurs from the adjoining parcel and effects only Well # 1.

During the month of June, the previous determination is confirmed by the minimal level changes observed at three of the wells. The short rain period, at the end of the month, provides a means to substantiate the relation of storm water run-off associated with Well # 1.

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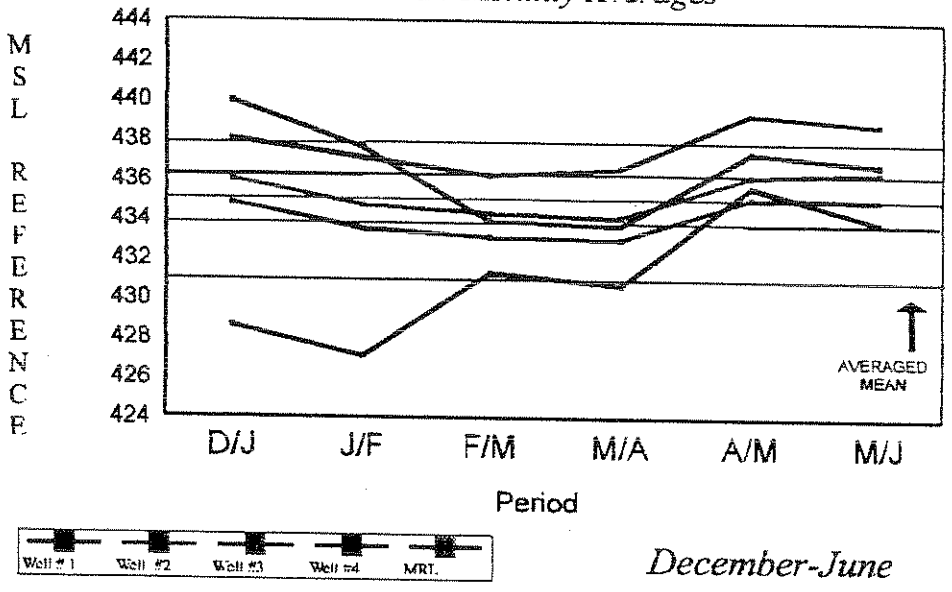
Westlake Quarry & Material Co.

Bi-Monthly Averages



December-June

This graph represents a comparison of the six bi-monthly averages based on the data collection conducted during the periods. Of significant representation is the distinct variation between the elevation levels associated with the "seasonal precipitation" as compared to the "flooding occurrence".

LU 3874

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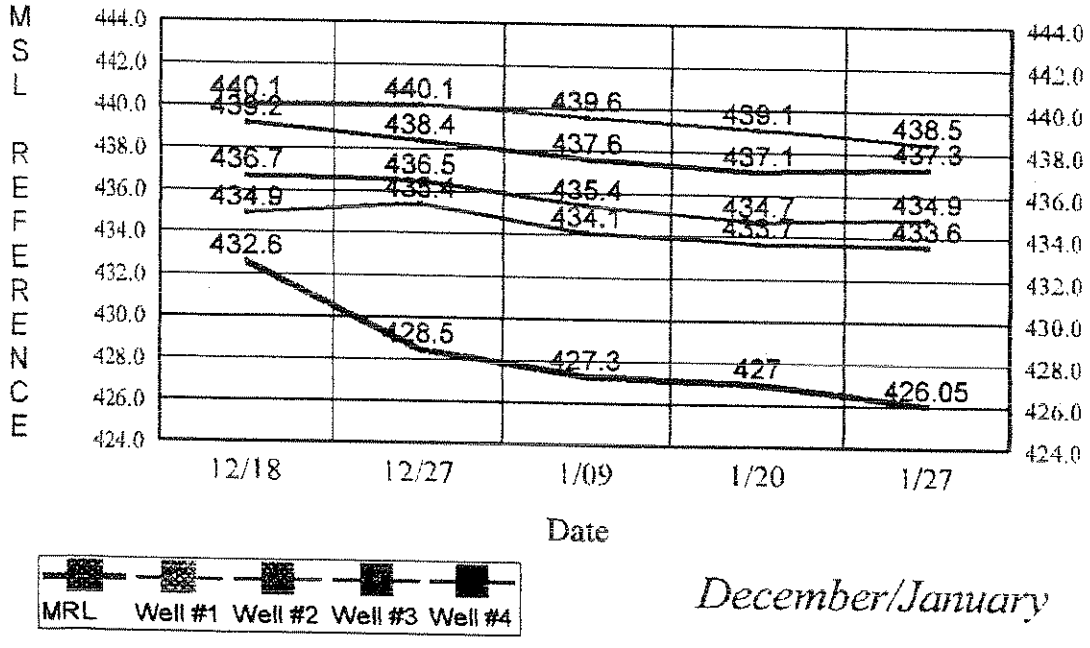
Westlake Quarry & Material Co.

Missouri River & Well Data



December/January

The information provided has been acquired from various sources identified in the summary report. Caution is advised in presuming any interpretation of this specific data without proper disclosure of the source. Information provided by USGS and USWS are deemed preliminary and subject to correction or adjustment until released in the annual report for the period.

LU 3874

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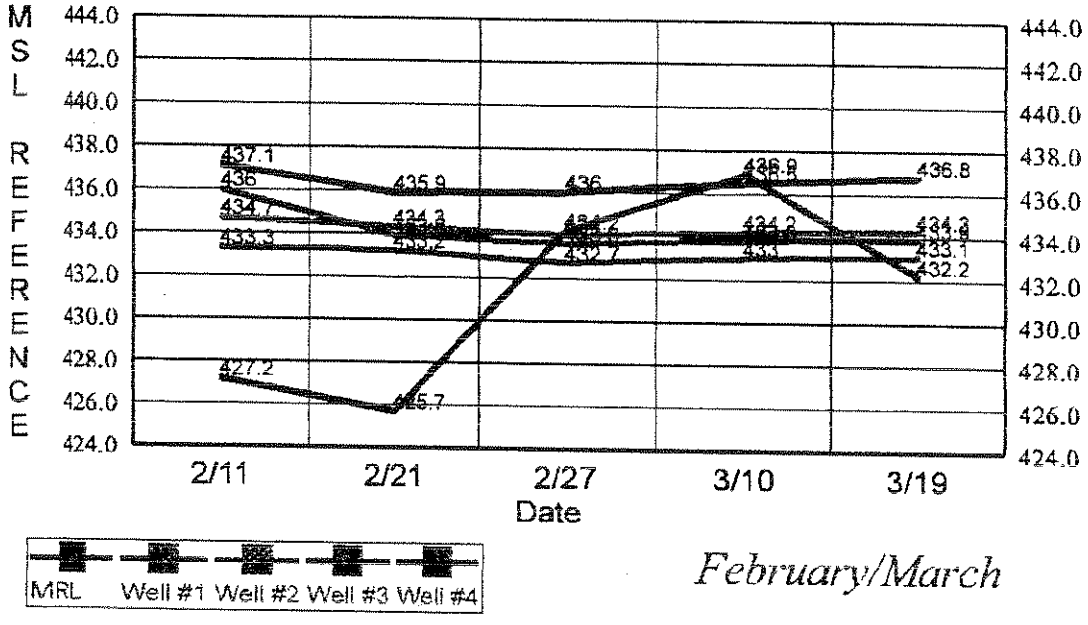
Westlake Quarry & Material Co.

Missouri River & Well Data



February/March

The information provided has been acquired from various sources identified in the summary report. Caution is advised in presuming any interpretation of this specific data without proper disclosure of the source. Information provided by the USGS and USWS are deemed preliminary and subject to correction or adjustment until released in the annual report for the period.

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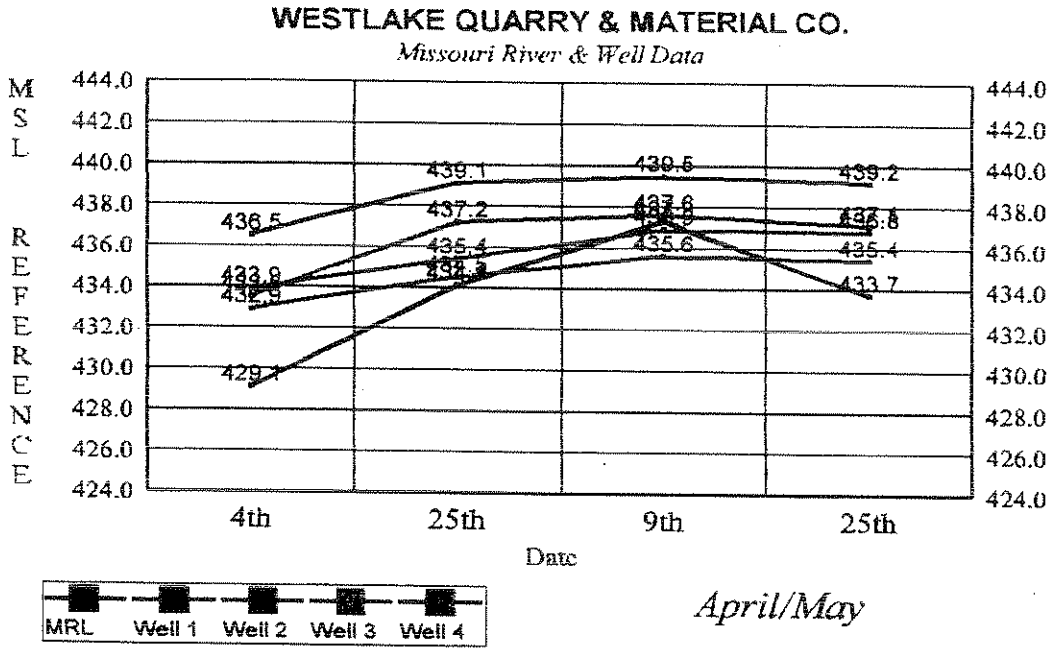

April/May

The information provided has been acquired from various sources identified in the summary report. Caution is advised in presuming any interpretation of this specific data without proper disclosure of the source. Information provided by the USGS and USWS are deemed preliminary and subject to correction or adjustment until released in the annual report for the period.

LU 3874

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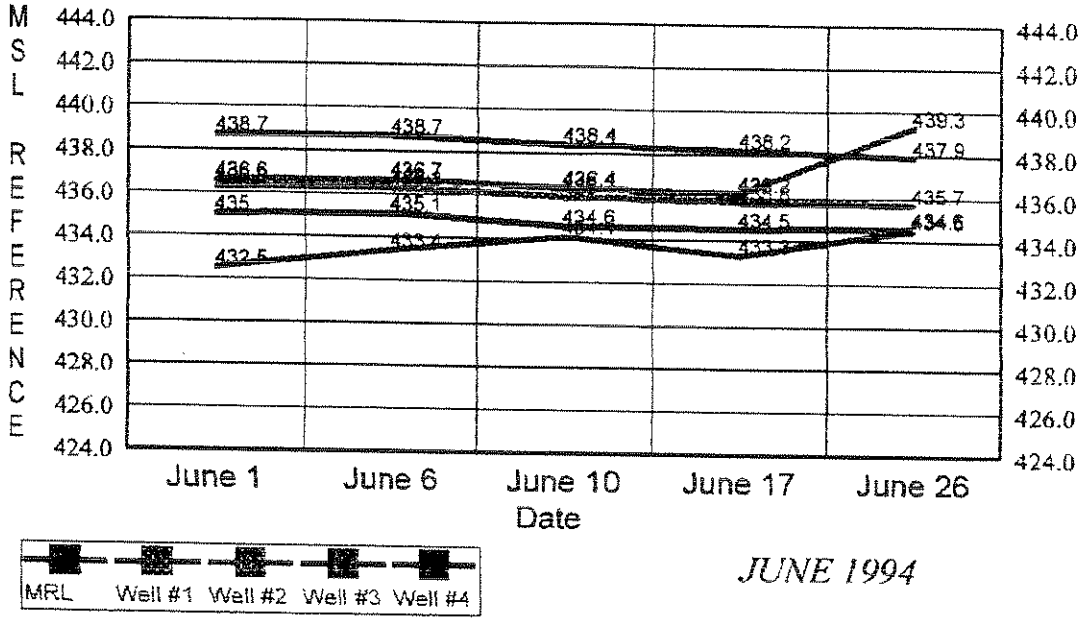
WESTLAKE QUARRY & MATERIAL COMPANY

Missouri River & Well Data



JUNE 1994

The information provided has been acquired from various sources identified in the summary report. Caution is advised in presuming any interpretation of this specific data without proper disclosure of the source. Information provided by the USGS and USWS are deemed preliminary and subject to correction or adjustment until released in the annual report for the period.

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WEST LAKE QUARRY & MATERIAL COMPANY
MDNR-ESP FILE LU3874

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Well # 1, Excavation Details

This section contains the specific details regarding the re-excavation of the former UST pit. Photographs depict the soil conditions and confirm placement is consistent with the prior excavation area. The monitoring well has been preserved for future sampling/monitoring access.

Corrective action was implemented by removal of the former UST fill material believed to be the residual source. Based on the analytical evaluation of the excavated soil samples and the well sample, detected levels for BTEX are below required action levels.

In recognizing the detected Total Petroleum Hydrocarbon levels are above the recommended regulatory guidelines, there remains some question as to the source. Based on information acquired from West Lake Quarry & Material Company and confirmed with the adjoining landfill employees, methane off-gases are transient in the entire area surrounding the site.

Subject to the approval of MDNR, future activity associated to this well area will be limited to monitoring the TPH levels during the next two quarterly periods.

COPY

May 13 th, 1994
ADR/ST. LOUIS

General Log
Well # 1 Location

Activity Date: May 6 through May 9

Initiated by : General discussion regarding objectives and cost relation for excavating potential "source" area as compared to SVE for an interim period.

May 5th Approval by B. Whitaker to proceed with implementation.
Equipment scheduled for Friday P.M. delivery to site.
Prior removal & related documents copied to field file.

May 6th On-site for barricading work area and equipment receiving.
Traffic Control Recvd.
Roland - Excavator recvd 747.4 hrs. 2:30 pm
Rental Center- Backhow 1993.5 hrs. 3:30 pm
PID w/c from Reis
Storage and sampling equipment secured.

May 7th On-Site Saturday 8:00 a.m.
Secured stock pile berm and plastic sheeting base in designated area.
Initiated soils excavations at former tank Center line.
Conducted soil screening during removal process . (PID)
Excavation taken to 18'. Surface disturbance 20' X 24'.
Calculated soils (320 cu.yd.-in place)

Soils description, loose granular clay silts and gravel. Minimal odor detectable at 14" depth. A defined color layer approximately 3/4 " (lense) was noted traversing the former tank bottom location and diminishing on the down-gradient wall at 16' depth. The lense is up-gradient to the monitoring well. Preservation of the well was maintained to allow future monitoring efforts in the vicinity.

Site work terminated at 5:00 p.m. Stock piles were covered with 4 mil. plastic and secured.

May 8th On-Site A 7:30 CR2 8:00
Stockpile uncovered on east quadrant.
Soil relocated from excavation area.
Potential gradient past well cleared for inspection. (Non-detect/PID)
Photodocument completed
Backfill of excavation initiated.

COPY

General Log

May 8 cont.

Excavation backfilled to within 1.5 ' of grade.
Alternate 3/4" minus required for completion of grade.
Site secured.
Stock piles covered and secured.
Site work terminted 5:30 p.m.

May 9 Completed backfill to grade with minus material
Cleared area of general obstructions
Secured equipment & ordered removal
Collected composite sample for soil/waste analysis
Document & COC completed.
Sample transported to lab. (3-5 day turn)

On-site work completed.

Additional Data Reference
Waste Classification Data
Analytical Results
MDNR Inspection (SLRO)
Summary Statement

May 13, 1994

Well # Location

COPY

DESCRIPTION OF PHOTOGRAPHS

1. Preconstruction, from south egress.

2. Preconstruction, from northwest parking area.

3. Preconstruction, from southwest parking area.

4. View of north quadrant of excavation.

5. View of east quadrant of excavation.

6. View towards ingress/egress (E/SE).

7. View of south quadrant.

8. View of west quadrant.

9. View of northwest excavation area.

10. View of gradient/downgradient excavation area.

11. View of lowest excavation point (N/E).

12. View of lowest excavation point from north wall.

LU3874

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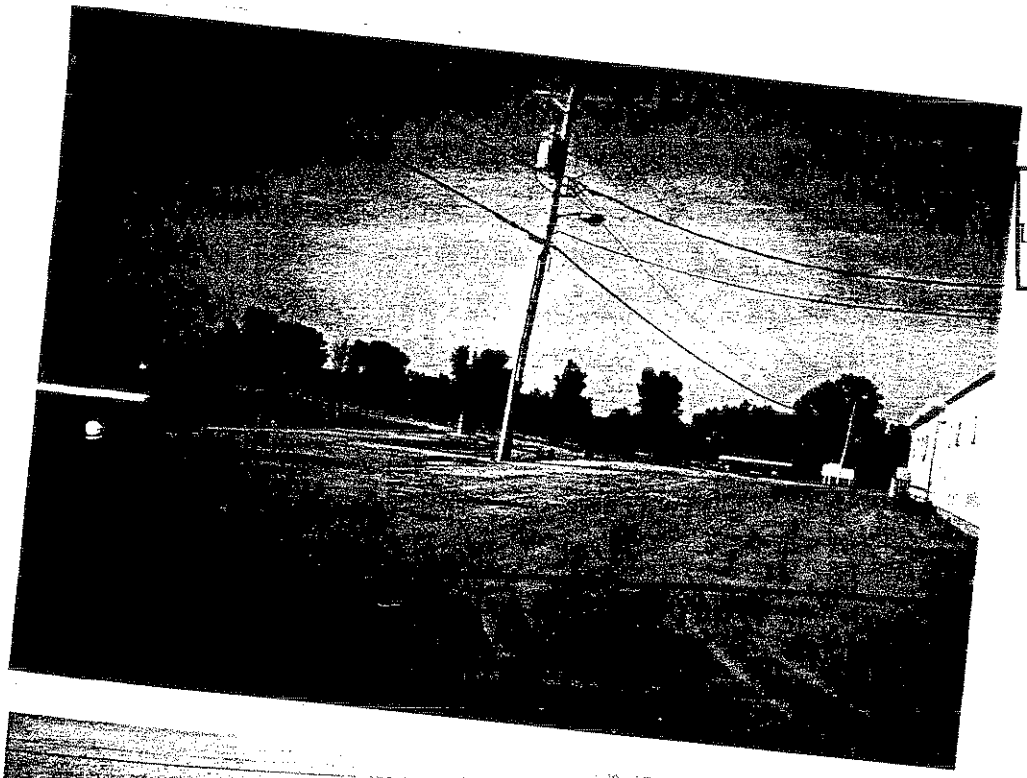

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LU3874

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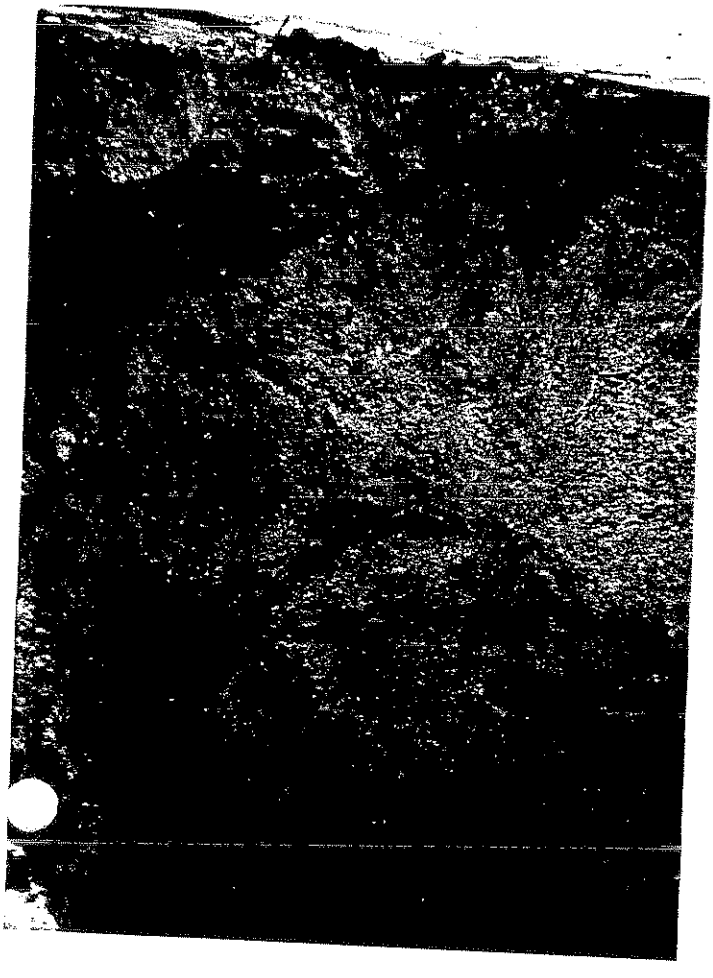

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WEST LAKE QUARRY & MATERIAL COMPANY
MDNR-ESP FILE LU3874

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Well # 4, General Details

This area remains a focus point for additional investigation and future remedial action. This section provides an overview of past activity and general opinion based on the observations made.

During the December well placement, two specific areas were identified with diesel residuals. The sample extracted from 12 to 14 foot depth was observed to contain product. The 18 to 20 foot sample also appeared to contain some residuals. This information is consistent when recognizing the upper sample is in the approximate area of the former tank bottom. The lower area is recognized as the dense clay area which may retain or restrict movement of residuals. Further support is based on the drillers log indicating more SPT blow counts at these specific levels.

On December 17,1993, residual product was observed in the well and immediate efforts were made to recover the product. The well did not recharge adequately to support continued pumping efforts.

During the past six months, the well has been manually bailed on a weekly basis. The height of the "product layer over water" has decreased in volume. Approximately 80 gallons of fluid have been removed from the well. Less than 6% (4.8 gls.) is separable product.

The asphalt plant maintains four aboveground oil tanks directly east of the well. On the western side, a scrubber unit operates to control emissions from asphalt batching. The lagoon located southwest of the well is used as a recirculating water supply. Surface run off flows directly west to the lower elevation channel which routes south and then southeast to return to the pumping units (see Well # 4 Plot).

The colored graphic sheet depicts a view of the well area from the south. The layers previously discussed are described as confirmed areas. The scrubber unit and water run off would be located to the left at "Grade cover." This is relative in recognizing the saturated gradient flow is generally twenty feet higher than fluid in the well. This indicates there is not a direct conduit for flow in the area of the well. Furthermore, with the limited recharge of the well, there exists a reasonable basis for assuming the "layers" are not migratory, and may be limited to the immediate pit area.

During the present quarter, investigation efforts will be directed to determine the conditions around the immediate well area. Low intrusion boring and sampling efforts will provide a basis to address a viable recovery and remedial action plan.

Layne-Western Company, Inc.

A Layne Company
2399 Cassens Drive • Fenton, Missouri 63026

FIELD BORING LOG
COPY
Boring No. 2-4 D

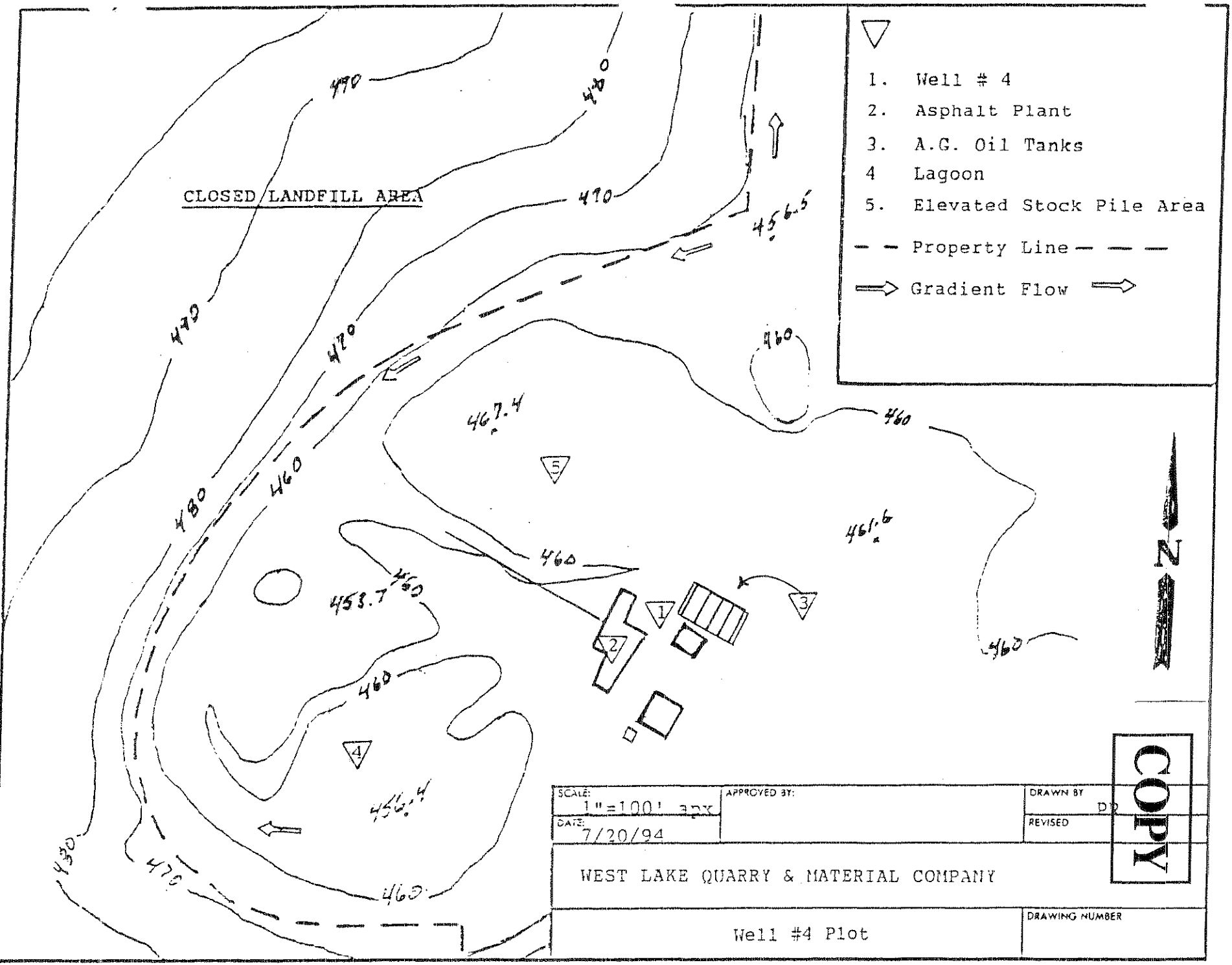
Project Port Rowan Job No. 111424 Date 12-11-93

Location West Lake Crew [illegible]

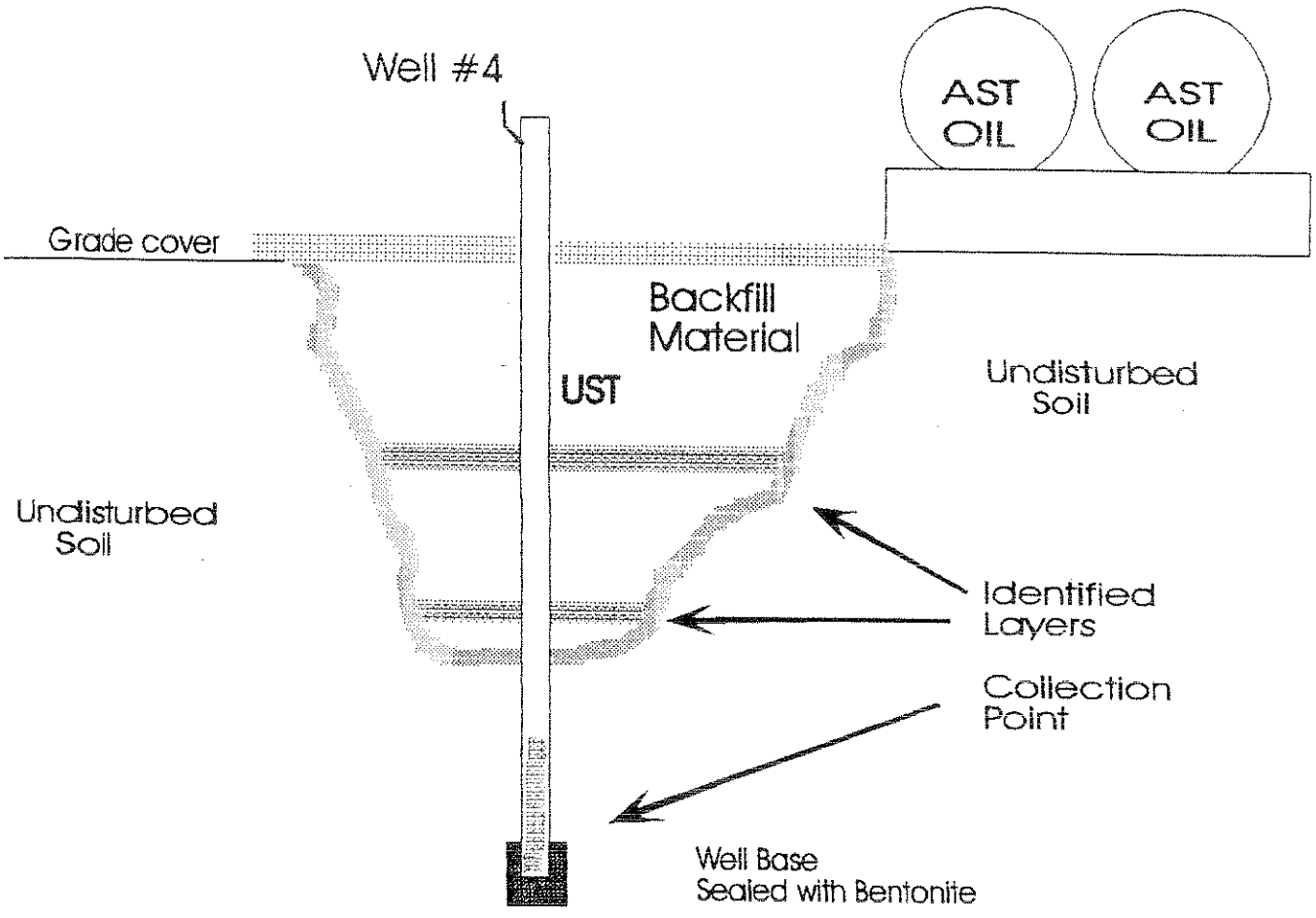
Drilling Method: ☐ HSA ☐ CFA ☐ Rotary Wash ☐ Rock Coring ☐ Drilling Fluid

DEPTH, ft. From	DEPTH, ft. To	DESCRIPTION	Sample Type	Sample Depth, ft.	Sample Recovery	SPT Blows N/6"
0	4'	Rock Cover	SS	10-12		2-2-3-4
4	10'	Dark Silt Clay	SS	12-14		1-2-2-3
10	21'	Brown Silt Clay	SS	14-16		1-2-1-2
21	36'	Brown Sand & Silt	SS	16-18		1-2-2-3
36'	47'10"	Fine Sand & Silt	SS	18-20		1-3-5-7
	47'10"	Rock	SS	20-22		15-5-7
		2-4" x 10' 10 Slot Screens	SS	22-24		2-3-4-4
		1-4" x 5' 10 Slot Screen	SS	24-26		2-3-3-4
		1-4" x 10 Riser	SS	26-28		5-9-8-8
		1-4" Female Plug	SS	28-30		3-4-5-6
		1-4" Female Plug Cap	SS	30-32		3-3-5-5
		20 Bag Sand				
		1 Bag Bentonite				
		3 Bags Cement				

WATER LEVEL OBSERVATIONS	NOTES
During Drilling _____ ft.	Piezometer Installed: ☐ No ☐ Yes - Depth 47'10" ft.
ompletion _____ ft.	
ıfter _____ hrs. _____ ft.	
After _____ hrs. _____ ft.	
After _____ hrs. _____ ft.	


1. Well # 4
2. Asphalt Plant
3. A.G. Oil Tanks
4 Lagoon
5. Elevated Stock Pile Area
Property Line
Gradient Flow
CLOSED LANDFILL AREA
490
480
470
460
450
430
456.5
467.4
461.6
453.7
456.4
N
SCALE: 1"=100' apx
DATE: 7/20/94
APPROVED BY:
DRAWN BY DP
REVISED
WEST LAKE QUARRY & MATERIAL COMPANY
Well #4 Plot
DRAWING NUMBER
COPY

COPY



Immediate Focus Area

Confirmed Residuals

Note: MW # 4 not to scale for reference purposes only

LU 3874

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WEST LAKE QUARRY & MATERIAL COMPANY
MDNR-ESP FILE LU3874

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Analysis of Well Samples

Based on the analysis of well samples conducted by St. Louis Testing Laboratories, the detected levels of BTEX constituents are below regulatory action levels for Well # 1 through 3.

Based on information acquired from site employees, the cause for elevated TPH levels may be attributed to "off-gases" originating from the landfill areas. As provided in the previous section additional testing will be conducted. This irregularity in TPH concentrations is supported by the prior test results of December 1993, as compared to the test results of May 1994.

Additional investigation and remedial action are anticipated for Well #4.

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May 12, 1994
Lab No. 94D-0194

ADR / ST. LOUIS
P.O. Box 182
St. Charles, MO 63302

Attention: Pat Reeves

REPORT OF TESTS

SAMPLE ID:
#1 WATER - WATER FROM WELL #1 (21'7"), 5/9/94
#2 WATER - WATER FROM WELL #2 (21'8"), 5/9/94
#3 WATER - WATER FROM WELL #3 (24'4"), 5/9/94
#4 WATER - WATER FROM WELL #4 (24'7"), 5/9/94
#4 W-P - FROM WELL #4, 5/9/94
(SITE NAME: WEST LAKE PROJECT #: BRIDGETON)

RESULTS: mg/L **EPA METHOD 8020**

PARAMETER	#1 WATER	#2 WATER	#3 WATER	#4 WATER	#4 W-P	MDL
Benzene	0.032	ND	ND	0.098	287.090	0.002
Toluene	ND	ND	ND	0.015	1539.595	0.002
Ethylbenzene	0.005	0.005	ND	0.050	2712.170	0.002
m,p-Xylenes	0.002	0.003	ND	0.036	1590.640	0.002
o-Xylenes	0.002	0.002	ND	0.036	4610.820	0.002

RESULTS: mg/L **EPA METHOD 418.1**

PARAMETER	#1 WATER	#2 WATER	#3 WATER	#4 WATER	MDL
Total Petroleum Hydrocarbons	19	30	20	1920	5

ND: Not Detected / MDL: Method Detectiion Limit

Identification of tested specimens was provided by the client.

Russell Keeney
Manager Organic
Chemistry Department

RK/slw

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ADR/Saint Louis
P.O. Box 182
Saint Charles, Missouri 63302

December 23, 1993
Lab No. 93D-0458
Site: Westlake Bridgeton

ATTENTION: Pat Reeves

REPORT OF ANALYSIS

SAMPLE IDENTIFICATION: Four (4) samples submitted as follows:

Sample #1 - MW1-23', water
Sample #2 - MW2-25.5', water
Sample #3 - MW3-28', water
Sample #4 - MW4-30', product/water

RESULTS: mg/L

EPA METHODS 8020 (Samples #1-#3) and 8240 (Sample #4)

PARAMETER	#1	#2	#3	#4*	MDL
Benzene	0.076	N.D.	N.D.	70.0	0.002
Toluene	0.050	N.D.	N.D.	65.0	0.002
Ethylbenzene	0.037	0.002	0.002	1222.5	0.002
m,p-Xylenes	0.065	0.002	N.D.	530.0	0.002
o-Xylenes	0.110	0.005	N.D.	232.5	0.002

EPA METHOD 418.1

PARAMETER	#1	#2	#3	#4	MDL
TPH	N.D.	N.D.	N.D.	748593	5

* - All other 8240 parameters for this sample were N.D.

N.D. - NOT DETECTED
MDL - METHOD DETECTION LIMIT
Identification of tested specimens was provided by the customer.

John M. Gibson, Manager
Organic Chemistry

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ADR/Saint Louis
P.O. Box 182
Saint Charles, Missouri 63302

December 17, 1993
Invoice No. 35698
Lab No. 93D-0450
Site: Westlake Bridgeton

ATTENTION: Pat Reeves

REPORT OF ANALYSIS

SAMPLE IDENTIFICATION: Six (6) samples submitted as follows:

Sample #1 - MW1-20', water, 12/15/93
Sample #2 - MW2-20', water, 12/15/93
Sample #3 - MW3-22', water, 12/15/93
Sample #4 - MW4-17.5', product, 12/15/93
Sample #5 - WLWO-2, soil composite, 12/15/93
Sample #6 - MW4S, soil, 12/15/93

RESULTS: mg/L Samples #1 - #4; mg/kg Samples #5 & #6

EPA METHOD 8240

PARAMETER	#1	#2	#3	#4	#5	#6	MDL
Benzene	0.082	N.D.	N.D.	140.0	N.D.	0.140	0.002
Toluene	0.061	N.D.	N.D.	100.0	0.003	0.030	0.002
Ethylbenzene	0.052	N.D.	N.D.	1402.5	0.016	3.490	0.002
m,p-Xylenes	0.104	N.D.	N.D.	655.0	0.007	0.305	0.002
o-Xylenes	0.152	0.012	N.D.	297.5	N.D.	0.180	0.002

EPA METHOD 418.1

PARAMETER	#1	#2	#3	#4	#5	#6	MDL
TPH	N.D.	19	N.D.	661935	26	26225	5

N.D. - NOT DETECTED
MDL - METHOD DETECTION LIMIT
Identification of tested specimens was provided by the customer.

John M. Gibson, Manager
Organic Chemistry

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WEST LAKE QUARRY & MATERIAL COMPANY
MDNR-ESP FILE LU3874

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Special Waste Disposal Documents

Associated with Well # 1

Application

Certification

Acceptance

Sampling

Analysis

RECEIVED

MAY 19 1994

WASTE MANAGEMENT
DOCHMC-ENV
COMMUNITY HEALTH SERVICES

St. Louis County
Department of Health

COPY

OFFICE USE ONLY
Special Waste I.D. 1978
Special Waste Registration No. 1978S-C940

ST. LOUIS COUNTY
APPLICATION FOR DISPOSAL OF SPECIAL WASTE

The undersigned is applying for authorization to dispose of Special Waste in St. Louis County as provided by Chapter 607, Section 860, 1987.

IMPORTANT: Application must be completed in full (Do not leave any sections blank) and accompanied by Missouri Department of Natural Resource's Special Waste Approval.

Generator (To Be Completed By Generator)

Company/Individual WEST LAKE QUARRY & MATERIAL CO.
Mailing Address 12976 ST. CHARLES ROCK RD.
City, State, Zip BRIDGETON, MISSOURI 63044
Contact Person BILL WHITAKER Telephone (314 739-1122

Generation Rate (To Be Completed By Generator)

One Time Disposal 330 cu. yds.
Periodic/Continuous ____ cu. yds. per ____ (mo., yr.)

Waste Information (To Be Completed By Generator)

Waste Description EXCAVATED SOILS FROM FORMER UST SITE.
Location of generated waste 13570 ST. CHARLES ROCK RD. Zip 63044
Briefly describe the process by which this waste is generated. Enclose a process flow chart if available
UST REMOVAL

Physical Charactaristics (Color, Odor, Consistency, etc.) GRAY TONES, MINIMAL DETECTABLE CLAY/SILT/GRAVEL.

Chemical Characteristics (Attach a completed copy of the Missouri Department of Natural Resources Special Waste Disposal Request if applicable and laboratory analysis performed). SEE ATTACHED:

For neutralized infectious and hazardous waste, describe the method(s) of neutralization: (i.e., autoclaving, incineration, etc.) N/A

Name of neutralization company if different from generator. N/A

For neutralized infectious and hazardous waste, please describe the quality control safeguard(s) used including indicator(s): (i.e., time/temp. charts, bacillus stearothermophilus spore assay, chamber retention times and temps, etc). N/A

Transportation (To Be Completed By Generator)

Waste Hauling Company N/A — WILL NOT LEAVE PROPERTY ADDRESS.
Mailing Address
City, State, Zip
Contact Person Telephone (___)
County Hauling Vehicle Permit Number(s)
County Hauling Container Permit Number(s)

Disposal (To Be Completed By Disposal Facility)

Waste loads shall be individually recorded at the disposal facility. St. Louis County's approval is contingent upon the disposal facility's agreement

COPY

Environmental Company (If applicable)

Company ADR / ST. LOUIS

Mailing Address P. O. BOX 182

City, State, Zip ST. CHARLES, MISSOURI 63302

Contact Person PATRICK REEVES Telephone (314 947-9963

Certification (To Be Completed By Generator and Disposal Facility)

I, the undersigned, submit this request to dispose of the named waste under SLCRO Chapter 607, 1987, and certify that the waste named herein and as shown is not a hazardous waste as defined by the Missouri Waste Management Law and Rules. All infectious waste has been completely neutralized and managed in accordance with the Missouri Solid Waste Managment Law and Rules.

Signature of Waste Generator or Authorized Representative — Date: 5-19-94

PATRICK REEVES - CONTRACTOR

Print Name and Title

Signature of Disposal Facility or Authorized Representative — Date: 5/19/94

GARY I. MEIER SOLID WASTE TECH.

Print Name and Title

Application Fee:	Please remit $50.00
To:	St. Louis County Dept. of Health Waste Management Section 111 South Meramec Avenue Clayton, MO 63105

FOR WASTE MANAGEMENT USE ONLY

Approved — Expiration Date: July 1, 1994

Disapproved

Other Conditions:

For — Date: May 25, 1994

CERTIFICATION FOR DISPOSAL OF SOIL CONTAMINATED WITH VIRGIN GASOLINE OR VIRGIN FUEL OIL

COPY

SECTION I - GENERAL INFORMATION (To be completed by the generator and the landfill operator.)

[redacted]	Sanitary Landfill:	Waste Generator:
Name:	LAIDLAW WASTE SYSTEMS, BRIDGETON LANDFILL, INC.	WEST LAKE QUARRY & MATERIAL CO.
Mailing Address:	13570 ST. CHARLES ROCK ROAD	12976 ST. CHARLES ROCK RD.
City, State and Zip:	BRIDGETON, MISSOURI 63044	BRIDGETON, MISSOURI 63044
Contact Person:	GARY MEIER	BILL WHITAKER
Telephone No. of Contact Person:	(314) 739-1919	(314)-739-1122
Landfill Permit Number:	118912	[redacted]

SECTION II - WASTE IDENTIFICATION (To be completed by the generator.)

Description of generation process:	EXCAVATION OF FORMER UST LOCATION.
Location of spill/tank:	13570 ST. CHARLES ROCK ROAD
Source of contamination: (Check one)	☒ virgin gasoline ☐ virgin fuel oil If virgin fuel oil, specify grade: _____
Quantity of waste (cubic yards):	334

SECTION III - CERTIFICATION (To be completed by the generator and the sanitary landfill operator.)

Signature of landfill operator or authorized representative:	Date of disposal:
Printed name and title of person signing above:	

I, the undersigned, certify that the waste named herein, to the best of my knowledge, is soil contaminated solely with virgin gasoline or virgin fuel oil as specified above, that the soil contains no free liquid (passed the paint filter test) and that the information supplied by me is correct.

Signature of waste generator or authorized representative:	
Printed name and title of person signing above: PATRICK REEVES · CONTRACTOR	Date: 5/18/94

Additional Comments:

Revised December 1991

Code # 112554

ADDLAW Special Waste Acceptance Application

COPY

Generator Name: WESTLAKE COMPANIES
Address: 12976 ST. CHAS. ROCK Rd.
BRIDGETON, MO. 63044
Telephone: (314) 739-1122
Generator Contact: BILL WHITAKER
General Material Description: VIRGIN FUEL CONTAMINATED SOIL -

Originating Division: 337 - GARY MEIER
Disposal Facility: LWS - BRIDGETON LF
Location: 13570 ST. CHAS. ROCK Rd. 512, MO. 63044
Waste Quantities: _____ Units: Cubic Yds. [ ] Tons [ ]
Frequency of Receipt: Daily [ ] Weekly [ ] Monthly [ ] One Time [✓]
Other _____

Process Generating Waste: U.S.T. REMOVAL

Physical Properties: Physical State at 70°F: Solid [X] Semisolid [ ] Liquid [ ] Density: ____ #/CY Color: GREY
Viscosity: Low [ ] Medium [ ] High [ ] Flash Point >210°F Odor: Yes [ ] No [✓]
Water Content: ____ % by Weight Paint Filter Test: Passed [✓] Failed [ ]
Reactive: No [✓] Yes [ ] With _____
Waste pH: ____ Infectious: Yes [ ] No [ ]

Chemical Properties: (Concentrations in mg/l) SEE ATTACHED:

(TCLP)

Arsenic		m-Cresol		Hexachlorobenzene		Pyridine	
Barium		p Cresol		Hexachlorobutadiene		Selenium	
Benzene		Cresol		Hexachloroethane		Silver	
Cadmium		2,4-D		Lead		Tetrachloroethylene	
Carbon Tetrachloride		1,4 Dichlorobenzene		Lindane		Toxaphene	
Chlordane		1,2 Dichloroethane		Mercury		Trichloroethylene	
Chlorobenzene		1,1-Dichloroethylene		Methoxychlor		2,4,5-Trichlorophenol	
Chloroform		2,4-Dinitrotoluene		Methyl Ethyl Ketone		2,4,6-Trichlorophenol	
Chromium		Endrin		Nitrobenzene		2,4,5TP (Silvex)	
o-Cresol		Heptachlor		Pentachlorophenol		Vinyl Chloride	

Other (list): _____

Other Information: Delivery Method: Bulk [ ] Other _____
Regulatory Agency Approval Received: Yes [ ] No [ ] Permit Number _____
Material Safety Data Sheet Provided: Yes [ ] No [ ]

GENERATOR CERTIFICATION

To the best of my knowledge, the information provided above is accurate and the material is not classified as a hazardous waste in accordance with current regulations.

Authorized Representative
Signature [signature]
Name PATRICK REEVES
Title CONTRACTOR
Date 5/15/98

FOR OFFICE USE ONLY

Conditions for Acceptance _____

1. Originating Division Manager _____ Date _____
2. Disposal Facility Manager _____ Date _____
3. District Manager _____ Date _____
4. Regional Engineer _____ Date _____

LAIDLAW

Sampling Information

COPY

1.A Sampling time: date 5/9/94 time 2:30 p. m.

1.B Sampling location (be specific: hopper, drum, excavation, tank, etc.):

Composite sample from stockpile - taken 12" into surface areas - 2 from top opposing sides, 4 from toe section around pile.

1.C Sampler's Name PATRICK REEVES Telephone (314)-947-9963

1.D Sampler's Firm (if different from Generator) ADR / ST.LOUIS

1.E Address P. O. BOX 182

City ST. CHARLES State MISSOURI Zip 63302

Phone (314)-947-9963

1.F Was a Generator's representative present during sampling?

yes x no

1.G Briefly describe sampling method and equipment used:

Grab samples obtained by hand scoop clearing of surface materials to 12" depth into pile.Six areas were selected.(2 top-4 sides) placed into sample container & preserved on ice until received by Lab.

Representative Sampling Certification

I hereby certify that the methods and equipment described above in section 1.G are an accurate report of the sampling procedure used. I also certify that the above-mentioned methods resulted in obtaining a sample that is representative of the waste.

Sampler's Signature

Witness' Signature* Elizabeth Hartmann

*If the sampler is not an employee of the generator, the generator should provide a witness during the sampling.

St. Louis Testing Laboratories
INCORPORATED

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COPY

May 13, 1994
Lab No. 94D-0195

ADR / ST. LOUIS

Attention: Pat Reeves

RESULTS: mg/l. Metals Per TCLP

ANALYTE	SOIL 5/9/94	MDL	METHOD NUMBER
Lead	ND	.05	200.7

RESULTS:

ANALYTE	SOIL 5/9/94	MDL	METHOD NUMBER
Flash Point, °F	>210° F	—	ASTM D93-85

PAINT FILTER	PASS	METHOD NUMBER 9095

ND: Not Detected / MDL: Method Detection Limit

Identification of tested specimen was provided by the client.

Russell Keeney
Manager, Organic
Chemistry Department

RK/slw

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MEMBERS

St. Louis Testing Laboratories
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May 13, 1994
Lab No. 94D-0195
Page 1 of 2

ADR / ST. LOUIS
P. O. Box 182
St. Charles, MO 63302

Attention: Pat Reeves

REPORT OF TESTS

SAMPLE ID: ST. PILE SOIL, 5/9/94

RESULTS: mg/L **EPA METHOD 8020**

PARAMETER	SOIL 5/9/94	MDL
Benzene	ND	0.002
Toluene	ND	0.002
Ethylbenzene	ND	0.002
m,p-Xylenes	ND	0.002
o-Xylenes	ND	0.002

RESULTS: mg/L **EPA METHOD 418.1**

PARAMETER	SOIL, 5/9/94	MDL
Total Petroleum Hydrocarbons	42	5.0

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MEMBERS

CHAIN OF CUSTODY

ST. LOUIS TESTING LABORATORIES, INC.

Client: AIR ST LOUIS

Address: P.O. Box 182

ST. CHARLES, MO

Phone # 947-9963

Site Name: [illegible]

Project #: [illegible]

Number of Samples: 1

Turnaround Time (circle one)

24 hr. 48 hr. 72 hr. 3-5 days 6-9 days Standard

Please Telephone/Fax (circle one) results to [illegible]

Telephone/Fax #

Type of Sample (circle one) Soil Water Sludge

Billing Reference:

P.O. #:

Sampled By (PRINT)	Date Sampled
[illegible]	5/9/94
Sampler Signature	Date
[illegible]	5/9/94

SAMPLE #	SAMPLE DESCRIPTION	# OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	COOLED			BTEX 8020	TPH 418.1	TCLP (Lead Only)	[illegible]	[illegible]		
[illegible]	Soil - Clay - [illegible]	1				X									

PRESERVATIVES

ANALYSIS REQUESTED (see reverse side for listed)

COPY

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MARKS	Relinquished by/Corp.	Received by/Company	Date	Time
	[illegible]	[illegible]	5/9/94	[illegible]
	Holly Macias	ST. L.	5/9	3:30 p.m.

COPY

COPY

WEST LAKE QUARRY & MATERIAL COMPANY
MDNR-ESP FILE LU3874

Field Monitoring Data

1st Quarter Records

Schedule from Field Records
Schedule converted to decimal
Schedule adjusted to grade reference
Schedule converted to Mean Sea Level reference (MSL)

2nd Quarter Records

Schedule from Field Records
Schedule converted to decimal
Schedule adjusted to grade reference
Schedule converted to Mean Sea Level reference (MSL)

LU 3874

COPY

FIELD MONITOR DATA
December 1993 through March 1994
Fluid Level below Well Head (top)

DATE	MW1	MW2	MW3	MW4	A/N	
12/17/93	22'2"	25'9"	25'9"	28'4"		
12/18/93	22'10"	25'9"	25'0"	28'2"		
12/27/93	22'9"	26'0"	25'6"	29'0"		
1/1/94	23'1"	26'5"	26'3"	29'2"		
1/3/94	23'1"	26'7"	26'5"	29'10"		
1/9/94	23'3"	27'1"	26'10"	29'10"		
1/20/94	23'9"	27'9"	27'2"	30'3"		
1/27/94	24'5"	27'7"	27'3"	30'1"		
2/5/94	26'2"	27'10"	27'6"	30'3"		
2/11/94	26'11"	27'10"	27'7"	30'4"		
2/16/94	28'9"	28'3"	28'4"	31'1"		
2/21/94	29'0"	28'2"	27'8"	31'6"		
2/27/94	29'3"	28'6"	28'2"	31'5"		
3/4/94	29'3"	28'3"	28'0"	31'4"		
3/10/94	29'1"	28'4"	27'11"	30'11"		
3/17/94	28'10"	28'1"	27'10"	30'8"		
3/19/94	29'0"	28'3"	27'10"	30'8"		
3/26/94	29'2"	28'4"	28'0"	30'9"		

LU 3874

COPY

FIELD MONITOR DATA
December 1993 through March 1994
Converted to Decimal

DATE	MW1	MW2	MW3	MW4	A/N	
12/17/93	22.2	25.8	25.8	28.3		
12/18/93	22.8	25.8	25.0	28.2		
12/27/93	22.8	26.0	25.5	29.0		
1/1/94	23.1	26.4	26.3	29.2		
1/3/94	23.1	26.6	26.4	29.8		
1/9/94	23.3	27.1	26.8	29.8		
1/20/94	23.8	27.8	27.2	30.3		
1/27/94	24.4	27.6	27.3	30.1		
2/5/94	26.2	27.8	27.5	30.3		
2/11/94	26.9	27.8	27.6	30.3		
2/16/94	28.8	28.2	28.3	31.1		
2/21/94	29.0	28.2	27.7	31.5		
2/27/94	29.3	28.5	28.2	31.4		
3/4/94	29.3	28.3	28.0	31.3		
3/10/94	29.1	28.3	27.9	30.9		
3/17/94	28.8	28.1	27.8	30.6		
3/19/94	29.0	28.2	27.8	30.7		
3/26/94	29.2	28.3	28.0	30.8		

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COPY

FIELD MONITOR DATA
December 1993 through March 1994
Fluid level to Grade

DATE	MW1	MW2	MW3	MW4	A/N	
12/17/93	18.7	21.3	23.8	24.8		
12/18/93	19.3	21.3	23.0	24.7		
12/27/93	19.3	21.5	22.5	25.5		
1/1/94	19.6	21.9	23.3	25.7		
1/3/94	19.6	22.1	23.4	26.3		
1/9/94	19.8	22.6	23.8	26.3		
1/20/94	20.3	23.3	24.2	26.8		
1/27/94	20.9	23.1	24.3	26.6		
2/5/94	22.7	23.3	24.5	26.8		
2/11/94	23.4	23.3	24.6	26.8		
2/16/94	25.3	23.7	25.3	27.6		
2/21/94	25.5	23.7	24.7	28.0		
2/27/94	25.8	24.0	25.2	27.9		
3/4/94	25.8	23.8	25.0	27.8		
3/10/94	25.6	23.8	24.9	27.4		
3/17/94	25.3	23.6	24.8	27.1		
3/19/94	25.5	23.7	24.8	27.6		
3/26/94	25.7	23.8	25.0	27.3		

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COPY

FIELD MONITOR DATA
December 1993 through March 1994
Converted to Mean Sea Level (MSL)

DATE	MW1	MW2	MW3	MW4	A/N	
12/17/93	440.7	436.7	434.1	439.1	433.2	
12/18/93	440.1	436.7	434.9	439.2	432.6	
12/27/93	440.1	436.5	435.4	438.4	428.5	
1/1/94	439.8	436.1	434.6	438.2	429.8	
1/3/94	439.8	435.9	434.5	437.6	428.9	
1/9/94	439.6	435.4	434.1	437.6	428.6	
1/20/94	439.1	434.7	433.7	437.1	427.0	
1/27/94	438.5	434.9	433.6	437.3	426.1	
2/5/94	436.7	434.7	433.4	437.1	429.1	
2/11/94	436.0	434.7	433.3	437.1	427.2	
2/16/94	434.1	434.3	432.6	436.3	426.4	
2/21/94	433.9	434.3	433.2	435.9	425.7	
2/27/94	433.6	434.0	432.7	436.0	434.2	
3/4/94	433.6	434.2	432.9	436.1	432.3	
3/10/94	433.8	434.2	433.0	436.5	436.9	
3/17/94	434.1	434.4	433.1	436.8	432.9	
3/19/94	433.9	434.3	433.1	436.7	432.2	
3/26/94	433.7	434.2	432.9	436.6	429.2	

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COPY

FIELD MONITOR DATA
April 1994 through June 1994
Fluid Level below Well Head (top)

DATE	MW1	MW2	MW3	MW4	A/N	
4/04/94	29'05"	28'07"	28'00"	30'11"		
4/12/94	27'11"	27'08"	30'06"	29'10"		
4/25/94	25'08"	26'01"	26'05"	28'04"		
4/30/94	25'03"	25'10"	25'10"	27'06"		
5/05/94	25'02"	25'07"	25'10"	27'08"		
5/09/94	25'04"	25'07"	25'04"	27'11"		
5/20/94	26'00"	25'10"	25'06"	28'00"		
5/25/94	25'10"	25'09"	25'06"	28'02"		
6/01/94	26'04"	26'02"	25'11"	28'09"		
6/06/94	26'03"	26'02"	25'10"	28'08"		
6/10/94	26'06"	26'06"	26'04"	29'00"		
6/17/94	26'10"	26'09"	26'05"	29'02"		
6/26/94	23'07"	26'10"	26'06"	29'06"		

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COPY

FIELD MONITOR DATA
April 1994 through June 1994
Converted to Decimal

DATE	MW1	MW2	MW3	MW4	A/N	
4/04/94	29.4	28.6	28.0	30.9		
4/12/94	27.9	27.7	27.5	29.8		
4/25/94	25.7	26.1	26.4	28.3		
4/30/94	25.2	25.8	25.8	27.5		
5/05/94	25.2	25.6	25.8	27.7		
5/09/94	25.3	25.6	25.3	27.9		
5/20/94	26.0	25.8	25.5	28.0		
5/25/94	25.8	25.7	25.5	28.2		
6/01/94	26.3	26.2	25.9	28.7		
6/06/94	26.2	26.2	25.8	28.7		
6/10/94	26.5	26.5	26.3	29.0		
6/17/94	26.8	26.7	26.4	29.2		
6/26/94	23.6	26.8	26.5	29.5		

LU 3874

COPY

FIELD MONITOR DATA
April 1994 through June 1994
Converted to Decimal

DATE	MW1	MW2	MW3	MW4	A/N	
4/04/94	29.4	28.6	28.0	30.9		
4/12/94	27.9	27.7	27.5	29.8		
4/25/94	25.7	26.1	26.4	28.3		
4/30/94	25.2	25.8	25.8	27.5		
5/05/94	25.2	25.6	25.8	27.7		
5/09/94	25.3	25.6	25.3	27.9		
5/20/94	26.0	25.8	25.5	28.0		
5/25/94	25.8	25.7	25.5	28.2		
6/01/94	26.3	26.2	25.9	28.7		
6/06/94	26.2	26.2	25.8	28.7		
6/10/94	26.5	26.5	26.3	29.0		
6/17/94	26.8	26.7	26.4	29.2		
6/26/94	23.6	26.8	26.5	29.5		

LU 3874

COPY

FIELD MONITOR DATA
April 1994 through June 1994
Fluid Level to Grade

DATE	MW1	MW2	MW3	MW4	A/N	
4/04/94	25.9	24.1	25.0	27.4		
4/12/94	24.4	23.2	24.5	26.3		
4/25/94	22.2	21.6	23.4	24.8		
4/30/94	21.7	21.3	22.8	24.0		
5/05/94	21.7	21.1	22.8	24.2		
5/09/94	21.8	21.1	23.3	24.4		
5/20/94	22.5	21.3	22.5	24.5		
5/25/94	22.3	21.2	22.5	24.7		
6/01/94	22.8	21.7	22.9	25.2		
6/06/94	22.7	21.7	22.8	25.2		
6/10/94	23.0	22.0	23.3	25.5		
6/17/94	23.2	22.2	23.4	25.7		
6/26/94	20.1	22.3	23.3	26.0		

LU 3874

COPY

FIELD MONITOR DATA
April 1994 through June 1994
Converted to Mean Sea Level (MSL)

DATE	MW1	MW2	MW3	MW4	A/N
4/04/94	433.5	433.9	432.9	436.5	429.1
4/12/94	435.0	434.8	433.4	437.6	442.5
4/25/94	437.2	436.4	434.5	439.1	434.1
4/30/94	437.7	436.7	435.1	439.9	443.0
5/05/94	437.7	436.9	435.1	439.7	441.1
5/09/94	437.6	436.9	434.6	439.5	437.3
5/20/94	436.9	436.7	435.4	439.4	435.3
5/25/94	437.1	436.8	435.4	439.2	433.7
6/01/94	436.6	436.3	435.0	438.7	432.5
6/06/94	436.7	436.3	435.1	438.7	433.4
6/10/94	436.4	436.0	434.6	438.4	434.1
6/17/94	436.2	435.8	434.5	438.2	433.3
6/26/94	439.3	435.7	434.6	437.9	434.5

August 22, 1994 Letter from Mr. Alam Reinkemeyer of the MDNR to Mr. B. Whitaker of Westlake Companies

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

August 22, 1994

ESP FILE NO.
LU#3874

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The LUST (Leaking Underground Storage Tank) Unit of the Missouri Department of Natural Resources has received and reviewed the ADR/St. Louis Activities Summary dated July 26, 1994, for the above referenced site. Analytical data contained in the report indicate excessive TPH contamination in the vicinity of Monitoring Well #4 .

The reported contaminant concentrations warrant further investigation to include down gradient sampling and, subsequently, a corrective action plan with supporting data.

In addition to the corrective action plan, the LUST Unit will require Westlake Companies to continue to monitor wells 1 & 2 for TPH in addition to well #4 for BTEX and TPH. The LUST Unit will also require the submittal of the summary data pertaining to the purging to Monitoring Well #4. Please submit to this department within thirty days, a proposal to define the extent of contamination.

Please submit to the Leaking Underground Storage Tank Unit, within 30 days, a proposal to define the extent of contamination.

RECYCLED PAPER

COPY

If you have any questions, please do not hesitate to contact Dave Bellamy at our department at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:sla

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Pat Reeves, ADR/St. Louis, P.O. Box 182, St. Charles, MO 63302

October 12, 1994 Subsurface Environmental Site Investigation Work Plan

SCHREIBER GRANA & YONLEY INCORPORATED

ENVIRONMENTAL ENGINEERS

LETTER OF TRANSMITTAL

TO: DAVE BELLAMY
MDNR
LEAKING UST UNIT
ENVIRONMENTAL SERVICES PROGRAM
P.O. BOX 176
JEFFERSON CITY, MO. 65102-0176

DATE: JOB NO.
ATTEN:
RE:

COPY RECEIVED OCT 28 1994

WE ARE SENDING YOU the following items: ☑ Attached ☐ Under separate cover via _____

☐ Shop Drawing ☐ Prints ☐ Samples ☐ Specifications
☐ Copy of Letter ☐ Change Order ☑ FINALIZED WORKPLAN AND SCHEDULE

COPIES	DATE	NO.	DESCRIPTION
1			WORKPLAN
1			SCHEDULE.

THESE ARE TRANSMITTED as checked below:

☐ For Approval ☐ Approved as Submitted ☐ Resubmit ____ Copies for Approval
☐ For Your Use ☐ Approved as Noted ☐ Submit ____ Copies for Distribution
☑ As requested ☐ Returned for Corrections ☐ Return ____ Corrected Prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19___ ☐ PRINTS RETURNED AFTER LOAN TO US

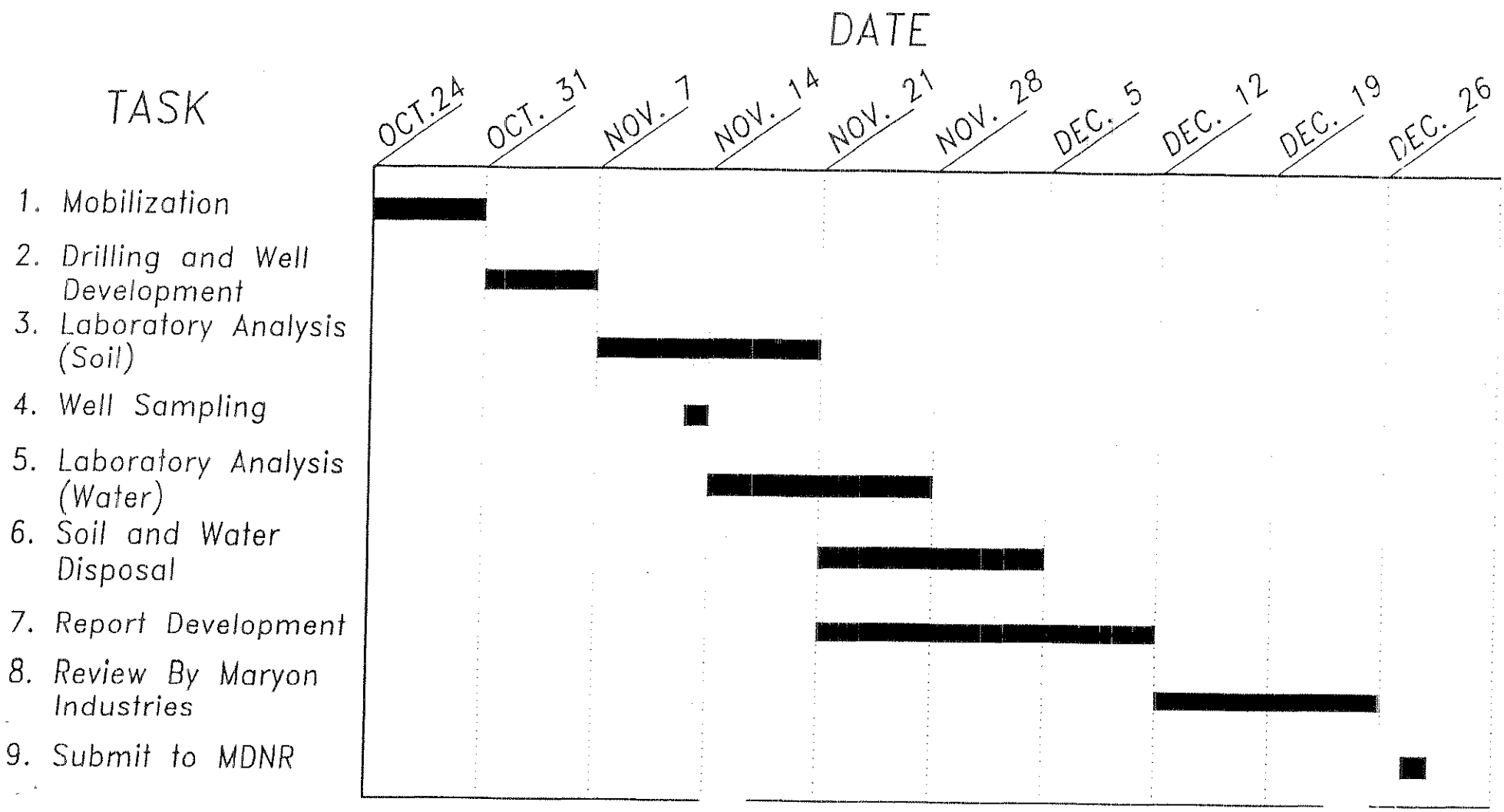
REMARKS: LUST 3874 WELL #1 UST #7 MDNR No. 11

COPY TO:

SIGNED: E.S.O.
(314) 319-8300

COPY

ATTACHMENT A
WORKPLAN IMPLEMENTATION SCHEDULE



MII01-2

COPY

SUBSURFACE ENVIRONMENTAL SITE INVESTIGATION WORKPLAN

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

LU #3874

October 12, 1994

PREPARED FOR:

MR. VINCENT M. JONES
PRESIDENT
MARYON INDUSTRIES, INC.
150 WELDON PARKWAY
ST. LOUIS, MISSOURI 63043

PREPARED BY:

SCHREIBER, GRANA & YONLEY, INC.
271 WOLFNER DRIVE
ST. LOUIS, MISSOURI 63026

TABLE OF CONTENTS

COPY

1.0 INTRODUCTION 1

2.0 METHODS OF INVESTIGATION 1
- 2.1 Soil Boring Drilling/Soil Screening/Sampling 2
- 2.2 Groundwater Monitoring Well Installation Procedures 4
- 2.3 Groundwater Monitoring Well Survey Procedures 4
- 2.4 Groundwater Monitoring Well Development Procedures 5
- 2.5 Groundwater Monitoring Well Fluid Level Measurements 5
- 2.6 Groundwater Sampling Procedures 6

3.0 EXISTING MONITORING WELL CLOSURE PROCEDURES 6

4.0 REPORT 6

LIST OF FIGURES

FIGURE 1 BORING/MONITORING LOCATION MAP

LIST OF APPENDICES

APPENDIX A BORING LOG EXAMPLE
APPENDIX B WELL COMPLETION FORM EXAMPLE
APPENDIX C MONITORING REPORT EXAMPLE
APPENDIX D GROUNDWATER MONITORING FIELD FORM EXAMPLE

1.0 INTRODUCTION

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At the request of Maryon Industries, Inc., Schreiber, Grana & Yonley, Inc. has developed a Subsurface Environmental Site Investigation Workplan for the Maryon Industries, Inc. facility located at the Westlake Quarry & Material Company facility in Bridgeton, Missouri. This investigation will focus on the location of the former 10,000 gallon diesel underground storage tank. The facility is currently an operating asphaltic concrete manufacturing plant. The facilities include the asphalt batch plant, four (4) 20,000-gallon oil above ground storage tanks, one (1) 2,000-gallon diesel above ground storage tank, two (2) small storage buildings, and the scale house.

The investigation will consist of the following:

- Drill four (4) soil borings, each extending to an approximate maximum depth of 35 feet below ground surface (bgs);
- Install four (4) on-site shallow groundwater monitoring wells, completed to an approximate maximum depth of 35 feet bgs;
- Field screening of soil samples;
- Laboratory analysis of soil samples;
- Collection of groundwater samples;
- Laboratory analysis of groundwater samples;
- Data evaluation and reduction; and,
- Report preparation for client and regulatory review.

The purpose of this investigation is to:

- Evaluate the shallow subsurface lithology present beneath the site;
- Identify the existence, magnitude and extent of benzene, toluene, ethylbenzene and xylenes (BTEX) and total petroleum hydrocarbons (TPH) constituents in excess of Missouri Department of Natural Resources (MDNR) cleanup objectives at the subject property;
- Identify potential source(s) of BTEX and TPH constituents, if any; and
- Identify the need and/or scope of additional work to evaluate BTEX and TPH constituents.

In addition to the investigatory activities performed on-site, Schreiber, Grana & Yonley, Inc. will also properly close the existing monitoring well at the asphalt facility.

Therefore, the following scope of work will be performed at the site.

2.0 METHODS OF INVESTIGATION

This section describes the procedures and methods of soil boring drilling, soil screening, groundwater monitoring well installation, survey and development, and soil and groundwater sampling and analysis.

2.1 Soil Boring Drilling/Soil Screening/Sampling

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Soil boring drilling will be conducted by a subcontract driller, under the direction of a Schreiber, Grana & Yonley, Inc. representative. The approximate locations of the soil borings are presented in Figure 1. The borings will be advanced utilizing hollow stem augers and a truck-mounted drill rig. The borings will be advanced/sampled to approximately 35 feet bgs.

A two-inch diameter split spoon sampler will be advanced ahead of the hollow stem auger to collect a minimally disturbed soil sample. Soil samples from each of the borings will be collected continuously. This method of sample collection allows a review of subsurface lithology and vertical correlation of soil lithology below the site.

After retrieval of the split spoon sampler from the boring, the sampler will be opened and the soil will be screened immediately with a Photovac MicroTip^R photoionization detector (PID) to monitor the total concentration of ionizable gases and vapors. The PID will be calibrated prior to use at the site, daily thereafter, using isobutylene at a concentration of 100 parts per million (ppm), which provides a mid-range balance for expected readings.

Boring logs will be prepared in the field as the sampler is retrieved and opened. Properties such as soil composition, structure, voids, layering, lenses, odor, staining, mottling, etc. will be noted, as appropriate, on the boring logs. Classification of the soils according to the Unified Soils Classification System will be included on the logs, an example of which is contained in Appendix A.

As each section of soil core is examined and screened with the PID, a representative section, a stratigraphically significant section, or the section with the highest PID reading will be split, and each half will be placed into a Zip-Loc^R bag. One (1) sample will be placed into a chilled cooler, and the other sample will be placed in a warm environment and allowed to equilibrate for approximately five minutes prior to screening with the PID. The PID probe will be inserted into the Zip-Loc^R bag and a reading will be obtained. Two (2) samples per borehole, one (1) from the section exhibiting the highest PID reading and one (1) from at or near the soil/water interface will be collected. These samples will be transferred into appropriate laboratory-prepared sampling containers and placed on ice for subsequent shipment to the subcontract laboratory for analysis. A chain-of-custody form will be generated and included with the samples. Soil samples will be analyzed for BTEX according to EPA Method 8020, and TPH according to EPA Method 418.1.

The drill rig augers, tools and associated equipment will be steam-cleaned prior to the start of drilling at each borehole location in order to minimize cross-contamination between individual boreholes. Downhole soil sampling devices will be washed in an Alconox/water solution and rinsed with tap water between each sampling event in order to minimize cross-contamination between individual samples. Small sampling tools

Figure 1

COPY

used to retrieve individual soil samples from the retrieved soil core will be washed in an Alconox/water solution and rinsed with de-ionized water. Additionally, a new pair of disposable latex gloves will be worn by the person sampling to further limit cross-contamination. Soil cuttings and decontamination water will be containerized and stored on-site in labeled, 55-gallon, DOT-approved steel drums, pending proper disposal.

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2.2 Groundwater Monitoring Well Installation Procedures

Four (4) groundwater monitoring wells will be installed to further evaluate the horizontal and vertical extent of BTEX and TPH constituents and to assess the groundwater quality. The monitoring wells will be installed by the subcontract driller, under the observation of a Schreiber, Grana & Yonley, Inc. representative, into the soil borings which were drilled as part of the soil investigation. The approximate locations of the monitoring wells are presented on Figure 1. The four (4) monitoring wells will be installed to an approximate depth of 35 feet bgs.

Monitoring wells will be constructed of two-inch, screw-coupled, schedule 40 polyvinyl chloride (PVC) casing, with 10 feet of 0.010-inch factory slotted PVC well screen. An 8-inch threaded end cap will be used at the bottom of the screen to provide for sediment storage. A new pair of disposable latex gloves will be worn by the subcontract driller personnel in order to minimize the possibility of contaminating the new screen and riser.

A washed, silica sand filter pack will be used over the entire screened section and to at least one (1) foot above the top of the screen. A minimum of three (3) feet of bentonite pellets will then be placed into the borehole annulus to provide an annular seal above the filter pack. The pellets will be hydrated in-place with fresh (city) water. A weighted tape will be utilized for control purposes to insure proper thickness and depth of the sand pack and bentonite seal.

A cement/bentonite grout mix will be utilized to backfill the remaining annulus and to provide anchoring for a flush-grade protective manhole cover or a pedestal mount protective cover for each of the monitoring wells. The covers prevent surface water from infiltrating into the borehole annulus/well while also allowing for well protection. The flush-grade protective manhole cover will be utilized in high traffic areas to allow for normal traffic flow. A locked compression cap will be placed over the top of the PVC riser on each of the monitoring wells.

Appendix B contains examples of monitoring well completion forms.

2.3 Groundwater Monitoring Well Survey Procedures

A site map, identification of potential subsurface migration routes and potential receptors, and a well casing elevation survey will be completed by a Schreiber, Grana & Yonley, Inc. representative. The survey will be conducted to provide vertical control for the

monitoring well casings. Elevations for the top of the PVC casing will be obtained via a level, a tripod and a measuring rod utilizing conventional leveling techniques. The elevations will be surveyed to an arbitrary datum of +100.0 feet and an accuracy of 0.01 feet to allow calculation of relative fluid level elevations in the wells.

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2.4 Groundwater Monitoring Well Development Procedures

The four (4) monitoring wells will be developed by Schreiber Grana & Yonley, Inc. personnel. The development will be conducted to remove suspended solids resulting from installation of the monitoring wells. The development will be accomplished by using dedicated, disposable hand bailers. By removing water stored in the well casing and the adjacent filter pack, fresh groundwater entering the monitoring well breaks down any mud cake which may form on the annulus wall, and washes these materials into the monitoring well for removal. A much cleaner annulus and sand/gravel pack remains for proper performance of the monitoring well and more representative groundwater samples.

Each of the four (4) monitoring wells will be developed by removing a minimum of four (4) casing volumes per development event. Development water generated during the development will be contained and stored on-site in labeled, 55-gallon, DOT-approved steel drums, pending proper disposal.

2.5 Groundwater Monitoring Well Fluid Level Measurements

The fluid levels of the monitoring wells will be gauged by a Schreiber, Grana & Yonley, Inc. representative. This will be done to determine the presence of liquid-phase hydrocarbons and/or groundwater in the wells. The measurements of groundwater depths will be taken from the top of the well casing with an electronic water level indicator probe which measures fluid levels to an accuracy of 0.01 feet.

The presence of liquid-phase hydrocarbons will be determined by lowering a dedicated, disposable bailer into each well and visually checking the bailed fluid for such.

These measurements will then be referenced to the top of the casing survey data for each monitoring well and utilized for determination of the groundwater surface elevation and groundwater flow direction and gradient. In addition, the measurement data will be utilized to calculate the water column within each monitoring well and the required volume of water to purge from each monitoring well prior to sampling (discussed further in Section 2.6). The measured groundwater depths will be included on the monitoring report, an example of which is contained in Appendix C.

2.6 Groundwater Sampling Procedures

Groundwater samples will be collected utilizing dedicated, disposable, polyethylene bailers. A new bailer will be utilized at each monitoring well to preclude the need for bailer washing/decontamination, and to prevent cross-contamination between monitoring wells sampled. New bailer twine will be utilized for each bailer.

An initial amount of four (4) well casing volumes of water will be removed from each monitoring well in order to purge the well. This water will be contained and stored on-site in labeled, 55-gallon, DOT-approved steel drums pending proper disposal. Subsequent bailers of water will be used to fill the sample containers. The sample containers were cooled to approximately 4° Celsius and shipped next day delivery for analysis to the subcontract laboratory. Samples will be labeled with the collection date, sample I.D., type of preservative utilized, and person collecting the sample. A chain-of-custody form will be generated and included with the samples for transport to the laboratory. Groundwater samples will be analyzed for BTEX according to EPA Method 8020, and TPH according to EPA Method 418.1.

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Sample containers used for this project (soil and groundwater) will be laboratory-supplied, pre-cleaned, EPA-approved containers which contain no preservatives. An example of the Groundwater Monitoring Field Form, which contains well development and groundwater sampling details, is contained in Appendix D.

3.0 EXISTING MONITORING WELL CLOSURE PROCEDURES

The existing 4-inch PVC monitoring well located at the site will be closed in accordance with Missouri Well Construction Rules dated December 1993.

First, the monitoring well will be overdrilled, utilizing hollow stem augers and a truck mounted drill rig to remove the well casing, screen and sand pack. Next, the borehole will be plugged with a cement/bentonite grout delivered via a tremie pipe through the center of the hollow stem augers as the augers are withdrawn from the borehole. This method of closure ensures that a good seal is achieved so as to minimize the vertical migration of contaminants along the borehole.

4.0 REPORT

Upon completion of field activities and receipt of analytical results, Schreiber, Grana & Yonley, Inc. will develop a summary report. The report will describe the existing environmental conditions relating to BTEX and TPH constituents and/or other appropriate information pertaining to this site, and will discuss the regional, local and site geology/hydrogeology. The report will also summarize field activities, present field and analytical data, and present conclusions of the investigation.

APPENDIX A

BORING LOG EXAMPLE

COPY

SCHREIBER GRANA & YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive
Saint Louis, Missouri 63026
314/349-8399

LOG OF TEST BORING

COPY

Client:	Project No:	Boring No:
Project:		Page No:
Location:	Start Date:	
Surface Elev: / Casing Elev:	Completion Date:	
Drilling Contractor:	Sample Method(s):	
Drilling Rig:	Hole Diameter(s):	Total Depth:
Initial Water Level:	Inspector(s):	
Static Water Level:		

Depth Below Surface	Sample/ Run No. Interval	N	Rec.% / RQD	PID/ FID (ppm)	Description of Materials/Remarks	Moisture	Soil Class	Graphic Log	Well Diagram/ Remarks

Notes:

APPENDIX B

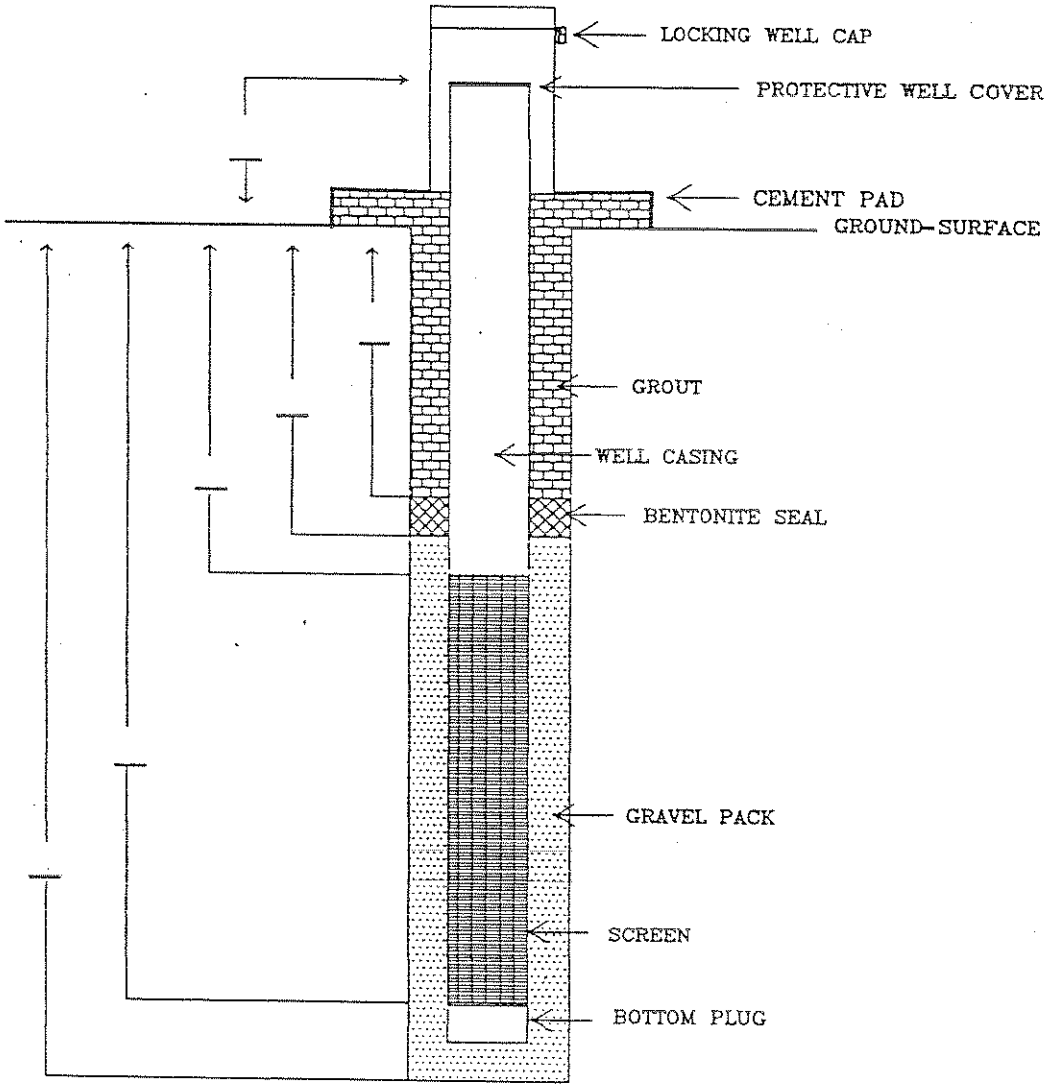
WELL COMPLETION FORM EXAMPLE

COPY

SCHREIBER GRANA & YONLEY, INC.
WELL COMPLETION FORM

OJECT:	CONTRACTORS:
ADDRESS:	PROJECT MANAGER:
SG&Y PROJECT #:	DATE INSTALLED:
BORING #:	ELEVATION – SURFACE: CASING:
CASING LENGTH: DIAMETER:	SCREEN LENGTH: DIAMETER:
CASING MATERIAL:	SCREEN MATERIAL:
JOINT TYPE:	SCREEN TYPE: SIZE:
FILTER PACK TYPE: SIZE:	BENTONITE SEAL THICKNESS:
WATER LEVEL BEFORE: AFTER DEVELOPMENT	DEVELOPMENT METHOD:

COPY

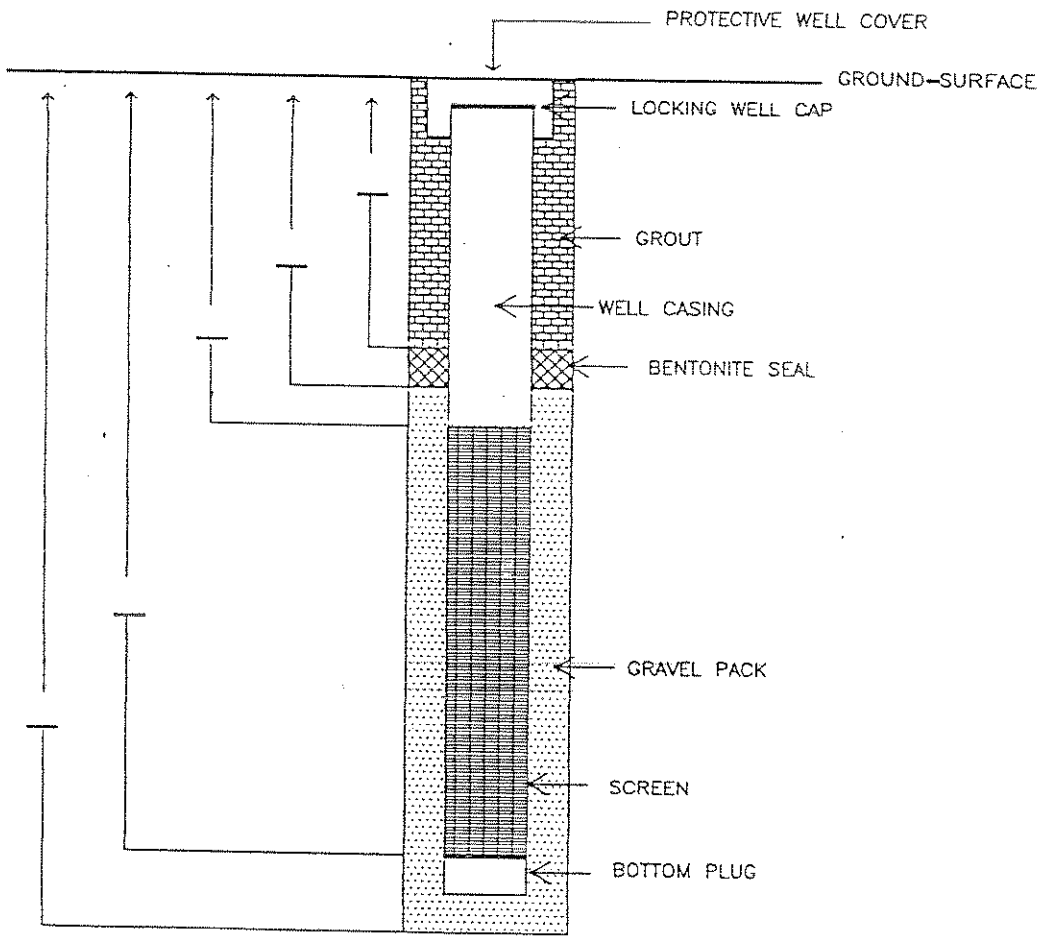


LOCATION

SCHREIBER GRANA & YONLEY, INC.
WELL COMPLETION FORM

COPY

ROJECT:	CONTRACTORS:
ADDRESS:	PROJECT MANAGER:
SG&Y PROJECT #:	DATE INSTALLED:
BORING #:	ELEVATION – SURFACE: CASING:
CASING LENGTH: DIAMETER:	SCREEN LENGTH: DIAMETER:
CASING MATERIAL:	SCREEN MATERIAL:
JOINT TYPE:	SCREEN TYPE: SIZE:
FILTER PACK TYPE: SIZE:	BENTONITE SEAL THICKNESS:
WATER LEVEL BEFORE: AFTER DEVELOPMENT:	DEVELOPMENT METHOD:



LOCATION:

APPENDIX C

MONITORING REPORT EXAMPLE

COPY

SCHREIBER GRANA & YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

MONITORING REPORT

COPY

CLIENT: _____

ADDRESS: _____

_____

PROJECT NO: _____

WELL #	CASING ELEVATION (FT)	DEPTH TO PRODUCT (FT)	DEPTH TO WATER (FT)	PRODUCT THICKNESS (FT)	WATER ELEVATION (FT)

Remarks: _____

Date Observed: _____

Observed By: _____

Computed By: _____
(Initials)

APPENDIX D

GROUNDWATER MONITORING FIELD FORM EXAMPLE

COPY

GROUNDWATER MONITORING FIELD FORM

PURGING PHASE									
WELL I.D.	DATE	TIME	DEPTH TO SWL (FT)	TOTAL DEPTH (FT)	LENGTH WATER COL (FT)	LENGTH OF SAND PACK (FT)	REQ GALS TO PURGE 4 VOLS	AMOUNT PURGED (GAL)	DEPTH TO SWL AFTER PURGE (FT)

SAMPLING PHASE											
DATE	TIME	PH	SPEC COND AT 25°C	TEMP (°C)	COLOR BEFORE FILTER	COLOR AFTER FILTER	ODOR	TURB BEFORE FILTER	TURB AFTER FILTER	# OF FILTERS	VOLUME FILTERED (ML)

TEMPERATURE/WEATHER CONDITIONS:

EQUIPMENT USED:

OTHER REMARKS:

CASING I.D. (INCHES)	GAL/FT/CASING	BOREHOLE DIA. (INCHES)	GAL/FT/WELL VOLUME (V1+V2)
1.25	0.06	4	.24
1.25	0.06	6	.48
1.5	0.09	4	.26
1.5	0.09	6	.50
2	0.16	6	0.55
2	0.16	8	0.89
2	0.16	10	1.33
4	0.65	8	1.23
4	0.65	10	1.67
4	0.65	12	2.21
6	1.47	10	2.75
6	1.47	12	2.76
6	1.47	14	3.60

COPY

SCHREIBER GRANA & YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS
271 Wolfner Drive
Saint Louis, Missouri 63026

SITE NAME: _____

PERSONNEL: _____

CLIENT: _____ PROJECT #: _____

PROJECT: _____ PAGE: _____

PREPARED BY: _____ DATE: _____

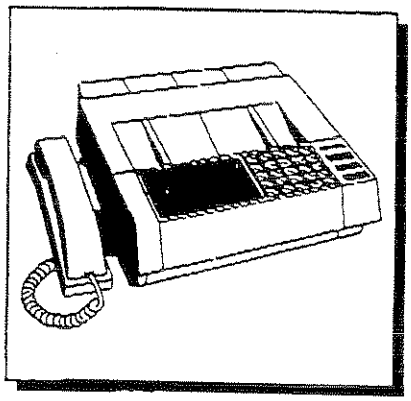
CHECKED BY: _____ DATE: _____

November 10, 1994 fax from Schreiber, Grana & Yonley, Inc. to Mr. Dave Bellamy

SCHREIBER GRANA & YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

COPY



FACSIMILE TRANSMITTAL COVER SHEET

TO: DAVE BENAMY

FROM: ED SHEPARD

DATE: NOV. 10, 1994

No. of pages (including cover sheet) ~~3~~ 4

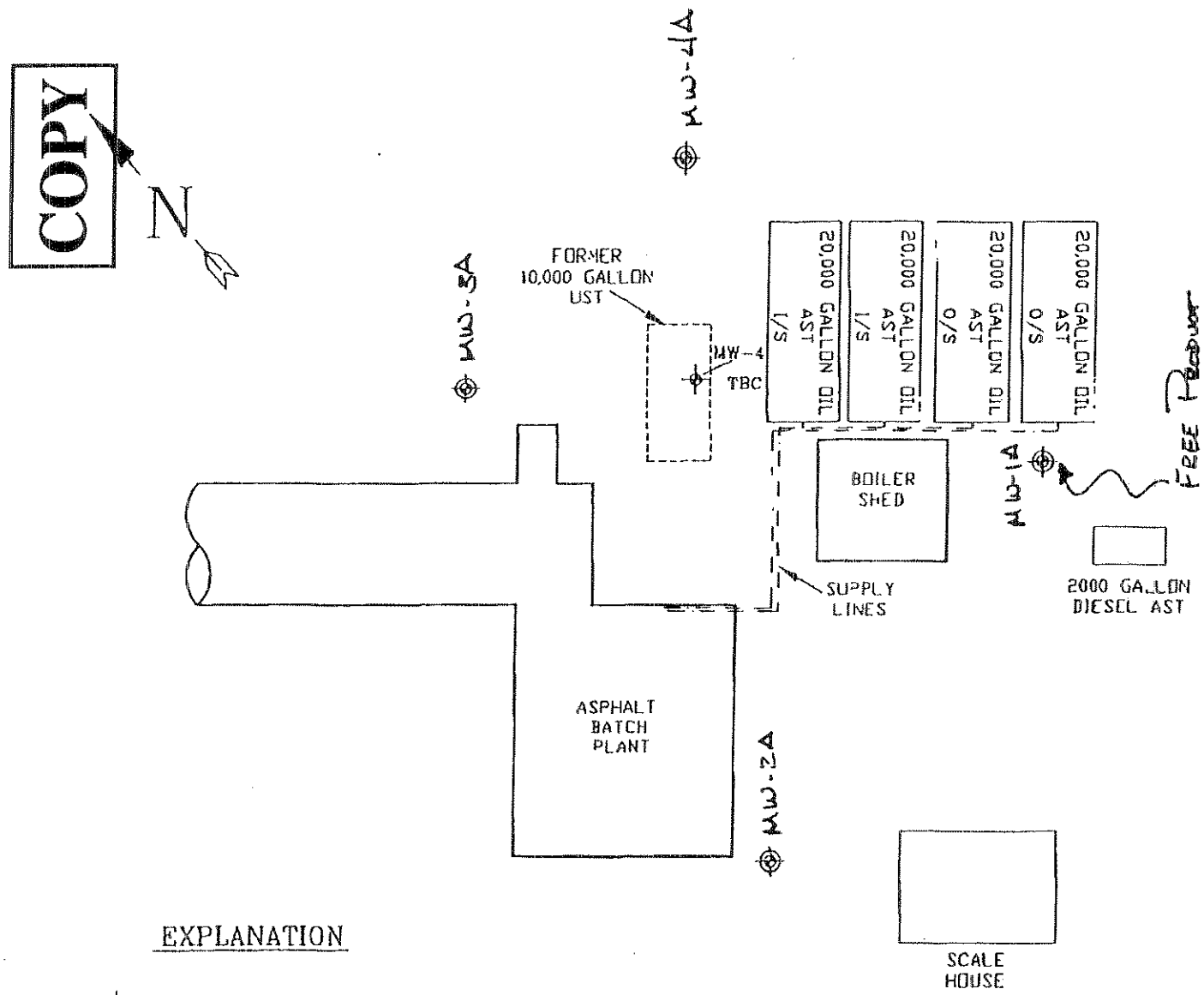
From Fax No.: (314) 349-8384

To Fax No.: 526-3850

MESSAGE: ENCLOSED PLEASE FIND FIGURE 1 & FIGURE 1 WITH FREE PRODUCT WELL INDICATED. THE PLANTERS ARE ALSO LISTED.

THANKS
ED.

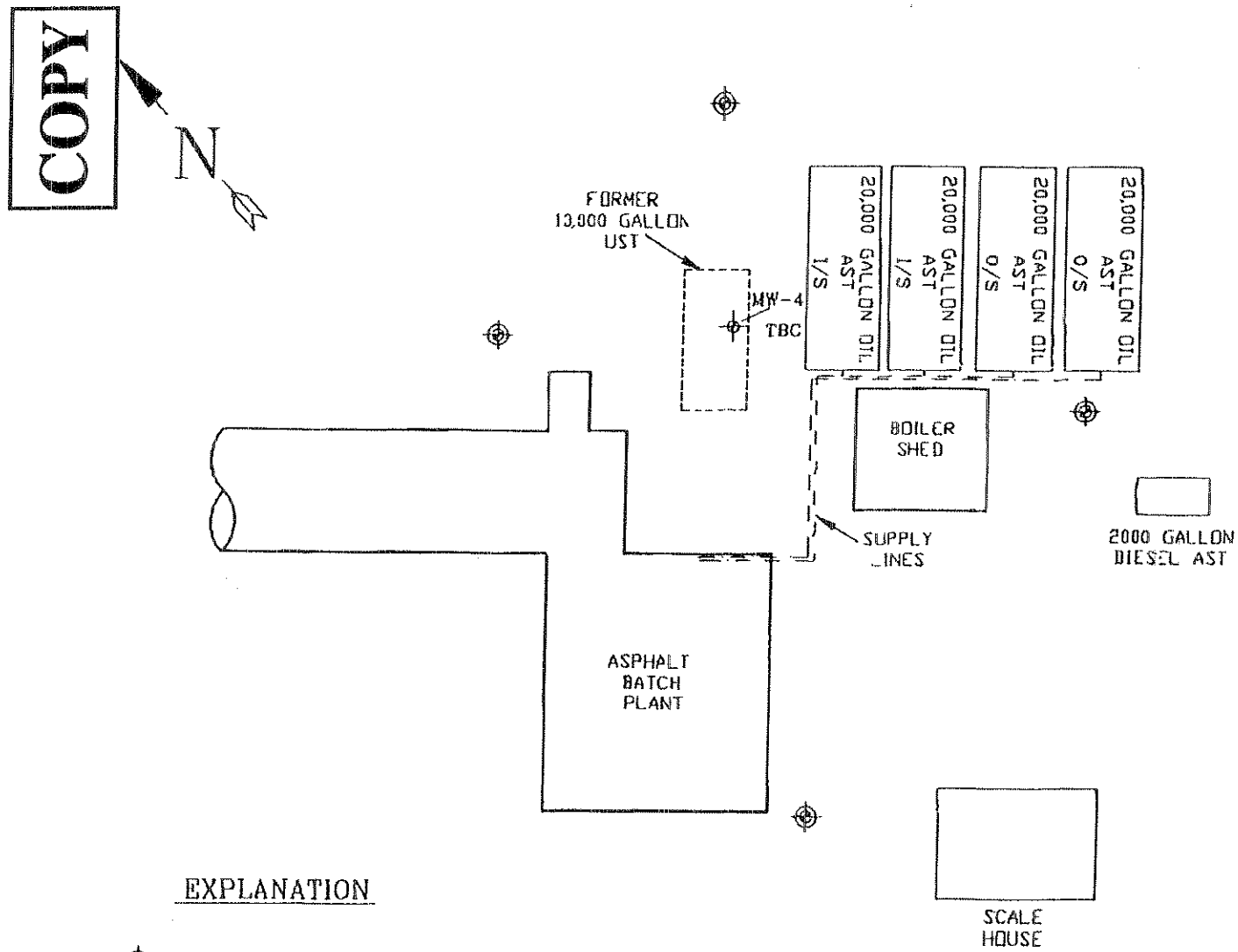
IF YOU DO NOT RECEIVE ALL PAGES TRANSMITTED,
PLEASE CALL (314) 349-8399



EXPLANATION

- PROPOSED MONITORING WELL
- MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- TBC TO BE CLOSED
- UST UNDERGROUND STORAGE TANK

SITE and PROPOSED MONITORING WELL LOCATIONS MAP MARYON INDUSTRIES, INC. WESTLAKE ASPHALT PLANT BRIDGETON, MISSOURI	FIGURE 1 SCALE: 1"=20' DWG.# M1101-1	SCHREIBER GRANA & YONLEY INCORPORATED ENVIRONMENTAL ENGINEERS



EXPLANATION

- PROPOSED MONITORING WELL
- MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- TBC TO BE CLOSED
- UST UNDERGROUND STORAGE TANK

SITE and PROPOSED MONITORING WELL LOCATIONS MAP

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

FIGURE 1

SCALE: 1"=20'

DWG.# MH01-1

SCHREIBER GRANA & YONLEY INCORPORATED
ENVIRON ENGINEERS

COPY

PROPERTY OWNER: WESTLAKE COMPANIES
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MO. 63044
ATTN: MR. BILL WHITAKER.

PLANT OWNER: #2 (operator) MARTON INDUSTRIES, INC.
(LEASES PROPERTY) 150 WELDON PARKWAY
MARYLAND HEIGHTS, MO. 63043
ATTN: MR. VINCE JONES

CONSULTANT: SCHREIBER, GRIMA & YONLEY, INC.
(WORKS FOR MARTON) 271 WOLFNER DR.
ST. LOUIS, MO. 63026
ATTN. MR ED SHEPARD.

COULD YOU PLEASE SEND A FOLLOW-UP LETTER ~~APPROVING~~ THE PLAN PER OUR ORIGINAL CONVERSATION

THANKS,
ED SHEPARD.

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

November 4, 1994

ESP FILE NO.
LU#3874

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources (MDNR) has received and reviewed the Schreiber, Grana & Yonley, Inc. Investigative Workplan dated October 12, 1994, on the above referenced site. The LUST Unit will not approve the proposed plan without the following information:

1. Figure #1 site map; and,
2. Pump and purge product recovery records as previously requested in MDNR's letter of August 22, 1994.

Upon receipt of the requested items, MDNR will determine whether or not MW-4 meets the criteria for closure. Therefore, please submit the requested information within 30 days of receipt of this letter.

If you have any questions, please do not hesitate to contact Dave Bellamy at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:jlh

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Schreiber, Grana, and Yonley, Inc., 271 Wolfner Drive, St. Louis, MO 63026
Pat Reeves, ADR/St. Louis, P.O. Box 182, St. Charles, MO 63302

RECYCLED PAPER

November 22, 1994 Letter from Mr. Alan Reinkemeyer of the MDNR to Mr. B. Whitaker of Westlake Companies

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

November 22, 1994

ESP FILE NO.
LU#3874

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westland, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources (MDNR) has received and reviewed the November 10, 1994, facsimile on the above referenced site. Based on the additional information, the LUST Unit approves the previously submitted "Subsurface Workplan" dated October 12, 1994.

The reported free product/contamination warrants further investigation to delineate the horizontal and vertical extent of the plume. This should include the determination as to whether or not the tank pit is working as a direct conduit to groundwater.

Please submit to this department, within 30 days, an addendum to address these issues in the work plan.

Per 10CSR20-10.064 and paragraphs 3.2 and 5.2 of MDNR's Corrective Action Guidance Document, the LUST Unit requires the initial free product recovery report be submitted within 45 days of confirming the release. The initial recovery report should be followed by monthly written reports to this unit providing information on free product recovery activities and any changes made to enhance the rate of recovery.

RECYCLED PAPER

COPY

If you have any questions, please do not hesitate to contact Dave Bellamy at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:jlh

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. Ed Shepard, Schreiber, Grana, & Yonley, Inc., 271 Wolfner Drive, St. Louis, MO 63026
Mr. Vince Jones, Marion Industries, Inc., 150 Weldon Parkway, Maryland Heights, MO 63043

December 9, 1994 Letter from Pat Reeves of ADR to Mr. Bellamy with the MDNR

JAN 4 1995

ADR

ST. LOUIS

COPY

P.O. Box 182 St. Charles, MO 63302 314 947-9963

Department of Natural Resources
P.O. Box 176
Jefferson City, Mo. 65102

Attn: LU Division
re: LU 3874 Purge & Recovery Data Requested

December 9,1994

Mr. Bellamy,

In accordance with your request of August 22,1994, the attached records reflect the details regarding "pump and purge" activities associated with Well # 4. As disclosed previously, the well did not provide adequate recharge to support the implementation of direct "pump and treat" applications, as a viable remedial effort.

The information attached reflects the actual field record without adjustment or any compensation. The decimal conversions and riser adjustments compiled and presented in previously submitted data may be compared with this field data. However, a discrepancy in December will appear due to the riser reduction (18 inches) which occurred in February.

During the months of January through May, the upper well contents were bailed and stored on-site for future disposal. As provided in our report of July 28,1994, of the 80 gallons collectively removed from the well, less than 5 gallons was recognized as recovered product.

During July 1994, a review of available information and a site inspection were conducted by representatives of Schreiber, Grana & Yonley, Inc., to provide an independent opinion with respect to investigation and remedial concerns. Subsequently, our company received directives to discontinue activities or efforts associated with Well #4.

Respectively, future communications or inquiry regarding this well should be addressed, based on the date of activity and respective participant. If you should have any further questions regarding activities relative to Well #4, please contact me.

Respectfully,

Patrick Reeves

ADR
ST. LOUIS
P.O. Box 182 St. Charles, MO 63302 314-947-9963

COPY

LU3874
MONITOR WELL #4
PURGE & RECOVERY DATA

12/17/93	Confirmation of well measurements.		
	Riser top to well bottom	35'4"	
	Riser above grade	5'0"	
	Fluid level below riser top	29'10.5"	
	Fluid level below grade	24'10.5"	
	Removed 8 bails (2 gls)	32'1.5"	
	Recharge (10 min.)	31'8.5"	1.62 gph.
	Initial bails were product, transpiring to "milky" water.		
12/18/93	Start Measurement	29'8"	
	Removed 10 bails	32'6"	
	Recharge(10 min.)	32'2"	1.26 gph
	Recharge(10 min.)	31'10"	
	Initial 4 bails product. balance clear water.		
12/20/93	Start measurement	29'11"	
	12 bails out,50%water	33"0"	
	Recharge (10 min.)	32'6"	
	"	32'1"	1.47 gph
	"	31'10"	
	"	31'6"	
	10 bails out,90% water	34'6"	
	Recharge (10 min.)	33'10"	
	"	33'6"	1.74 gph
	"	33'2"	
	4 bails out, 98% water	34'6"	
	Recharge (10 min.)	34'3"	
	"	34"0"	1.08 gph
	"	33'8"	

COPY

LU 3874- Well #4, Purge & Recovery Data

12/21/93	Start measurement	30'1"	
	1st bail sample, 16" of product		
	Diminished to 1/2" by = 6 bail		
	Total of 14 bails out (3.5 gls.)	34'3"	
	Recharge (10 min.)	33'9"	
	"	33'5"	
	"	33'1"	
	"	32'9"	
	"	32'5"	1.41 gph
	"	32'1"	
12/22/93	Start measurement	30'2"	
	1st bail sample, 6" product		
	Diminished to 1/2", by = 4		
	Total of 12 bails (3 gls.)	33'5"	
	Recharge (10 min.)	32'10"	
	"	32'6"	1.30 gph
	"	32'2"	
	"	31'11"	
12/27/93	Start measurement	30'6"	
	1st Bail sample, 6" product		
	Diminished to 1/2 by =4		
	Total bails 12 (3 gls.)	34"	
	Recharge (10 min.)	33'8"	1.09 gph.
	"	33'5"	
	"	33'2"	

COPY

LU 3874- WELL =4, Purge & Recovery Data

Implemented to provide current information and a confirmation of prior data.

5/04/94	Start measurement	28'5"	
	1st bail, 2" product layer		
	12 bails removed (3.5 gls.)	33'1"	
	Recharge (10 min)	32'3"	3.1 gph.
	"	31'6"	
5/05/94	Start measurement	27'8"	
	1" product layer on 1st bail		
	10 bails out (2.5 gls.)	31'8"	2.45 gph.
	Recharge (20 min.)	30'5"	
	8 bails out (2 gls.)	32'10"	
	Recharge (10 min.)	32'1"	2.8 gph.
	"	31'4"	
	"	30'8"	
5/08/94	Start Measurement	27'10"	
	3" product layer on 1st bail		
	13 bails out (3.25 gls.)	32'8"	1.76 gph.
	Recharge (1.5 hours)	28'7"	
5/20/94	Start measurement	28'0"	
	10 bails out	30'10"	
	10 bails out	31'10"	
	Recharge (30 min.)	30'1"	1.68 gph.
	"	29'3"	

COPY

LU 3874- WELL #4. Purge & Recovery Data

5/25/94	Start measurement	28'2"	
	3" product layer on 1st bail		
	16 bails out (4 gls.)	33'2"	
	Recharge (15 min.)	32'2"	
	"	31'6"	
	"	30'8"	2.07 gph
	"	30'0"	
6/06/94	Start measurement	28'8"	
	1st bail, 4" of product		
	20 bails out (5 gls.)	33'4'	
	Recharge (20 min.)	32'6"	
	"	31'8"	1.27 gph.
	"	31'4"	
	"	30'7"	
	"	30'1"	
6/10/94	Start measurement	29'0"	
	1st bail 6" of product		
	15 bails out (3.75 gls)	32'4"	
	Recharge (15 min)	31'7"	
	"	31'1"	
	"	30'7"	1.22 gph
	"	30'3"	
	"	30'0"	

COPY

LU 3874 WELL #4 Purge and Recovery Data

6/17/94	Start measurement	29'2"	
	1st bail. 4" product		
	20 bails out (5 gls.)	33'4"	
	Recharge (15 min.)	33'1"	0.86 gph.
	"	32'8"	
6/26/94	Start measurement	29'6"	
	1st bail. 4" product		
	8 bails out (2 gls.)	32'5"	
	Recharge (30 min.)	31'9"	0.87 gph.

January 10, 1995 Letter from Mr. Alan Reinkemeyer of the MDNR to Mr. B. Whitaker of Westlake Companies

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

January 10, 1995

ESP FILE NO.
LU#3874

CERTIFIED MAIL #P144 644 954
RETURN RECEIPT REQUESTED

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources has received and reviewed the ADR St. Louis Report dated December 9, 1994, pertaining to monitoring well No. 4's "pump & purge" activities between December 17, 1993, and June 26, 1994. However, the LUST Unit has not received the required free product recovery reports pertaining to monitoring well No. 1A, installed by Schreiber, Grana, and Yonley, as mandated by 10CSR20-10.064.

Since the initial free product recovery and monthly reports, to include the work plan addendum for MW-1A, have missed their suspense dates, the LUST Unit will require a status update covering all site activities.

Please submit the requested information to this department within 15 days from receipt of this letter.

If you have any questions, please do not hesitate to contact Dave Bellamy at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:jlh

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. Ed Shepard, Schreiber, Grana, & Yonley, Inc., 271 Wolfner Drive, St. Louis, MO 63026
Mr. Vince Jones, Marion Industries, Inc., 150 Weldon Parkway, Maryland Heights, MO 64043

RECYCLED PAPER

January 11, 1995 Letter from Mr. Edward Shepard Jr. of Schreiber, Grana & Yonley, Inc. to Mr. Dave Bellamy of the MDNR

SCHREIBER GRANA & YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

COPY

January 11, 1995

JAN 17 1995

Mr. Dave Bellamy
Missouri Department of Natural Resources
Environmental Services Program
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, MO 65102

RE: Maryon Industries, Inc.
Westlake Asphalt Plant
UST - #7 (MDNR #11)
Bridgeton, Missouri
LU #3874

Dear Mr. Bellamy:

At the request of Maryon Industries, Inc., Schreiber, Grana & Yonley, Inc. is submitting this letter to notify the Missouri Department of Natural Resources (MDNR) of the discovery of free product at the site, and to summarize the results of investigatory activities at the site.

The investigatory activities were performed in accordance with the Subsurface Environmental Site Investigation Workplan, dated October 12, 1994, which was submitted to the MDNR by Schreiber, Grana & Yonley, Inc. and was subsequently approved by the MDNR.

From October 31, 1994 to November 2, 1994, four (4) soil borings, MW-1A through MW-4A, were advanced/sampled to approximate maximum depths of 35' (see Attachment A for boring/monitoring well locations). Two (2) soil samples per boring were collected and submitted to Specialized Assays Environmental, Nashville, Tennessee, for chemical analyses of benzene, toluene, ethylbenzene and xylenes (BTEX) in accordance with EPA Method 8020, and total petroleum hydrocarbons (TPH) in accordance with EPA Method 418.1 (see Attachment B for a soil analytical results summary and map). Utilizing the MDNR "Leaking Underground Storage Tank Soil Cleanup Guidelines," it is anticipated that the cleanup objectives for BTEX will be 1/5/10/10 ppm, respectively, and TPH will be 200 ppm (see Attachment C for completed chart). The MDNR soil cleanup objective for xylenes was exceeded in both samples from MW-1A, and the MDNR soil cleanup objective for TPH was exceeded in both samples from MW-1A and both samples from MW-4A. Upon completion of the soil borings, a monitoring well was installed in each boring.

COPY

Following installation, the monitoring wells were gauged, developed and sampled. Data gathered from the gauging events was utilized to determine the amount of water to be evacuated from the wells for the development and sampling events, and to estimate the groundwater flow direction (see Attachment D for a groundwater elevation map). One (1) groundwater sample per monitoring well, except for MW-1A, was collected and submitted to Specialized Assays Environmental, Nashville, Tennessee, for chemical analyses of BTEX in accordance with EPA Method 8020, and TPH in accordance with EPA Method 418.1 (see Attachment E for a groundwater analytical results summary and map). Utilizing the MDNR "Underground Storage Tank Closure Guidance Document," dated January 1992, it was determined that non-potable groundwater cleanup objectives for BTEX are .050/.150/.320/.320 ppm, respectively; total BTEX is .750 ppm; and TPH is 10 ppm. The cleanup objective for TPH was exceeded in the sample collected from MW-4A.

MW-1A was not sampled due to the presence of free product in the well. Initially, free product was recovered utilizing a bailer. Approximately six (6) gallons of product was recovered using this method. Currently, an EZY Skimmer, manufactured by Horner Creative Products, Inc., is being utilized to collect product. An additional two (2) gallons of product have been recovered to date.

Based on the information collected from this investigation, Schreiber, Grana & Yonley, Inc. is proposing to install one (1) additional monitoring well to further delineate BTEX and TPH constituents (see Attachment F for the proposed boring/monitoring well location map). The well will be installed in accordance with procedures outlined in the previously submitted Subsurface Environmental Site Investigation Workplan dated October 12, 1994. Upon completion of the investigatory activities, a Subsurface Environmental Site Investigation Report will be submitted to MDNR detailing the findings of this investigation.

Should you have any questions or comments, please do not hesitate to contact me at (314)349-8399. Thank you for your time regarding this matter.

Sincerely,

SCHREIBER, GRANA & YONLEY, INC.

Edward A. Shepard, Jr.
Associate Engineer

EAS/ccp

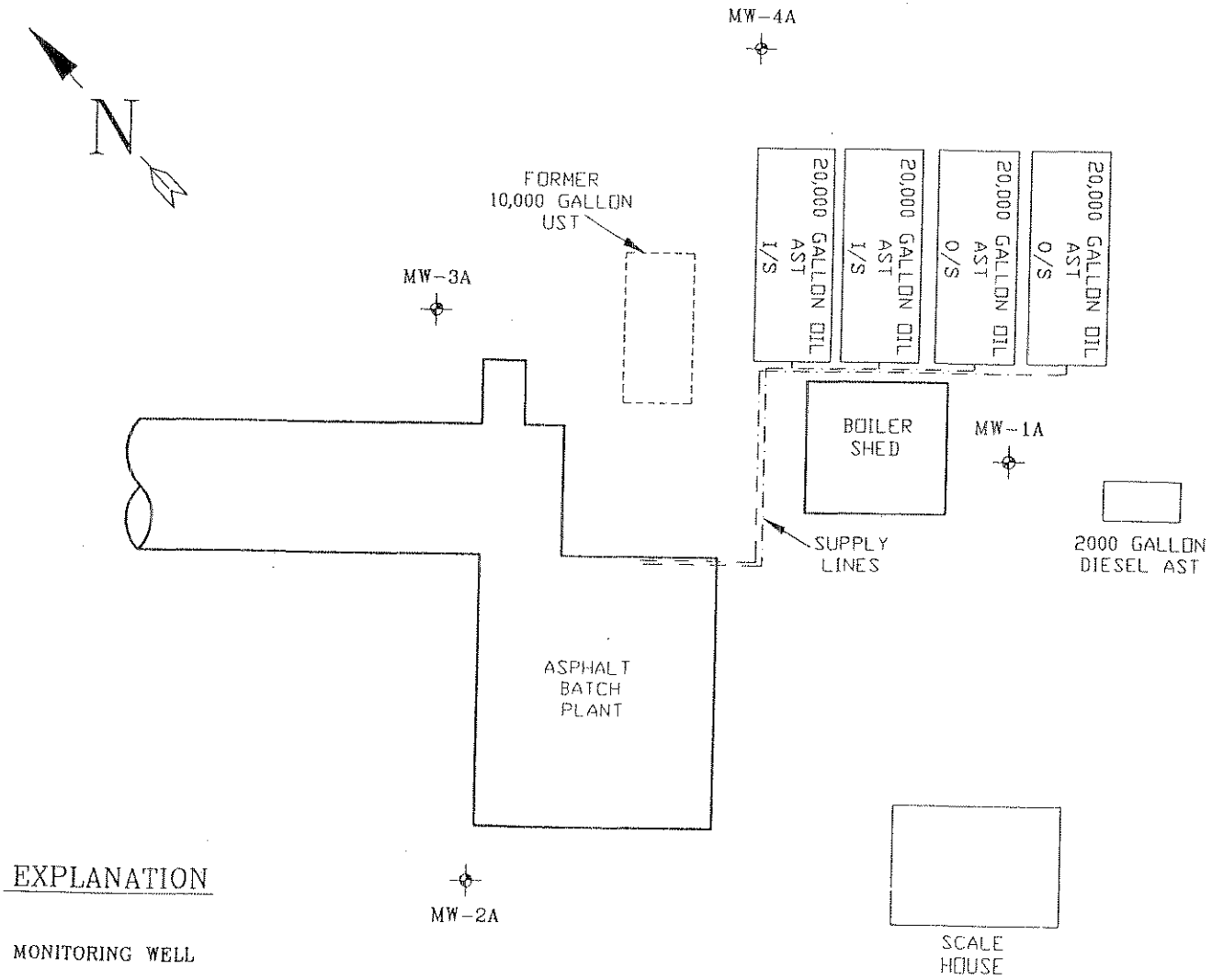
cc: Vince Jones - Maryon Industries, Inc.
William Whitaker - Westlake Companies

Encl.
MII02\BELLAMY.LTR

ATTACHMENT A

BORING/MONITORING WELL LOCATION MAP

COPY



EXPLANATION

⌖	MONITORING WELL
AST	ABOVEGROUND STORAGE TANK
I/S	IN SERVICE
O/S	OUT OF SERVICE
UST	UNDERGROUND STORAGE TANK

BORING/MONITORING WELL LOCATION MAP

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

ATTACHMENT A

SCALE:
1"=20'

DWG.#
MI101-1

SCHREIBER
& GRANA
YONLEY
INCORPORATED
ENVIRONMENTAL ENGINEERS

COPY

ATTACHMENT B

SOIL ANALYTICAL RESULTS SUMMARY

COPY

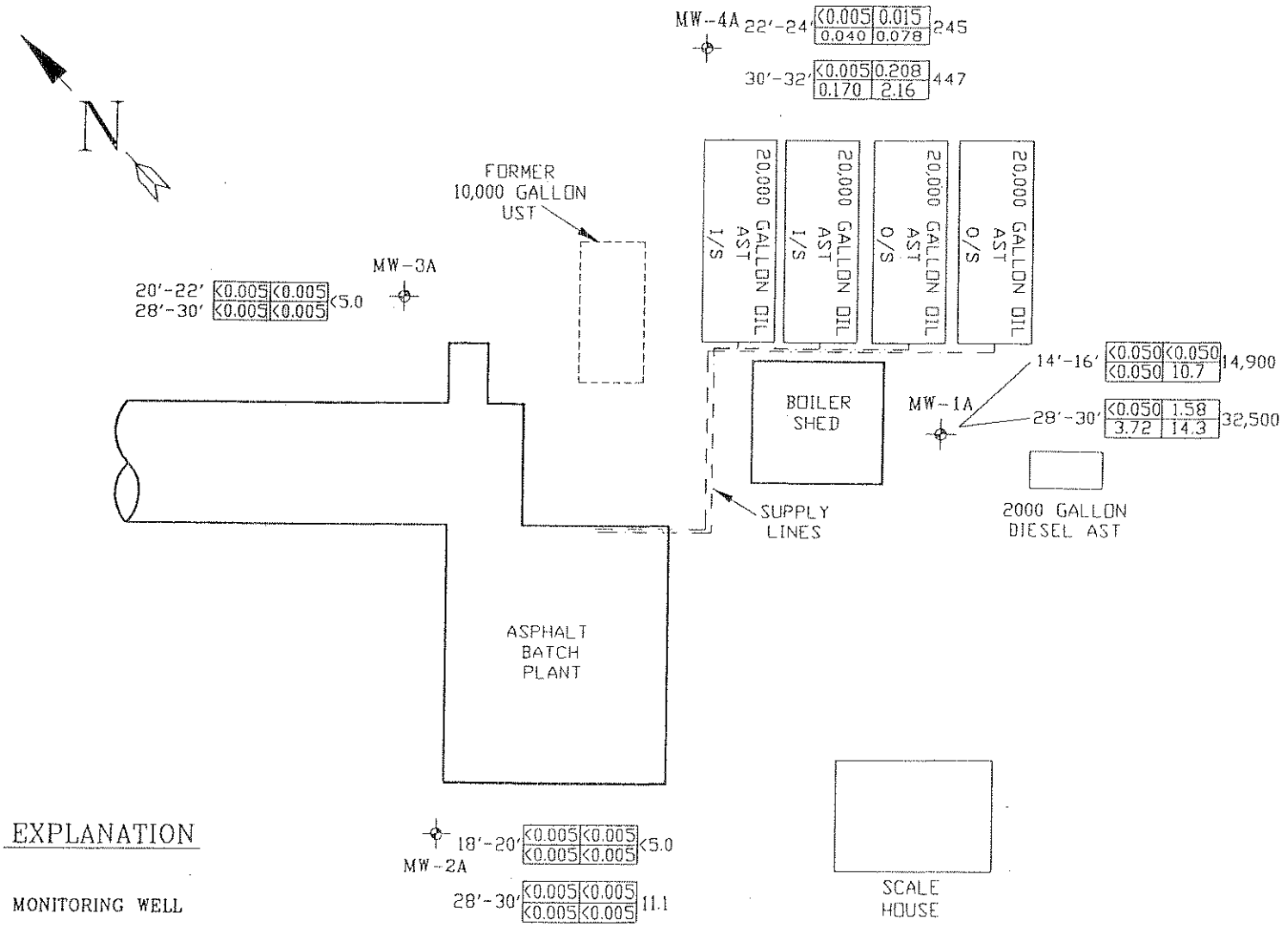
ATTACHMENT B

COPY

SOIL ANALYTICAL RESULTS
MARYON INDUSTRIES
BRIDGETON PLANT

Location	Depth	Benzene	Toluene	Ethylbenzene	Xylenes	TPH
MW-1A	14'-16'	<.050	<.050	<.050	**10.7**	**14,900**
MW-1A	28'-30'	<.050	1.58	3.72	**14.3**	**32,500**
MW-2A	18'-20'	<.005	<.005	<.005	<.005	<5.0
MW-2A	28'-30'	<.005	<.005	<.005	<.005	11.1
MW-3A	20'-22'	<.005	<.005	<.005	<.005	<5.0
MW-3A	28'-30'	<.005	<.005	<.005	<.005	<5.0
MW-4A	22'-24'	<.005	.015	.040	.078	**245**
MW-4A	30'-32'	<.005	.208	.170	2.16	**447**

Notes: Results in parts per million (ppm)
TPH - total petroleum hydrocarbons
Bold Denotes exceedences of MDNR Soil Cleanup Guidelines



EXPLANATION

- MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- UST UNDERGROUND STORAGE TANK

DEPTH	Benzene	Toluene	TPH
	Ethylbenzene	Xylenes	

–RESULTS IN ppm

COPY

ADSORBED-PHASE BTEX/TPH DISTRIBUTION MAP

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

ATTACHMENT B

SCALE: 1"=20'

DWG.# MI01-1

SCHREIBER & GRANA YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

ATTACHMENT C

COPY

COMPLETED LEAKING UNDERGROUND STORAGE TANK
SOIL CLEANUP GUIDELINES CHART

X:\MII02\MARYON.TBL

Leaking Underground Storage Tank Soil Cleanup Guidelines

COPY

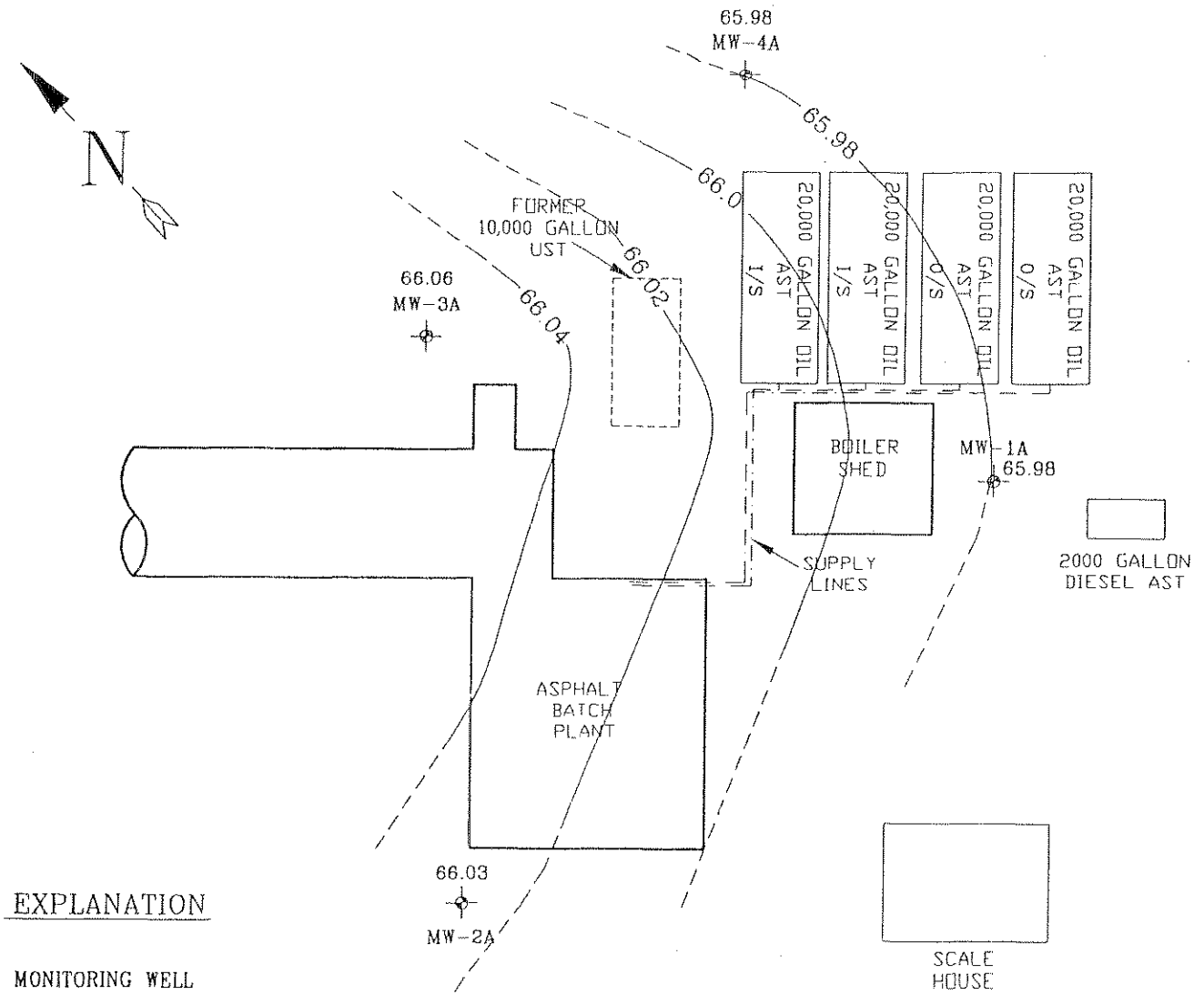
Site Features	Score 15 if True		Score 10 if True		Score 5 if True		Score 0 if True	
Groundwater potable?	No	X	Unknown		Poor		Yes	
Depth to groundwater?	> 100 ft		51-100 ft		25-50 ft	X	< 25 ft	
Natural fractures present?	None		Unknown		Present	X	Predominant	
Man-made vertical conduits?	None	X	Unknown		Present		Predominant	
Man-made horizontal conduits?	None		Unknown		Present	X	Predominant	
Coarse soil or sand present?	None		Unknown		Present	X	Predominant	
Water wells nearby?	> 1000 ft away	X	501-1000 ft away		100-500 ft away		< 100 ft away	
Background levels present?	Above action levels		Unknown	X	Below action level		Nondetectable	
Subtotals		45		10		20		
						Total Score =		75

Soil Cleanup (ppm)				
Total Score	101-120	71-100	41-70	40 or less
BTEX =	2/10/50/50	1/5/10/10	0.5/1/2/2	B+T+E+X < 2
TPH =	500	200	100	50

ATTACHMENT D

GROUNDWATER ELEVATION MAP

COPY



EXPLANATION

⊕	MONITORING WELL
AST	ABOVEGROUND STORAGE TANK
I/S	IN SERVICE
O/S	OUT OF SERVICE
UST	UNDERGROUND STORAGE TANK
—66.04—	GROUNDWATER ELEVATION (in feet), –dashed where inferred

GROUNDWATER ELEVATION MAP

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

ATTACHMENT D

SCALE: 1" = 20'

DWG. # M1101-1

SCHREIBER & GRANA YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

COPY

ATTACHMENT E

GROUNDWATER ANALYTICAL RESULTS SUMMARY

COPY

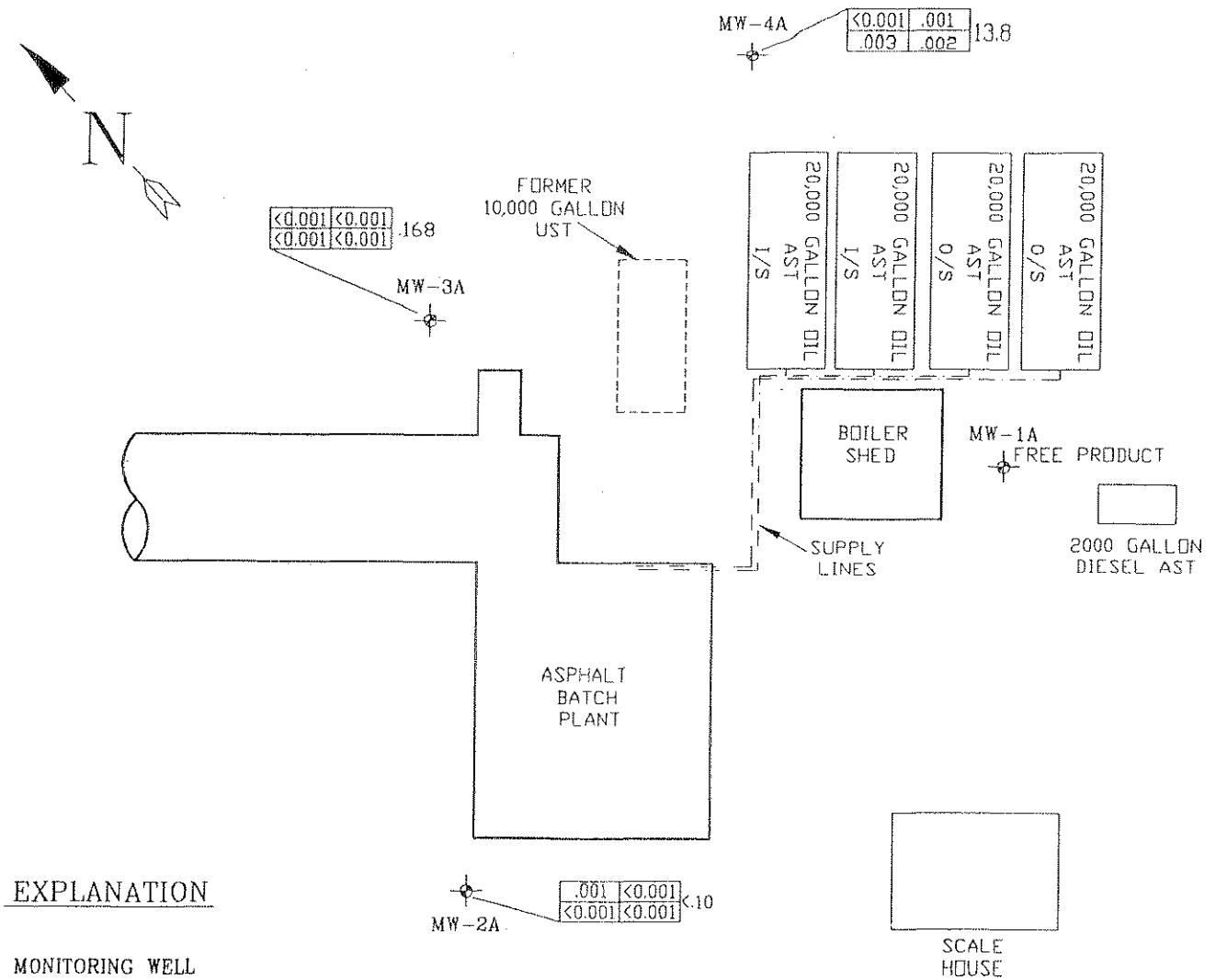
ATTACHMENT E

COPY

GROUNDWATER ANALYTICAL RESULTS SUMMARY
MARYON INDUSTRIES
BRIDGETON PLANT

Location	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX	TPH
MW-1A	F.P.	F.P.	F.P.	F.P.	F.P.	F.P
MW-2A	.001	<.001	<.001	<.001	<.004	<.10
MW-3A	<.001	<.001	<.001	<.001	<.004	.16
MW-4A	<.001	.001	.003	.002	<.007	**13.8**

Notes: Results in ppm
TPH - Total petroleum hydrocarbons
Bold Denotes exceedences of MDNR Non-Potable Groundwater Cleanup Guidelines
F.P. Denotes free product



EXPLANATION

- MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- UST UNDERGROUND STORAGE TANK

Benzene	Toluene
Ethylbenzene	Xylenes

TPH

–RESULTS IN ppm

SOLUBLE-PHASE BTEX/TPH DISTRIBUTION MAP

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

ATTACHMENT E

SCALE: 1" = 20'

DWG.# M1101-1

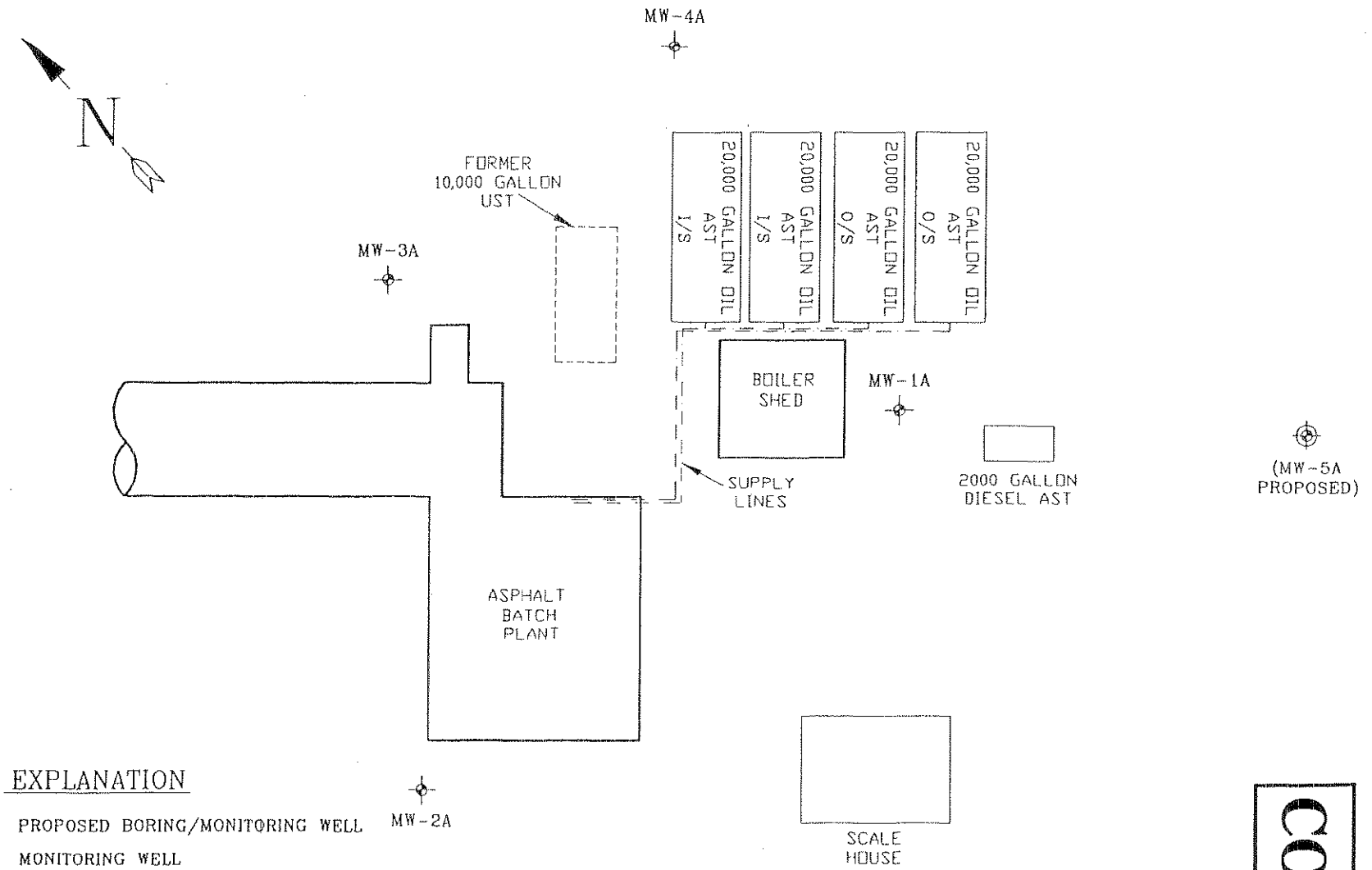
SCHREIBER & GRANA YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

COPY

ATTACHMENT F

PROPOSED BORING/MONITORING WELL LOCATION MAP

COPY



EXPLANATION

- PROPOSED BORING/MONITORING WELL
- MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- UST UNDERGROUND STORAGE TANK

PROPOSED BORING/MONITORING WELL
LOCATION MAP

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

ATTACHMENT F

SCALE:
1"=20'

DWG.#
M1101-1

SCHREIBER
& GRANA
YONLEY
INCORPORATED
ENVIRONMENTAL ENGINEERS

COPY

January 13, 1995 Letter from Pat Reeves of ADR to D. Bellamy of the MDNR

ADR

ST. LOUIS

P.O. Box 182 St. Charles, MO 63302 314-947 9963

RECEIVED
JAN 23 1995
COPY

Department of Natural Resources
ESP Division- D. Bellamy
P.O. BOX 176
Jefferson City, Mo. 65102

January 13, 1995
RE: LU# 3874 / West Lake Q & M Company

Mr. Bellamy

As requested in your letter of August 22, 1994, we are providing the analytical results of samples from Well # 1 and # 2. The results provided by CASCHEM LABORATORIES, INC., indicate the total petroleum hydrocarbons are below action level for the periods identified.

Period	Date	Well # 1	Well # 2
3rd Quarter 1994	08/17/94	1.1 ppm	5.3 ppm
4th Quarter 1994	10/11/94	< 1 ppm	<1 ppm
1st Quarter 1995	01/13/95	<1 ppm	<1 ppm

Parts per Million (ppm) = Milligrams per Liter (mg/l)

It is my understanding, your department has agreed to allow closure of these wells, provided the analytical results for the fourth monitoring period, are below 10 parts per million. Subject to the test results, we will anticipate closure of the three wells currently under our control (1,2 & 3).

Your written response is requested for our files as confirmation of this agreement. If you should require additional information, please contact my office or Mr. Bill Whitaker, at your earliest convenience.

Respectfully,

Patrick Reeves

Encl. 6-Test Results

CASCHEM LABORATORIES, INC.
1712 11TH STREET, N.E.
CANTON, OHIO 44705
Phone (216) 588-TEST FAX:(216) 588-8412

COPY

08/17/94

Laboratory Analysis Report

Client ID: 1039
Sample ID:BRIDGETON WESTLAKE
Sample Matrix: WATER
Sample Description:
WELL #1

Comment:

PAT REEVES
ADR/ST.LOUIS
566 NORTH FIRST CAPITAL
ST.CHARLES MO 63302-0182

Purchase Order No.:

Date Sampled:8-12-94
Time Sampled:11:40

Date Received:08/13/94 Time Received:11:00

Discrepancies or Deviations:

Lab Number	Test Description	Result	Unit	LOD	TEST DATE
1081138					
	T.P.H. (418.1)	1.1	mg/l	1.0 mg/l	08/17/94

DATE REPORTED:08/17/94 TIME REPORTED:14:07:13

fax mail phone

REPORTED BY: _____ Analysts

_____ QA/QC Manager

Results relate only to items tested. Samples tested as received. This report may not be reproduced except in full without the approval of CasChem Laboratories, Inc.

CASCHEM LABORATORIES, INC.
1712 11TH STREET, N.E.
CANTON, OHIO 44705
Phone (216) 588-TEST FAX:(216) 588-8412

COPY

08/17/94

Laboratory Analysis Report

Client ID: 1039
Sample ID:BRIDGETON WESTLAKE
Sample Matrix: WATER
Sample Description:
WELL #2

Comment:

PAT REEVES
ADR/ST.LOUIS
566 NORTH FIRST CAPITAL
ST.CHARLES MO 63302-0182

Purchase Order No.:

Date Sampled:8-12-94
Time Sampled:10:30

Date Received:08/13/94 Time Received:11:00

Discrepancies or Deviations:

Lab Number	Test Description	Result	Unit	LOD	TEST DATE
94081139					
	T.P.H. (418.1)	5.3	mg/l	1.0 mg/l	08/17/94

DATE REPORTED:08/17/94 TIME REPORTED:14:07:31

fax mail phone

REPORTED BY: _____ Analysts

_____ QA/QC Manager

Results relate only to items tested. Samples tested as received. This report may not be reproduced except in full without the approval of CasChem Laboratories, Inc.

CASCHEM LABORATORIES, INC.
1712 IRA TURPIN WAY NE
CANTON, OHIO 44705-1415
Phone (216) 588-TEST FAX:(216) 588-8412

COPY

10/11/94

Laboratory Analysis Report

Client ID: 1039
Sample ID:BRIDGETON WESTLAKE
Sample Matrix: WATER
Sample Description:
WELL#1 GRAB

PAT REEVES
ADR/ST.LOUIS
566 NORTH FIRST CAPITAL
ST.CHARLES MO 63302-0182

Comment:

Purchase Order No.:

Date Sampled:10-5-94
Time Sampled:16:30

Date Received:10/06/94 Time Received:09:20

Discrepancies or Deviations:

Lab Number	Test Description	Result	Unit	LOD	TEST DATE
9410154					
	T.P.H. (418.1)	<1	mg/l	1.0 mg/l	10/07/94

DATE REPORTED:10/11/94 TIME REPORTED: 9:25:01

fax mail phone

REPORTED BY: _____ Analysts

_____ QA/QC Manager

Results relate only to items tested. Samples tested as received. This report may not be reproduced except in full without the approval of CasChem Laboratories, Inc.

CASCHEM LABORATORIES, INC.
1712 IRA TURPIN WAY NE
CANTON, OHIO 44705-1415
Phone (216) 588-TEST FAX:(216) 588-8412

COPY

10/11/94

Laboratory Analysis Report

Client ID: 1039
Sample ID:BRIDGETON WESTLAKE
Sample Matrix: WATER
Sample Description:
WELL #2 GRAB

Comment:

PAT REEVES
ADR/ST.LOUIS
566 NORTH FIRST CAPITAL
ST.CHARLES MO 63302-0182

Purchase Order No.:

Date Sampled:10-5-94
Time Sampled:11:56

Date Received:10/06/94 Time Received:09:20

Discrepancies or Deviations:

Lab Number	Test Description	Result	Unit	LOD	TEST DATE
9410155					
	T.P.H. (418.1)	<1	mg/l	1.0 mg/l	10/07/94

DATE REPORTED:10/11/94 TIME REPORTED: 9:25:10

fax mail phone

REPORTED BY: _____ Analysts

_____ QA/QC Manager

Results relate only to items tested. Samples tested as received. This report may not be reproduced except in full without the approval of CasChem Laboratories, Inc.

CASCHEM LABORATORIES, INC.
1712 IRA TURPIN WAY NE
CANTON, OHIO 44705-1415
Phone (216) 588-TEST FAX:(216) 588-8412

COPY

01/13/95

Laboratory Analysis Report

Client ID: 1039
Sample ID:WEST LAKE-BRIDGETON
Sample Matrix: WATER
Sample Description:
GRAB WELL #1

Comment:

PAT REEVES
ADR/ST.LOUIS
566 NORTH FIRST CAPITAL
ST.CHARLES MO 63302-0182

Purchase Order No.:

Date Sampled:01-08-95
Time Sampled:11:30

Date Received:01/10/95 Time Received:10:15

Discrepancies or Deviations:

Lab Number	Test Description	Result	Unit	LOD	TEST DATE
9501237					
	T.P.H. (418.1)	<1	mg/l	1.0 mg/l	01/11/95

DATE REPORTED:01/13/95 TIME REPORTED:16:05:12

fax mail phone

REPORTED BY: _____ Analysts

_____ QA/QC Manager

Results relate only to items tested. Samples tested as received. This report may not be reproduced except in full without the approval of CasChem Laboratories, Inc.

CASCHEM LABORATORIES, INC.
1712 IRA TURPIN WAY NE
CANTON, OHIO 44705-1415
Phone (216) 588-TEST FAX:(216) 588-8412

COPY

01/13/95

Laboratory Analysis Report

Client ID: 1039
Sample ID:WEST LAKE-BRIDGETON
Sample Matrix: WATER
Sample Description:
GRAB WELL #2

PAT REEVES
ADR/ST.LOUIS
566 NORTH FIRST CAPITAL
ST.CHARLES MO 63302-0182

Comment:

Purchase Order No.:

Date Sampled:01-08-95
Time Sampled:12:15

Date Received:01/10/95 Time Received:10:15

Discrepancies or Deviations:

Lab Number	Test Description	Result	Unit	LOD	TEST DATE
9501238					
	T.P.H. (418.1)	<1	mg/l	1.0 mg/l	01/11/95

DATE REPORTED:01/13/95 TIME REPORTED:16:05:22

fax mail phone

REPORTED BY: _____ Analysts

_____ QA/QC Manager

Results relate only to items tested. Samples tested as received. This report may not be reproduced except in full without the approval of CasChem Laboratories, Inc.

February 7, 1995 Letter from Mr. Alan Reinkemeyer
of the MDNR to Vince Jones of
Maryon Industries, Inc.

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

February 7, 1995

ESP FILE NO.
LU#3874

Mr. Vince Jones
Maryon Industries, Inc.
150 Weldon Parkway
Maryland Heights, MO 63043

Dear Mr. Jones:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources (MDNR) has received and reviewed the Schreiber, Grana, & Yonley Investigative Summary dated January 11, 1995, for the above referenced site.

The LUST Unit approves of the additional monitoring well to determine the overall extent of the plume. However, please understand that one additional monitoring well will not satisfy MDNR's overall site characterization of the soil and water requirements. Once your consultant has determined the outer most downgradient boundary, the LUST Unit will require Maryon Industries, Inc. to fully define, both vertically and horizontally, the extent of the contamination. For more information pertaining to site characterization requirements, you may want to review MDNR's Site Characterization Guidance Document dated February 1991. Please see the enclosed order form.

Additional installation of the additional monitoring well may require the review for and issuance of appropriate permits. Please submit a status report after implementation.

RECYCLED PAPER

COPY

If you have any questions, please do not hesitate to contact Dave Bellamy at the Leaking Underground Storage Tank Unit at 314/526-3379 or 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:jlh

Enclosure

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. Ed Shepard, Schreiber, Grana, & Yonley, Inc., 271 Wolfner Drive, St. Louis, MO 63026

February 7, 1995 Free Product Recovery Report,
January 1995

SCHREIBER GRANA & YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

COPY

February 7, 1995

RECEIVED
FEB 14 1995

Mr. Dave Bellamy
Missouri Department of Natural Resources
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, Missouri 65102

RE: Maryon Industries, Inc.
Westlake Site
Bridgeton, Missouri
MDNR ESP File No. LU3874

Dear Mr. Bellamy:

Enclosed is a copy of the Free Product Recovery Report for January 1995. This report, prepared on behalf of Maryon Industries, Inc., provides a summary of the product recovery activities conducted during the month of January in 1995.

Please contact the undersigned at 314-349-8399 to discuss any comments you may have. We look forward to hearing from you regarding this site.

Sincerely,

SCHREIBER, GRANA & YONLEY, INC.

Edward A. Shepard, Jr.
Associate Engineer

EAS/cef/ccp

cc: Vince Jones - Maryon Industries, Inc.
William Whitaker - Westlake Companies

Encl.

MII02\MII02FP.RPT

COPY

FREE PRODUCT RECOVERY REPORT
JANUARY 1995

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

MDNR ESP FILE NO. LU3874

February 7, 1995

PREPARED FOR:

MR. DAVE BELLAMY
MISSOURI DEPARTMENT OF NATURAL RESOURCES
LEAKING UNDERGROUND STORAGE TANK UNIT
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102

PREPARED BY:

SCHREIBER, GRANA & YONLEY, INC.
271 WOLFNER DRIVE
ST. LOUIS, MISSOURI 63026

1.0 INTRODUCTION

COPY

At the request of Maryon Industries, Inc., Schreiber, Grana & Yonley, Inc. has initiated free product recovery for the Maryon Industries, Inc. facility located at the Westlake Quarry & Material Company facility in Bridgeton, Missouri. The product recovery is associated with a former 10,000-gallon diesel underground storage tank (UST).

During a previous Subsurface Environmental Site Investigation, four (4) groundwater monitoring wells were advanced and installed on the site near the former UST. These monitoring wells were designated MW-1A through MW-4A. Monitoring well MW-1A was found to have diesel fuel in a free-phase state.

Figure 1 depicts the subject site and shows the approximate locations of the former UST and the groundwater monitoring wells.

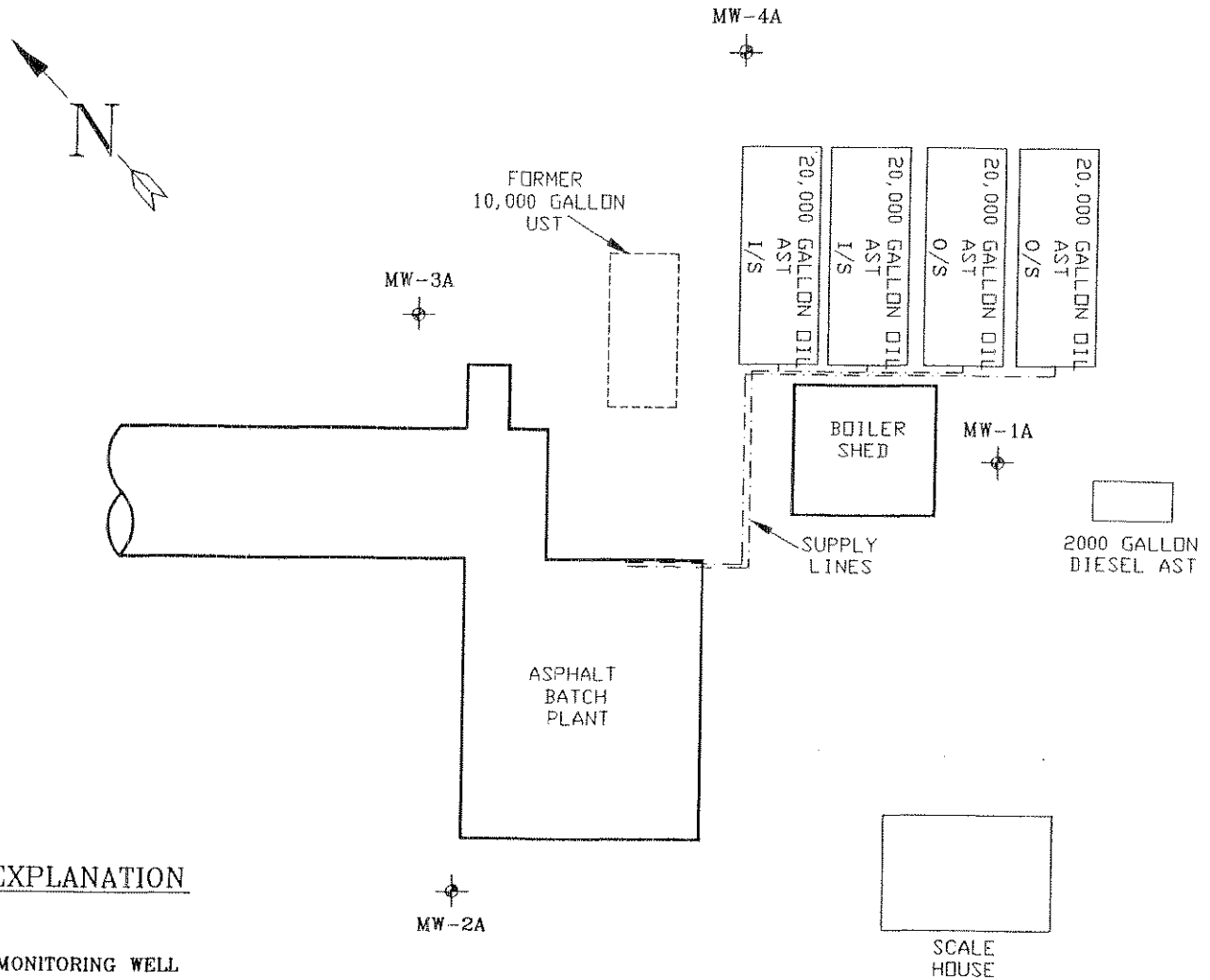
2.0 METHODS OF RECOVERY

Schreiber, Grana & Yonley, Inc. is currently utilizing a HORNER EZY SKIMMER, distributed by Horner Creative Products, Inc. to recover product. This method of product recovery consists of suspending a skimmer tube in the well. The skimmer tube has a screen at the top which allows petroleum product to flow into the skimmer, but retards water from entering. The petroleum is collected in the tube and is emptied through a drain in the bottom of the skimmer.

Maryon Industries, Inc. personnel empty the contents of the skimmer into a drum on-site on a regular basis. The amount of product in the skimmer is measured and recorded along with the date and time. In the month of January, approximately 1.037 gallons of product were recovered.

Table 1 contains a product recovery summary for the month of January 1995.

It should be noted that there is not product recovery data for every day, due to weekends and faulty recovery equipment.



EXPLANATION

⊕	MONITORING WELL
AST	ABOVEGROUND STORAGE TANK
I/S	IN SERVICE
O/S	OUT OF SERVICE
UST	UNDERGROUND STORAGE TANK

MONITORING WELL LOCATION MAP

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

FIGURE 1

SCALE:
1"=20'

DWG.#
M1101-1

SCHREIBER
GRANA
& YONLEY
INCORPORATED
ENVIRONMENTAL ENGINEERS

COPY

COPY

TABLE 1

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

FREE PRODUCT RECOVERY

DATE	AM RECOVERY	PM RECOVERY	DAILY TOTAL
1/5/95	0.097	0.072	0.169
1/9/95	0.097	0.008	0.105
1/10/95	0.023	0.011	0.034
1/11/95	0.018	0.005	0.023
1/12/95	0.005	0.003	0.008
1/13/95	0.010	0.003	0.013
1/16/95	0.097	0.050	0.147
1/17/95	0.049	0.050	0.099
1/18/95	0.040	-----	0.040
1/20/95	0.090	0.090	0.180
1/26/95	-----	0.090	0.090
1/27/95	-----	0.013	0.013
1/30/95	0.073	0.007	0.080
1/31/95	0.023	0.013	0.036
		JANUARY TOTAL	1.037

NOTES: Measurements in gallons
----- denotes recovery not performed

March 9, 1995 Letter from Mr. Alan Reinkemeyer of the MDNR to Mr. Vince Jones of Maryon Industries, Inc.

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

March 9, 1995

ESP FILE NO.
LU#3874

Mr. Vince Jones
Marion Industries, inc.
150 Weldon Parkway
Maryland Heights, MO 63043

Dear Mr. Jones:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources has received and reviewed the Schreiber, Grana & Yonley Report dated February 7, 1995. The LUST Unit looks forward to receiving and reviewing your free product recovery reports in the near future.

Please submit, within 45 days from receipt of this letter, a site characterization ~~plan~~ results for this site.

If you have any questions, please do not hesitate to contact Dave Bellamy at the Leaking Underground Storage Tank Unit at 314/526-3379 or 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:dbj

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. B. Whitaker, Westlake Companies, 12976 St. Charles Rock Road, Bridgeton, MO 63044

RECYCLED PAPER

March 21, 1995 Free Product Recovery Report,
February 1995

SCHREIBER GRANA & YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

APR 7 1995
COPY

March 21, 1995

Mr. Dave Bellamy
Missouri Department of Natural Resources
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, Missouri 65102

RE: Maryon Industries, Inc.
Westlake Site
Bridgeton, Missouri
MDNR ESP File No. LU3874

Dear Mr. Bellamy:

Enclosed is a copy of the Free Product Recovery Report for February 1995. This report, prepared on behalf of Maryon Industries, Inc., provides a summary of the product recovery activities conducted during the month of February in 1995.

Please contact the undersigned at 314-349-8399 to discuss any comments you may have. We look forward to hearing from you regarding this site.

Sincerely,

SCHREIBER, GRANA & YONLEY, INC.

Edward A. Shepard, Jr.
Associate Engineer

EAS/cef/ccp

Encl.

MII02\MII02FP.RPT

COPY

FREE PRODUCT RECOVERY REPORT
FEBRUARY 1995

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

MDNR ESP FILE NO. LU3874

March 21, 1995

PREPARED FOR:

MR. DAVE BELLAMY
MISSOURI DEPARTMENT OF NATURAL RESOURCES
LEAKING UNDERGROUND STORAGE TANK UNIT
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102

PREPARED BY:

SCHREIBER, GRANA & YONLEY, INC.
271 WOLFNER DRIVE
ST. LOUIS, MISSOURI 63026

1.0 INTRODUCTION

COPY

At the request of Maryon Industries, Inc., Schreiber, Grana & Yonley, Inc. has initiated free product recovery for the Maryon Industries, Inc. facility (Westlake Asphalt Plant) located at the Westlake Quarry & Material Company facility in Bridgeton, Missouri. The product recovery is associated with a former 10,000-gallon diesel underground storage tank (UST).

During a previous Subsurface Environmental Site Investigation, four (4) groundwater monitoring wells were advanced and installed on the site near the former UST. These monitoring wells were designated MW-1A through MW-4A. Monitoring well MW-1A was found to have diesel fuel in a free-phase state.

Figure 1 depicts the subject site and shows the approximate locations of the former UST and the groundwater monitoring wells.

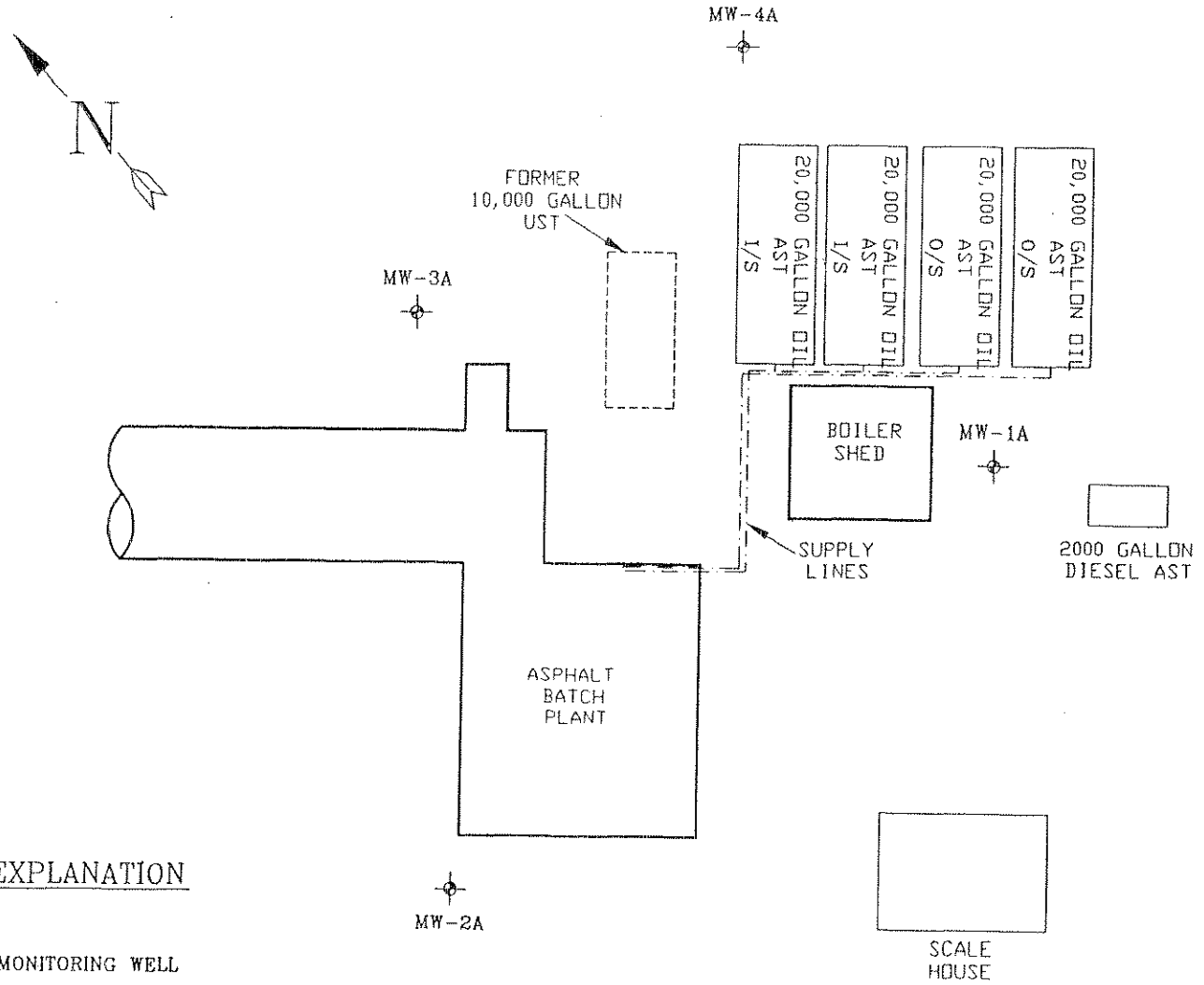
2.0 METHODS OF RECOVERY

Schreiber, Grana & Yonley, Inc. is currently utilizing a HORNER EZY SKIMMER, distributed by Horner Creative Products, Inc. to recover product. This method of product recovery consists of suspending a skimmer tube in the well. The skimmer tube has a screen at the top which allows petroleum product to flow into the skimmer, but retards water from entering. The petroleum is collected in the tube and is emptied through a drain in the bottom of the skimmer.

Maryon Industries, Inc. personnel empty the contents of the skimmer into a drum on-site on a regular basis. The amount of product in the skimmer is measured and recorded along with the date and time. In the month of February, approximately 0.550 gallons of product were recovered. In the previous month (January 1995) 1.037 gallons of product were recovered.

Table 1 contains a product recovery summary for the month of February 1995.

It should be noted that there is not product recovery data for every day, due to weekends and other days the plant is closed.



EXPLANATION

⌖	MONITORING WELL
AST	ABOVEGROUND STORAGE TANK
I/S	IN SERVICE
O/S	OUT OF SERVICE
UST	UNDERGROUND STORAGE TANK

MONITORING WELL LOCATION MAP

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

FIGURE 1

SCALE:
1"=20'

DWG.#
MI101-1

SCHREIBER
GRANA
& YONLEY
INCORPORATED
ENVIRONMENTAL ENGINEERS

COPY

TABLE 1

COPY

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

FREE PRODUCT RECOVERY

DATE	AM RECOVERY	PM RECOVERY	DAILY TOTAL
2/1/95	0.040	0.009	0.049
2/2/95	0.022	0.005	0.027
2/3/95	0.013	0.012	0.025
2/6/95	0.070	0.012	0.082
2/7/95	0.032	0.008	0.040
2/8/95	0.017	0.008	0.025
2/9/95	0.023	0.010	0.033
2/10/95	0.023	0.007	0.030
2/13/95	0.053	0.007	0.060
2/14/95	0.018	0.010	0.028
2/15/95	0.016	-----	0.016
2/16/95	0.010	0.007	0.017
2/17/95	0.010	0.005	0.015
2/20/95	0.040	0.003	0.043
2/21/95	0.007	0.002	0.009
2/22/95	0.009	0.002	0.011
2/23/95	0.007	0.002	0.009
2/24/95	0.007	0.007	0.014
2/27/95	0.017	-----	0.017
		FEBRUARY TOTAL	0.550

NOTES: Measurements in gallons
----- denotes recovery not performed

May 1, 1995 Free Product Recovery Report,
March 1995

SCHREIBER GRANA & YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

RECEIVED MAY 8 1995 COPY

May 1, 1995

Mr. Dave Bellamy
Missouri Department of Natural Resources
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, Missouri 65102

RE: Maryon Industries, Inc.
Westlake Site
Bridgeton, Missouri
MDNR ESP File No. LU3874

Dear Mr. Bellamy:

Enclosed is a copy of the Free Product Recovery Report for March 1995. This report, prepared on behalf of Maryon Industries, Inc., provides a summary of the product recovery activities conducted during the month of March in 1995.

Please contact the undersigned at 314-349-8399 to discuss any comments you may have. We look forward to hearing from you regarding this site.

Sincerely,

SCHREIBER, GRANA & YONLEY, INC.

Edward A. Shepard, Jr.
Associate Engineer

EAS/cef/ccp

Encl.

cc: Vince Jones - Maryon Industries, Inc.
William Whitaker - Westlake Companies

X:\MII02\MII02FP2.RPT

RECEIVED
MAY 10 1995
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FREE PRODUCT RECOVERY REPORT
MARCH 1995

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

MDNR ESP FILE NO. LU3874

May 1, 1995

PREPARED FOR:

MR. DAVE BELLAMY
MISSOURI DEPARTMENT OF NATURAL RESOURCES
LEAKING UNDERGROUND STORAGE TANK UNIT
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102

PREPARED BY:

SCHREIBER, GRANA & YONLEY, INC.
271 WOLFNER DRIVE
ST. LOUIS, MISSOURI 63026

1.0 INTRODUCTION

COPY

At the request of Maryon Industries, Inc., Schreiber, Grana & Yonley, Inc. has initiated free product recovery for the Maryon Industries, Inc. facility (Westlake Asphalt Plant) located at the Westlake Quarry & Material Company facility in Bridgeton, Missouri. The product recovery is associated with a former 10,000-gallon diesel underground storage tank (UST).

During previous Subsurface Environmental Site Investigation activities, five (5) groundwater monitoring wells were advanced and installed on the site near the former UST. These monitoring wells were designated MW-1A through MW-5A. Monitoring well MW-1A was found to have diesel fuel in a free-phase state.

Figure 1 depicts the subject site and shows the approximate locations of the former UST and the groundwater monitoring wells.

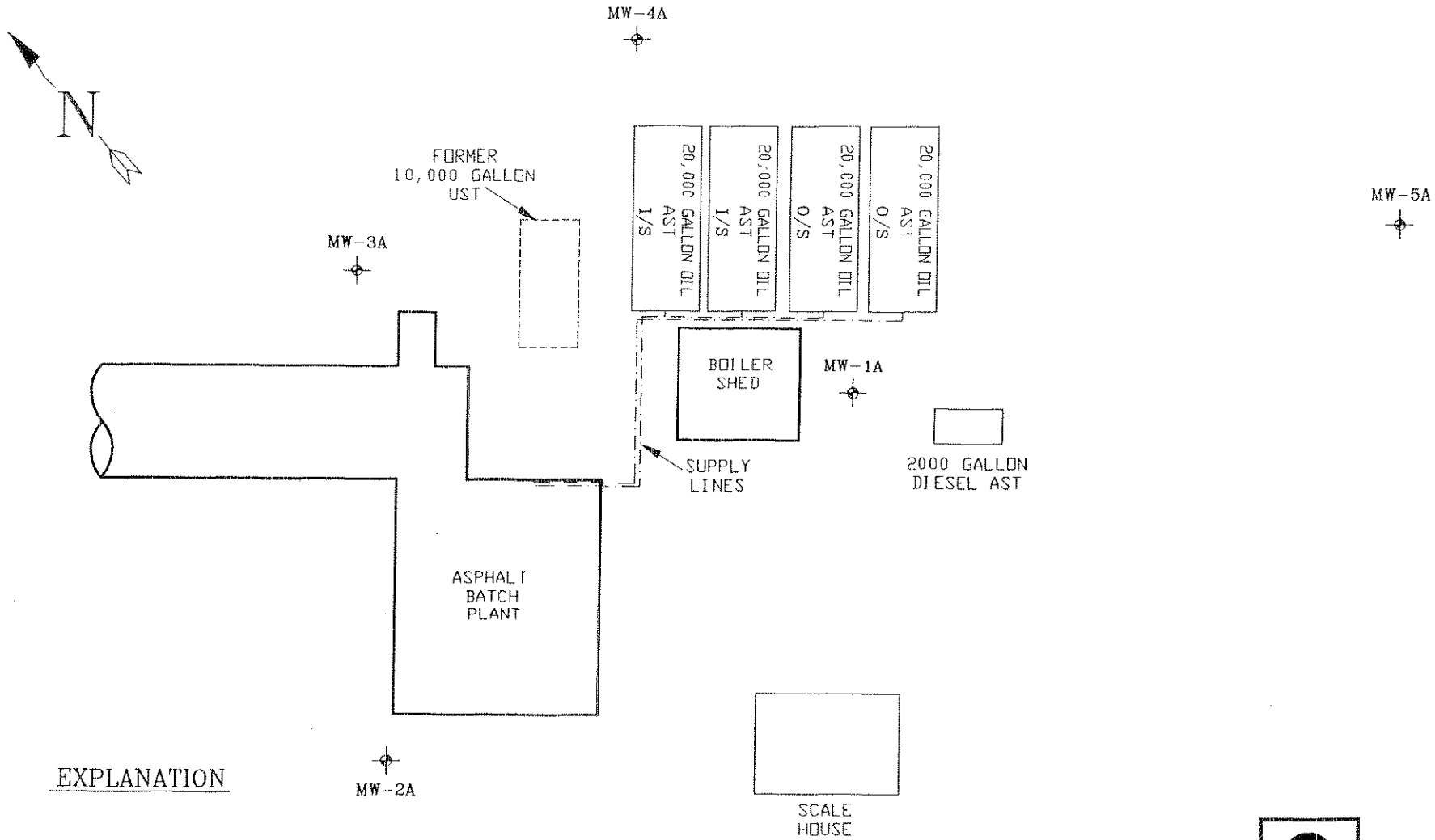
2.0 METHODS OF RECOVERY

Schreiber, Grana & Yonley, Inc. is currently utilizing a HORNER EZY SKIMMER, distributed by Horner Creative Products, Inc. to recover product. This method of product recovery consists of suspending a skimmer tube in the well. The skimmer tube has a screen at the top which allows petroleum product to flow into the skimmer, but retards water from entering. The petroleum is collected in the tube and is emptied through a drain in the bottom of the skimmer.

Maryon Industries, Inc. personnel empty the contents of the skimmer into a drum on-site on a regular basis. The amount of product in the skimmer is measured and recorded along with the date and time. In the month of March, approximately 0.154 gallons of product were recovered. In the previous month (February 1995) 0.550 gallons of product were recovered.

Table 1 contains a product recovery summary for the month of March 1995.

It should be noted that there is not product recovery data for every day, due to weekends and other days the plant is closed. Several days during the month of March, workers were not present due to repairs being performed on the facility.



EXPLANATION

⌖	MONITORING WELL
AST	ABOVEGROUND STORAGE TANK
I/S	IN SERVICE
O/S	OUT OF SERVICE
UST	UNDERGROUND STORAGE TANK

MONITORING WELL LOCATION MAP

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

FIGURE 1

SCALE:
1"=20'

DWG.#
MI101-1

SCHREIBER
GRANA
& YONLEY
INCORPORATED
ENVIRONMENTAL ENGINEERS

COPY

TABLE 1

COPY

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

FREE PRODUCT RECOVERY

DATE	AM RECOVERY	PM RECOVERY	DAILY TOTAL
2/28/95	0.010	-----	0.010
3/13/95	0.047	0.002	0.049
3/14/95	-----	0.013	0.013
3/17/95	-----	0.035	0.035
3/20/95	0.025	-----	0.025
3/21/95	-----	0.007	0.007
3/24/95	0.008	-----	0.008
3/27/95	0.007	-----	0.007
		MARCH TOTAL	0.154

NOTES: Measurements in gallons
----- denotes recovery not performed

May 17, 1995 Letter from Mr. Alan Reinkemeyer of the MDNR to Mr. Vince Jones of Marion (sic) Industries, Inc.

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

May 17, 1995

ESP FILE NO.
LU#3874

Mr. Vince Jones
Marion Industries, Inc.
150 Weldon Parkway
Maryland Heights, MO 63043

Dear Mr. Jones:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources (MDNR) has received and reviewed the Schreiber, Grana, & Yonley, Inc. Free Product Recovery Report for February, dated March 21, 1995. Please note that in the MDNR letter dated March 9, 1995, a site characterization plan was requested. It is requested that this document be provided to the LUST Unit for the above site within 30 days.

If you have any questions, please do not hesitate to contact Steve Johnston at the Leaking Underground Storage Tank Unit at 314/526-6023 or 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:sjj

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. B. Whitaker, Westlake Companies, 12976 St. Charles Rock Road, Bridgeton, MO 63044
Mr. Ed Shepard, Schreiber, Grana, & Yonley, Inc., 271 Wolfner Drive, St. Louis, MO 63026

RECYCLED PAPER

June 6, 1995 Free Product Recovery Report
April 1995

SCHREIBER GRANA & YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

COPY

June 6, 1995

Mr. Dave Bellamy
Missouri Department of Natural Resources
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, Missouri 65102

RE: Maryon Industries, Inc.
Westlake Site
Bridgeton, Missouri
MDNR ESP File No. LU3874

Dear Mr. Bellamy:

Enclosed is a copy of the Free Product Recovery Report for April 1995. This report, prepared on behalf of Maryon Industries, Inc., provides a summary of the product recovery activities conducted during the month of April in 1995.

Please contact the undersigned at 314-349-8399 to discuss any comments you may have. We look forward to hearing from you regarding this site.

Sincerely,

SCHREIBER, GRANA & YONLEY, INC.

Edward A. Shepard, Jr.
Associate Engineer

EAS/cef/ccp

Encl.

cc: Vince Jones - Maryon Industries, Inc.
William Whitaker - Westlake Companies

MI02\APR95.RPT

COPY

FREE PRODUCT RECOVERY REPORT
APRIL 1995

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

MDNR ESP FILE NO. LU3874

June 6, 1995

PREPARED FOR:

MR. DAVE BELLAMY
MISSOURI DEPARTMENT OF NATURAL RESOURCES
LEAKING UNDERGROUND STORAGE TANK UNIT
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102

PREPARED BY:

SCHREIBER, GRANA & YONLEY, INC.
271 WOLFNER DRIVE
ST. LOUIS, MISSOURI 63026

1.0 INTRODUCTION

COPY

At the request of Maryon Industries, Inc., Schreiber, Grana & Yonley, Inc. has initiated free product recovery for the Maryon Industries, Inc. facility (Westlake Asphalt Plant) located at the Westlake Quarry & Material Company facility in Bridgeton, Missouri. The product recovery is associated with a former 10,000-gallon diesel underground storage tank (UST).

During previous Subsurface Environmental Site Investigation activities, five (5) groundwater monitoring wells were advanced and installed on the site near the former UST. These monitoring wells were designated MW-1A through MW-5A. Monitoring well MW-1A was found to have diesel fuel in a free-phase state.

Figure 1 depicts the subject site and shows the approximate locations of the former UST and the groundwater monitoring wells.

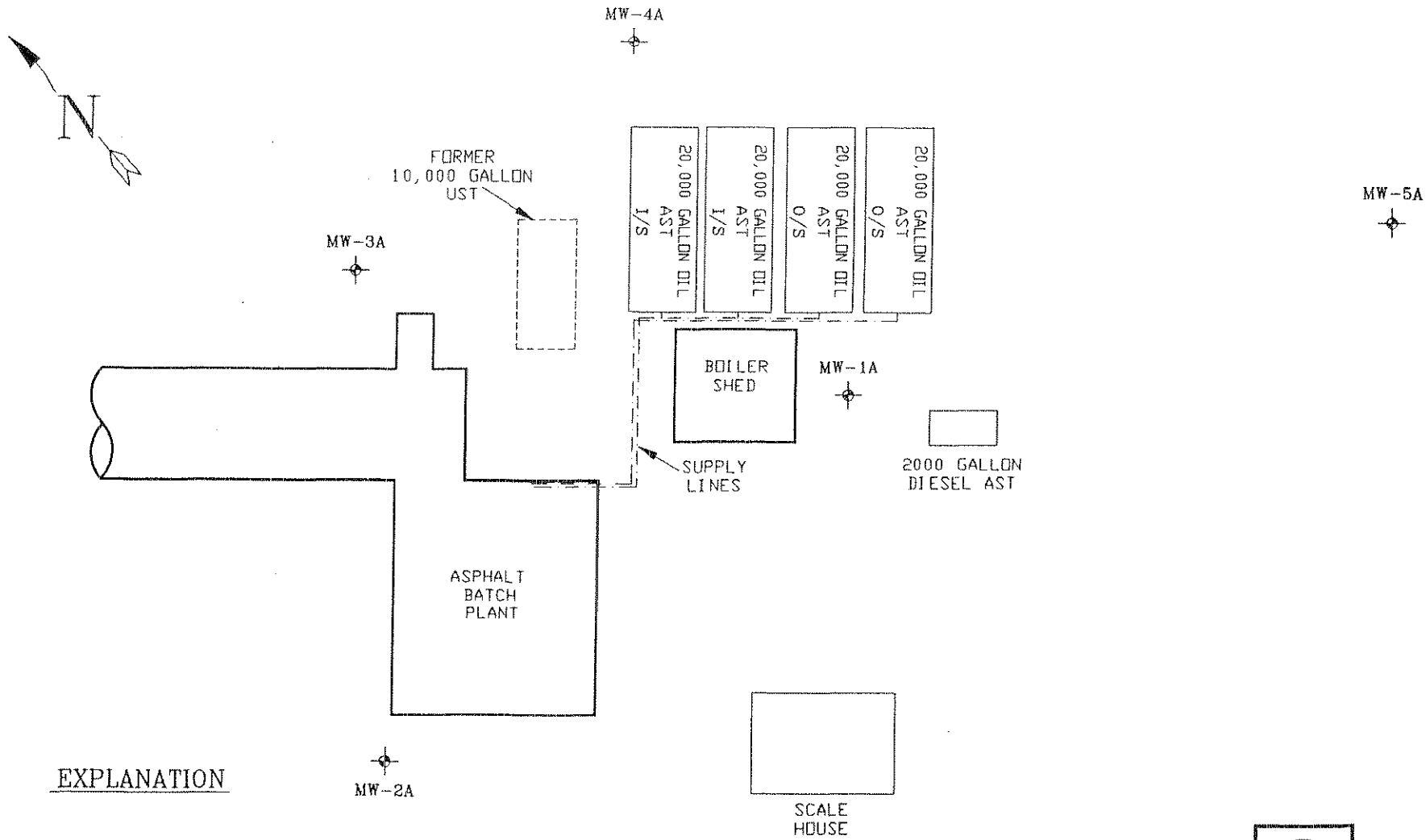
2.0 METHODS OF RECOVERY

Schreiber, Grana & Yonley, Inc. is currently utilizing a HORNER EZY SKIMMER, distributed by Horner Creative Products, Inc. to recover product. This method of product recovery consists of suspending a skimmer tube in the well. The skimmer tube has a screen at the top which allows petroleum product to flow into the skimmer, but retards water from entering. The petroleum is collected in the tube and is emptied through a drain in the bottom of the skimmer.

Maryon Industries, Inc. personnel empty the contents of the skimmer into a drum on-site on a regular basis. The amount of product in the skimmer is measured and recorded along with the date and time. In the month of April, approximately 0.085 gallons of product were recovered. In the previous month (March 1995) 0.154 gallons of product were recovered.

Table 1 contains a product recovery summary for the month of April 1995.

It should be noted that there is not product recovery data for every day, due to weekends and other days the plant is closed. Several days during the month of April, workers were not present due to repairs being performed on the facility.



EXPLANATION

⌖	MONITORING WELL
AST	ABOVEGROUND STORAGE TANK
I/S	IN SERVICE
O/S	OUT OF SERVICE
UST	UNDERGROUND STORAGE TANK

MONITORING WELL LOCATION MAP

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

FIGURE 1

SCALE:
1"=20'

DWG.#
MI101-1

SCHREIBER
GRANA
& YONLEY
INCORPORATED
ENVIRONMENTAL ENGINEERS

COPY

TABLE 1

COPY

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

FREE PRODUCT RECOVERY

DATE	AM RECOVERY	PM RECOVERY	DAILY TOTAL
04/03/95	0.020	--	0.020
04/05/95	0.005	--	0.005
04/07/95	--	0.011	0.011
04/10/95	0.007	--	0.007
04/14/95	--	0.007	0.007
04/21/95	0.015	--	0.015
04/28/95	0.020	--	0.020
		APRIL TOTAL	0.085

NOTES: Measurements in gallons
-- denotes recovery not performed

June 7, 1995 Free Product Recovery Report,
May 1995

SCHREIBER GRANA & YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive ▪ Saint Louis, Missouri 63026
314/349-8399 ▪ Fax 314/349-8384

COPY

June 7, 1995

Mr. Dave Bellamy
Missouri Department of Natural Resources
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, Missouri 65102

RE: Maryon Industries, Inc.
Westlake Site
Bridgeton, Missouri
MDNR ESP File No. LU3874

Dear Mr. Bellamy:

Enclosed is a copy of the Free Product Recovery Report for May 1995. This report, prepared on behalf of Maryon Industries, Inc., provides a summary of the product recovery activities conducted during the month of May in 1995.

Please contact the undersigned at 314-349-8399 to discuss any comments you may have. We look forward to hearing from you regarding this site.

Sincerely,

SCHREIBER, GRANA & YONLEY, INC.

Edward A. Shepard, Jr.
Associate Engineer

EAS/cef/ccp

Encl.

cc: Vince Jones - Maryon Industries, Inc.
William Whitaker - Westlake Companies

MI02\MAY95.RPT

COPY

FREE PRODUCT RECOVERY REPORT
MAY 1995

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

MDNR ESP FILE NO. LU3874

June 7, 1995

PREPARED FOR:

MR. DAVE BELLAMY
MISSOURI DEPARTMENT OF NATURAL RESOURCES
LEAKING UNDERGROUND STORAGE TANK UNIT
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102

PREPARED BY:

SCHREIBER, GRANA & YONLEY, INC.
271 WOLFNER DRIVE
ST. LOUIS, MISSOURI 63026

1.0 INTRODUCTION

COPY

At the request of Maryon Industries, Inc., Schreiber, Grana & Yonley, Inc. has initiated free product recovery for the Maryon Industries, Inc. facility (Westlake Asphalt Plant) located at the Westlake Quarry & Material Company facility in Bridgeton, Missouri. The product recovery is associated with a former 10,000-gallon diesel underground storage tank (UST).

During previous Subsurface Environmental Site Investigation activities, five (5) groundwater monitoring wells were advanced and installed on the site near the former UST. These monitoring wells were designated MW-1A through MW-5A. Monitoring well MW-1A was found to have diesel fuel in a free-phase state.

Figure 1 depicts the subject site and shows the approximate locations of the former UST and the groundwater monitoring wells.

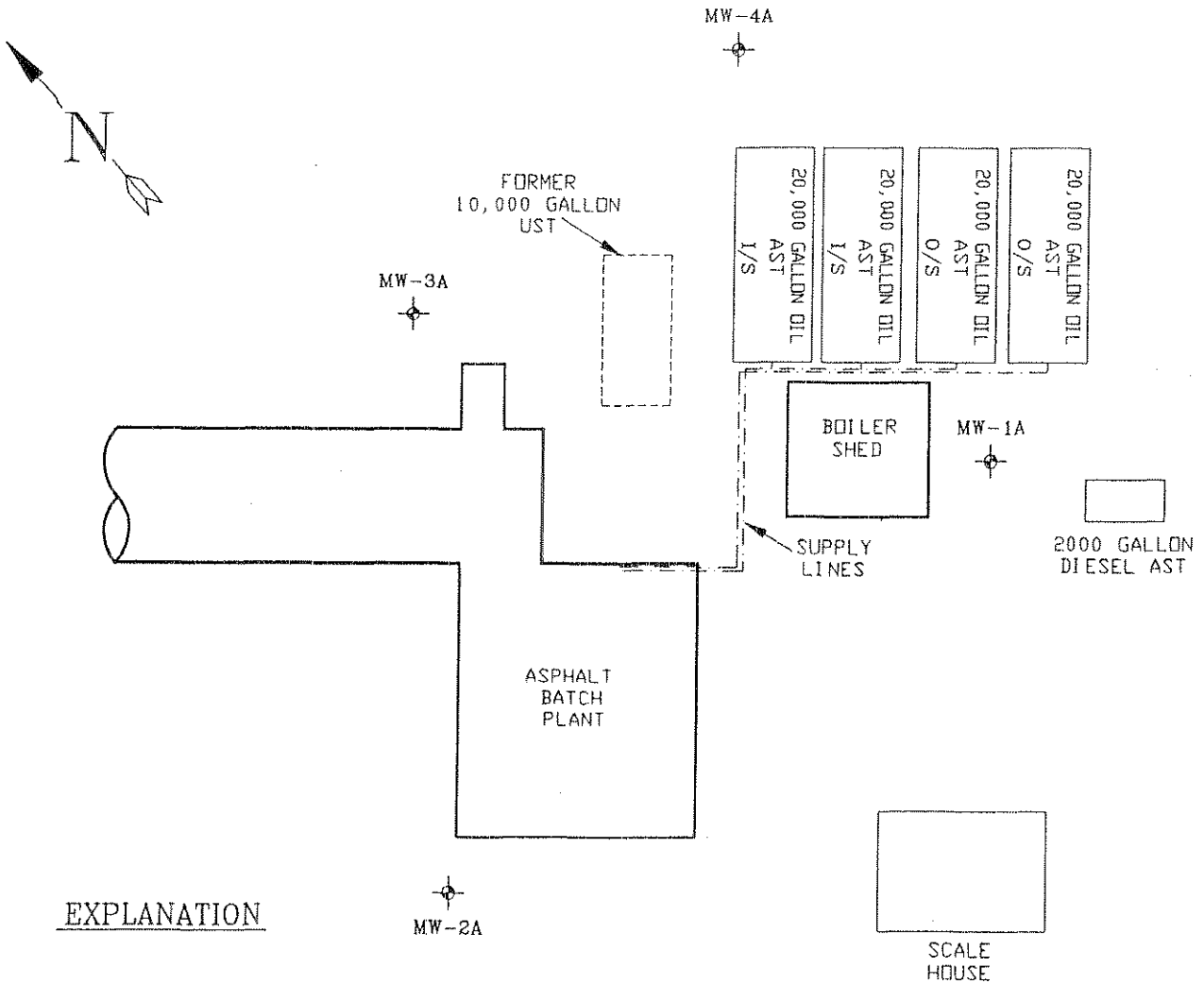
2.0 METHODS OF RECOVERY

Schreiber, Grana & Yonley, Inc. is currently utilizing a HORNER EZY SKIMMER®, distributed by Horner Creative Products, Inc., to recover product. This method of product recovery consists of suspending a skimmer tube in the well. The skimmer tube has a screen at the top which allows petroleum product to flow into the skimmer, but retards water from entering. The petroleum is collected in the tube and is emptied through a drain in the bottom of the skimmer.

Maryon Industries, Inc. personnel empty the contents of the skimmer into a drum located on-site on a regular basis. The amount of product in the skimmer is measured and recorded along with the date and time. In the month of May, approximately 0.302 gallons of product were recovered. In the previous month (April 1995), 0.085 gallons of product were recovered.

Table 1 contains a product recovery summary for the month of May 1995.

It should be noted that there is not product recovery data for every day, due to weekends and other days the plant is closed. Several days during the month of May, workers were not present due to repairs being performed on the facility.



EXPLANATION

⌖	MONITORING WELL
AST	ABOVEGROUND STORAGE TANK
I/S	IN SERVICE
O/S	OUT OF SERVICE
UST	UNDERGROUND STORAGE TANK

MONITORING WELL LOCATION MAP

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

FIGURE 1

SCALE:
1"=20'

DWG.#
MI101-1

SCHREIBER
GRANA
& YONLEY
INCORPORATED
ENVIRONMENTAL ENGINEERS

COPY

TABLE 1

COPY

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

FREE PRODUCT RECOVERY

DATE	AM RECOVERY	PM RECOVERY	DAILY TOTAL
05/05/95	0.060	--	0.060
05/12/95	0.042	--	0.042
05/19/95	--	0.090	0.090
05/26/95	0.080	--	0.080
05/30/95	--	0.030	0.030
		MAY TOTAL	0.302

NOTES: Measurements in gallons
-- denotes recovery not performed

June 21, 1995 Letter from Edward Shepard Jr. of
Schreiber, Grana & Yonley, Inc. to
Dave Bellamy of the MDNR

SCHREIBER GRANA & YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

RECEIVED
JUN 23 1995
COPY

June 21, 1995

Mr. Dave Bellamy
Missouri Department of Natural Resources
Environmental Services Program
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, MO 65102

RE: Maryon Industries, Inc.
Westlake Asphalt Plant
UST - #7 (MDNR #11)
Bridgeton, Missouri
LU #3874

Dear Mr. Bellamy:

At the request of Maryon Industries, Inc., Schreiber, Grana & Yonley, Inc. is submitting this letter to notify the Missouri Department of Natural Resources (MDNR) of the additional investigatory activities at the above-referenced site.

The investigatory activities were performed in accordance with the Schreiber, Grana & Yonley, Inc. "Subsurface Environmental Site Investigation Workplan" (Workplan) dated October 12, 1994. The Workplan was submitted to MDNR and was subsequently approved by MDNR on November 22, 1994.

On March 24, 1995, one (1) additional soil boring, MW-5A, was advanced/sampled to an approximate depth of 32.5' (see Attachment A for boring/monitoring well locations). Two (2) soil samples were collected and submitted to Specialized Assays Environmental, Nashville, Tennessee, for chemical analyses of benzene, toluene, ethylbenzene and xylenes (BTEX) in accordance with EPA Method 8020, and total petroleum hydrocarbons (TPH) in accordance with EPA Method 418.1 (see Attachment B for soil boring logs and well completion forms for MW-1A through MW-5, and Attachment C for a soil analytical results summary and map). Utilizing the MDNR "Leaking Underground Storage Tank Soil Cleanup Guidelines," it is anticipated that the cleanup objectives for BTEX will be 1/5/10/10 ppm, respectively, and TPH will be 200 ppm (see Attachment D for completed chart). The MDNR soil cleanup objective for TPH was exceeded in one (1) sample from MW-5A. Upon completion of the soil boring, a monitoring well was installed. Additional information pertaining to monitoring wells MW-1A through MW-4A was previously submitted to MDNR in a letter dated January 11, 1995.

COPY

Following installation, monitoring well MW-5A was gauged, developed and sampled. Monitoring wells MW-1A through MW-4A were also gauged and sampled. Data gathered from the gauging events was utilized to determine the amount of water to be evacuated from the monitoring wells for the development and sampling events, and to estimate the groundwater flow direction (see Attachment E for a groundwater elevation map). One (1) groundwater sample per monitoring well was collected and submitted to Specialized Assays Environmental, Nashville, Tennessee, for chemical analyses of BTEX in accordance with EPA Method 8020, and TPH in accordance with EPA Method 418.1 (see Attachment F for a groundwater analytical results summary and map). Utilizing the MDNR "Underground Storage Tank Closure Guidance Document," dated January 1992, it was determined that non-potable groundwater cleanup objectives for BTEX are .050/.150/.320/.320 ppm, respectively; total BTEX is .750 ppm; and TPH is 10 ppm. The cleanup objective for TPH was exceeded in the samples collected from MW-1A and MW-4A.

Should you have any questions or comments, please do not hesitate to contact me at (314)349-8399. Thank you for your time regarding this matter.

Sincerely,

SCHREIBER, GRANA & YONLEY, INC.

Edward A. Shepard, Jr.
Associate Engineer

EAS/ccp

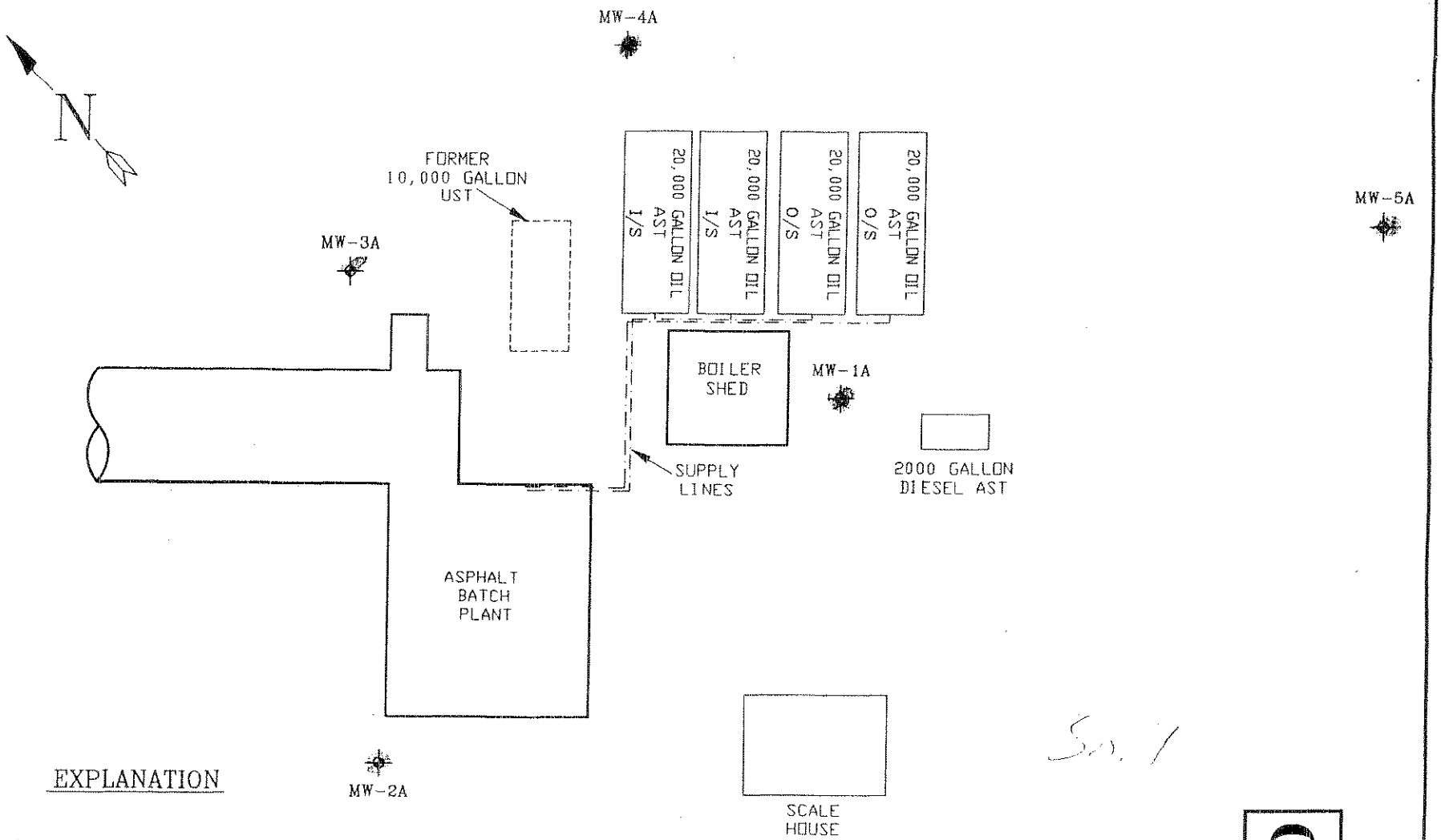
Encl.

mii\953483\summary.ltr

ATTACHMENT A

BORING/MONITORING WELL LOCATION MAP

COPY



EXPLANATION

⌖	MONITORING WELL
AST	ABOVEGROUND STORAGE TANK
I/S	IN SERVICE
O/S	OUT OF SERVICE
UST	UNDERGROUND STORAGE TANK

MONITORING WELL LOCATION MAP

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

ATTACHMENT A

SCALE:
1"=20'

DWG.#
MI101-1

SCHRAMBER
GRANA
& YONLEY
INCORPORATED
ENVIRONMENTAL ENGINEERS

COPY

ATTACHMENT B

SOIL BORING LOGS AND
MONITORING WELL COMPLETION FORMS

COPY

LOG OF TEST BORING

Client: Maryon Industries, Inc.	Project No.: MII02	Boring No.: MW-1A
Project: Westlake Asphalt Plant Site		Page No.: 1 of 2
Location: Bridgeton, Missouri	Start Date: 10/31/94	COPY
Surface Elev: / Casing Elev:	Completion Date: 10/31/94	
Drilling Contractor: Roberts Environmental Drilling, Inc.	Sample Method(s): Split Spoon	
Drilling Rig: CME-55	Hole Diameter(s):8.25"	Total Depth: 35'
Initial Water Level:	Inspector(s): EAS	
Static Water Level:		

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-1		100	0	Rock Fill	Dry	GW
-2							
-	SS-2		100	0	s.a.a.	Dry	GW
-4							
-	SS-3		100	103	Greenish gray silty CLAY w/varying amounts of rock, medium-stiff	Damp	CL
-	SS-4		100	57.3	s.a.a.	Damp	CL
-8							
-	SS-5		10	44.1	s.a.a.	Damp	CL
-10							
-	SS-6		60	23.4	Gray clayey SILT w/varying amounts of rock, medium-stiff, petroleum odor	Damp	ML
-12							
-	SS-7		50	122	s.a.a.	Damp	ML
-14							
-	SS-8		75	270	s.a.a., strong petroleum odor, sample #1	Moist	ML
-16							
-	SS-9		75	65.7	s.a.a.	Damp	ML
-18							
-	SS-10		100	1.5	Brown clayey SILT, medium	Damp	ML
-20							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above

LOG OF TEST BORING

Client: Maryon Industries, Inc.	Project No.: MII02	Boring No.: MW-1A
Project: Westlake Asphalt Plant Site		Page No.: 2 of 2
Location: Bridgeton, Missouri	Start Date: 10/31/94	COPY
Surface Elev: / Casing Elev:	Completion Date: 10/31/94	
Drilling Contractor: Roberts Environmental Drilling, Inc.	Sample Method(s): Split Spoon	
Drilling Rig: CME-55	Hole Diameter(s):8.25"	Total Depth: 35'
Initial Water Level:	Inspector(s): EAS	
Static Water Level:		

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-11		100	0	s.a.a.	Damp	ML
-22							
-	SS-12		100	0	Dark gray clayey SILT, medium	Damp	ML
-24							
-	SS-13		100	4.6	s.a.a.	Damp	ML
-	SS-14		100	15.4	s.a.a.	Moist	ML
-28							
-	SS-15		100	294	s.a.a., strong petroleum odor, sample #2	Wet	ML
-30							
-	SS-16		100	0	s.a.a., w/some sand	Wet	ML
-32							
-	SS-17		25	0	Dark gray silty SAND	Wet	SM
-34							
-					Boring terminated @ 35'		
-							
-							
-							
-							
-							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above

LOG OF TEST BORING

Client: Maryon Industries, Inc.	Project No.: MII02	Boring No.: MW-2A
Project: Westlake Asphalt Plant Site		Page No.: 1 of 2
Location: Bridgeton, Missouri	Start Date: 10/31/94	COPY
Surface Elev: Casing Elev:	Completion Date: 11/01/94	
Drilling Contractor: Roberts Environmental Drilling, Inc.	Sample Method(s): Split Spoon	
Drilling Rig: CME-55	Hole Diameter(s):8.25"	Total Depth: 35'
Initial Water Level:	Inspector(s): EAS	
Static Water Level:		

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-1		0	NA	Rock fill	Dry	GW
-2							
-	SS-2		0	NA	s.a.a.	Dry	GW
-4							
-	SS-3		75	0	Gray clayey SILT, medium	Moist	ML
-	SS-4		75	0	Brown silty SAND	Wet	SM
-8							
-	SS-5		0	NA	s.a.a.	--	--
-10							
-	SS-6		100	0	s.a.a.	Wet	SM
-12							
-	SS-7		50	0	s.a.a.	Wet	SM
-14							
-	SS-8		100	0	s.a.a.	Wet	SM
-16							
-	SS-9		10	0	s.a.a.	Wet	SM
-18							
-	SS-10		90	0	Dark gray clayey SILT, medium-still, sample #1	Moist	ML
-20							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above
NA - not analyzed

LOG OF TEST BORING

Client: Maryon Industries, Inc.	Project No.: MII02	Boring No.: MW-2A
Project: Westlake Asphalt Plant Site		Page No.: 2 of 2
Location: Bridgeton, Missouri	Start Date: 10/31/94	COPY
Surface Elev: / Casing Elev:	Completion Date: 11/01/94	
Drilling Contractor: Roberts Environmental Drilling, Inc.	Sample Method(s): Split Spoon	
Drilling Rig: CME-55	Hole Diameter(s):8.25"	Total Depth: 35'
Initial Water Level:	Inspector(s): EAS	
Static Water Level:		

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-11		90	0	s.a.a.	Damp	ML
-22							
-	SS-12		90	0	s.a.a.	Damp	ML
-24							
-	SS-13		100	0	s.a.a.	Damp	ML
-	SS-14		100	16.4	s.a.a., becoming sandy w/depth	Moist	ML
-28							
-	SS-15		100	0	Dark gray silty SAND, sample #2	Wet	SM
-30							
-	SS-16		50	0	s.a.a.	Wet	SM
-32							
-	SS-17		50	0	s.a.a., w/clay lumps	Wet	SM
-34							
-					Boring terminated @ 35'		
-							
-							
-							
-							
-							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above

LOG OF TEST BORING

Client: Maryon Industries, Inc.	Project No.: MII02	Boring No.: MW-3A
Project: Westlake Asphalt Plant Site		Page No.: 1 of 2
Location: Bridgeton, Missouri	Start Date: 11/01/94	COPY
Surface Elev: Casing Elev:	Completion Date: 11/01/94	
Drilling Contractor: Roberts Environmental Drilling, Inc.	Sample Method(s): Split Spoon	
Drilling Rig: CME-55	Hole Diameter(s):8.25"	Total Depth: 35'
Initial Water Level:	Inspector(s): EAS	
Static Water Level:		

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
- -2	SS-1		0	NA	Rock fill	Dry	GW
- -4	SS-2		0	NA	s.a.a.	Dry	GW
-	SS-3		0	NA	s.a.a.	Dry	GW
- -8	SS-4		25	0	Brown, gray silty CLAY w/varying amounts of rock, stiff	Dry	CL
- -10	SS-5		25	4.0	s.a.a.	Damp	CL
- -12	SS-6		60	3.2	s.a.a.	Damp	CL
- -14	SS-7		10	0	s.a.a.	Damp	CL
- -16	SS-8		90	3.5	Dark gray silty CLAY w/varying amounts of rock, stiff-very stiff	Damp	CL
- -18	SS-9		50	1.0	s.a.a.	Damp	CL
- -20	SS-10		100	2.4	s.a.a.	Damp	CL

Notes: MDU - Meter Deflection Units
s.a.a. - same as above
NA - not analyzed

LOG OF TEST BORING

Client: Maryon Industries, Inc.	Project No.: MII02	Boring No.: MW-3A
Project: Westlake Asphalt Plant Site		Page No.: 2 of 2
Location: Bridgeton, Missouri	Start Date: 11/01/94	COPY
Surface Elev: Casing Elev:	Completion Date: 11/01/94	
Drilling Contractor: Roberts Environmental Drilling, Inc.	Sample Method(s): Split Spoon	
Drilling Rig: CME-55	Hole Diameter(s):8.25"	Total Depth: 35'
Initial Water Level:	Inspector(s): EAS	
Static Water Level:		

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-11		100	1.1	s.a.a., sample #1	Damp	CL
-22							
-	SS-12		100	1.3	s.a.a.	Damp	CL
-24							
-	SS-13		100	15.6	Dark gray clayey SILT, medium-stiff	Moist	ML
-	SS-14		60	4.7	s.a.a.	Moist	ML
-28							
-	SS-15		75	0	Dark gray silty SAND	Wet	SM
-30							
-	SS-16		75	0	s.a.a.	Wet	SM
-32							
-	SS-17		10	0	s.a.a.	Wet	SM
-34							
-					Boring terminated @ 35'		
-							
-							
-							
-							
-							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above

LOG OF TEST BORING

Client: Maryon Industries, Inc.	Project No.: MII02	Boring No.: MW-4A
Project: Westlake Asphalt Plant Site		Page No.: 1 of 2
Location: Bridgeton, Missouri	Start Date: 11/02/94	COPY
Surface Elev: Casing Elev:	Completion Date: 11/02/94	
Drilling Contractor: Roberts Environmental Drilling, Inc.	Sample Method(s): Split Spoon	
Drilling Rig: CME-55	Hole Diameter(s):8.25"	Total Depth: 35'
Initial Water Level:	Inspector(s): EAS	
Static Water Level:		

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
- -2	SS-1		0	NA	Rock fill	Dry	GW
- -4	SS-2		0	NA	s.a.a.	Dry	GW
-	SS-3		0	NA	s.a.a.	Dry	GW
- -8	SS-4		10	0	s.a.a.	Damp	GW
- -10	SS-5		10	0	s.a.a.	Damp	GW
- -12	SS-6		60	0	Dark gray clayey SILT w/increasing amount of debris (wood, ash, etc.)	Moist	ML
- -14	SS-7		5	0	s.a.a.	Moist	ML
- -16	SS-8		50	0	s.a.a., approximately 10" piece of wood in spoon	Moist	ML
- -18	SS-9		40	0	Fill (appears to be wood) and debris	Wet	
- -20	SS-10		40	0	s.a.a.	Wet	

Notes: MDU - Meter Deflection Units
s.a.a. - same as above
NA - not analyzed

LOG OF TEST BORING

Client: Maryon Industries, Inc.	Project No.: MII02	Boring No.: MW-4A
Project: Westlake Asphalt Plant Site		Page No.: 2 of 2
Location: Bridgeton, Missouri	Start Date: 11/02/94	COPY
Surface Elev: / Casing Elev:	Completion Date: 11/02/94	
Drilling Contractor: Roberts Environmental Drilling, Inc.	Sample Method(s): Split Spoon	
Drilling Rig: CME-55	Hole Diameter(s):8.25"	Total Depth: 35'
Initial Water Level:	Inspector(s): EAS	
Static Water Level:		

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
- -22	SS-11		50	0	Dark gray clayey SILT becoming sandy w/depth, medium	Damp	ML
- -24	SS-12		100	0	s.a.a., sample #1	Damp	ML
-	SS-13		100	0	s.a.a.	Damp	ML
- -28	SS-14		80	0	s.a.a., larger amount of sand	Damp	ML
- -30	SS-15		100	0	Dark gray silty SAND	Moist	SM
- -32	SS-16		100	824	s.a.a., sample #2	Wet	SM
- -34	SS-17		50	0	s.a.a.	Wet	SM
-					Boring terminated @ 35'		
-							
-							
-							
-							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above

LOG OF TEST BORING

Client: Maryon Industries, Inc.	Project No.: MII02	Boring No.: MW-5A
Project: Westlake Asphalt Plant Site		Page No.: 1 of 2
Location: Bridgeton, Missouri	Start Date: 03/24/95	COPY
Surface Elev: Casing Elev:	Completion Date: 03/24/95	
Drilling Contractor: Roberts Environmental Drilling, Inc.	Sample Method(s): Split Spoon	
Drilling Rig: CME-55	Hole Diameter(s):8.25"	Total Depth: 32.5'
Initial Water Level:	Inspector(s): CEF	
Static Water Level:		

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
- -2	SS-1		0	0	Rock fill	Dry	GW
- -4	SS-2		20	4.6	s.a.a.	Dry	GW
-	SS-3		10	5.4	s.a.a.	Dry	GW
- -8	SS-4		60	19.9	Brown gray silty CLAY w/varying amounts of rock, stiff	Dry	CL
- -10	SS-5		70	7.5	s.a.a.	Dry	CL
- -12	SS-6		80	7.8	Gray, brown clayey SILT w/varying amounts of rock, stiff to very stiff	Damp	ML
- -14	SS-7		50	116	s.a.a., sample #1	Damp	ML
- -16	SS-8		60	17.0	s.a.a.	Damp	ML
- -18	SS-9		5	8.6	Brown gray silty CLAY w/varying amounts of rock, stiff	Damp	CL
- -20	SS-10		10	10.4	s.a.a.	Damp	CL

Notes: MDU - Meter Deflection Units
s.a.a. - same as above

LOG OF TEST BORING

Client: Maryon Industries, Inc.	Project No.: MII02	Boring No.: MW-5A
Project: Westlake Asphalt Plant Site		Page No.: 2 of 2
Location: Bridgeton, Missouri	Start Date: 03/24/95	COPY
Surface Elev: / Casing Elev:	Completion Date: 03/24/95	
Drilling Contractor: Roberts Environmental Drilling, Inc.	Sample Method(s): Split Spoon	
Drilling Rig: CME-55	Hole Diameter(s):8.25"	Total Depth: 32.5'
Initial Water Level:	Inspector(s): CEF	
Static Water Level:		

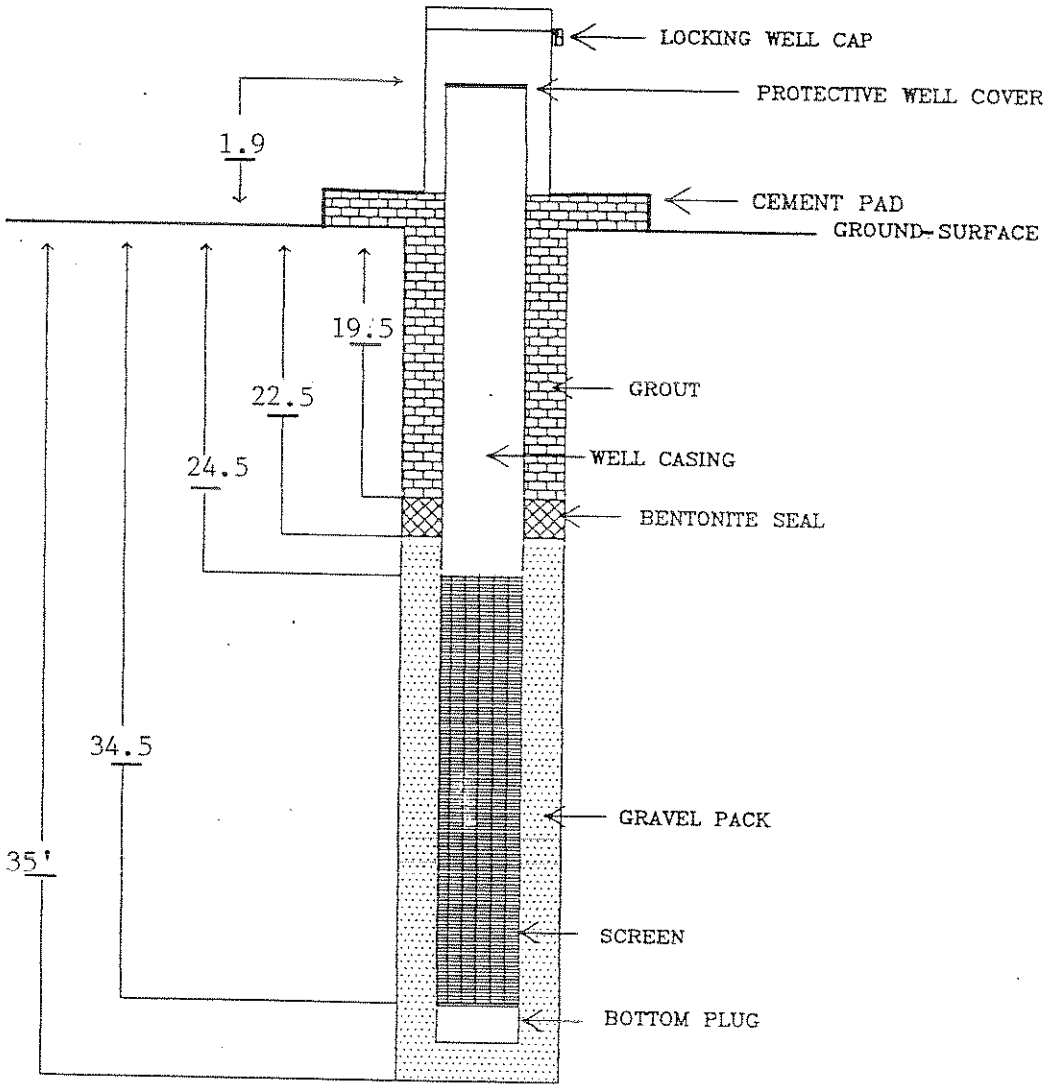
Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-11		30	9.7	s.a.a.	Damp	CL
-22							
-	SS-12		90	5.7	Dark gray clayey SILT, medium	Damp	ML
-24							
-	SS-13		90	2.8	s.a.a.	Damp	ML
-	SS-14		80	5.6	s.a.a., becoming sand	Moist	ML
-28							
-	SS-15		90	1.9	s.a.a.	Wet	ML
-30							
-	SS-16		80	3.2	Dark gray silty SAND	Wet	SM
-32					Boring terminated @ 32.5'		
-							
-							
-							
-							
-							
-							
-							
-							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above

SCHREIBER GRANA & YONLEY, INC.
WELL COMPLETION FORM

OJECT: Maryon Industries, Inc.	CONTRACTORS: Roberts Environmental Drilling
ADDRESS: 13570 St. Charles Rock Road	PROJECT MANAGER: EAS
SG&Y PROJECT #: MII02	DATE INSTALLED: 11/01/94
BORING #: MW-1A	ELEVATION – SURFACE: CASING: 100.34
CASING LENGTH: 26.4' DIAMETER: 2"	SCREEN LENGTH: 10' DIAMETER:
CASING MATERIAL: PVC	SCREEN MATERIAL: PVC
JOINT TYPE: Threaded	SCREEN TYPE: Slotted SIZE: .010"
FILTER PACK TYPE: Sand SIZE: WB-40	BENTONITE SEAL THICKNESS: 3'
WATER LEVEL BEFORE: 33.11 AFTER DEVELOPMENT	DEVELOPMENT METHOD: Hand Bail

COPY

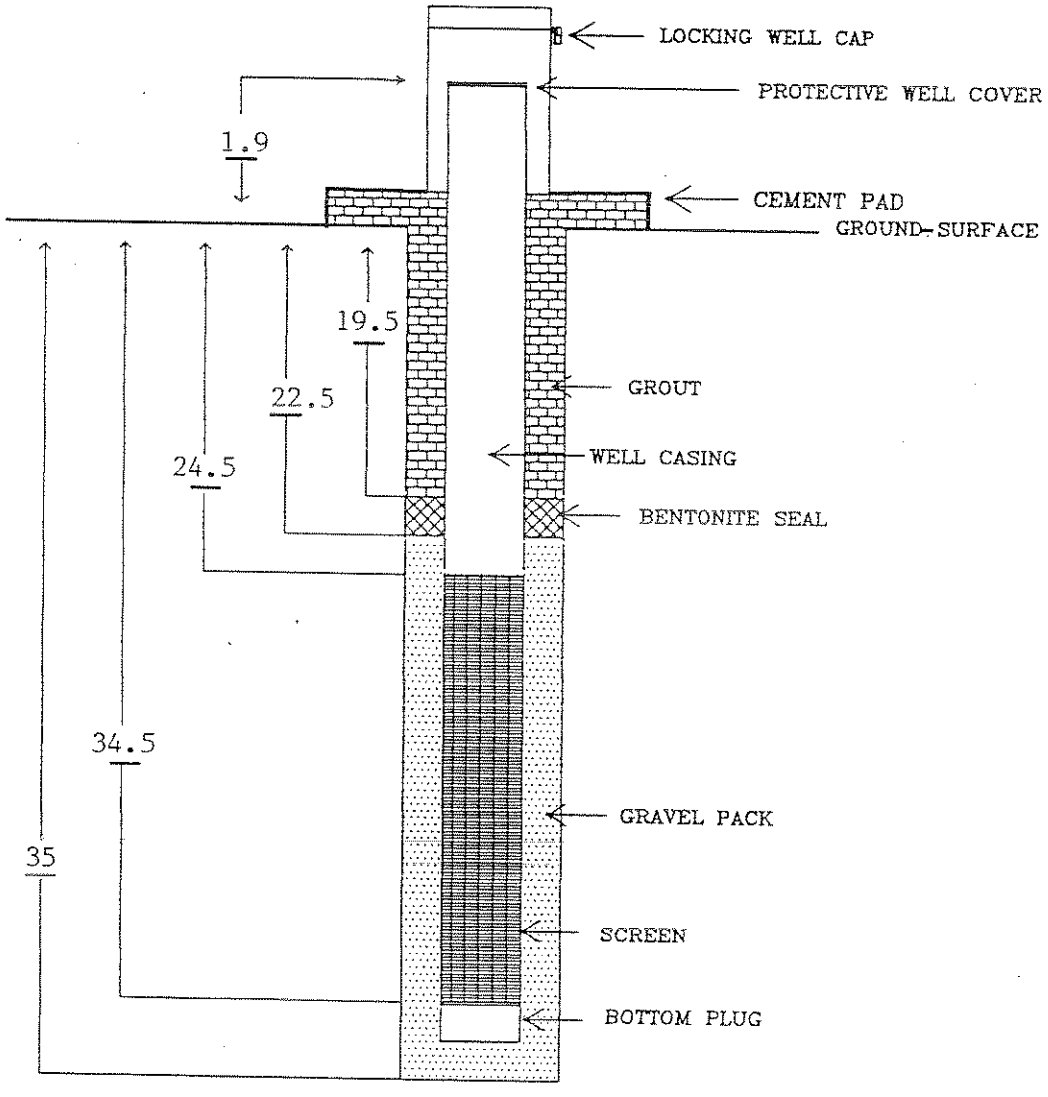


LOCATION In front of boiler building

SCHREIBER GRANA & YONLEY, INC.
WELL COMPLETION FORM

PROJECT: Maryon Industries, Inc.	CONTRACTORS: Roberts Environmental Drilling
ADDRESS: 13570 St. Charles Rock Road	PROJECT MANAGER: EAS
SG&Y PROJECT #: MII02	DATE INSTALLED: 11/01/94
BORING #: MW-2A	ELEVATION – SURFACE: CASING: 99.14
CASING LENGTH: 26.4 DIAMETER: 2"	SCREEN LENGTH: 10' DIAMETER:
CASING MATERIAL: PVC	SCREEN MATERIAL: PVC
JOINT TYPE: Threaded	SCREEN TYPE: Slotted SIZE: .010"
FILTER PACK TYPE: Sand SIZE: WB-40	BENTONITE SEAL THICKNESS: 3'
WATER LEVEL BEFORE: 33.11 AFTER DEVELOPMENT	DEVELOPMENT METHOD: Hand Bail

COPY

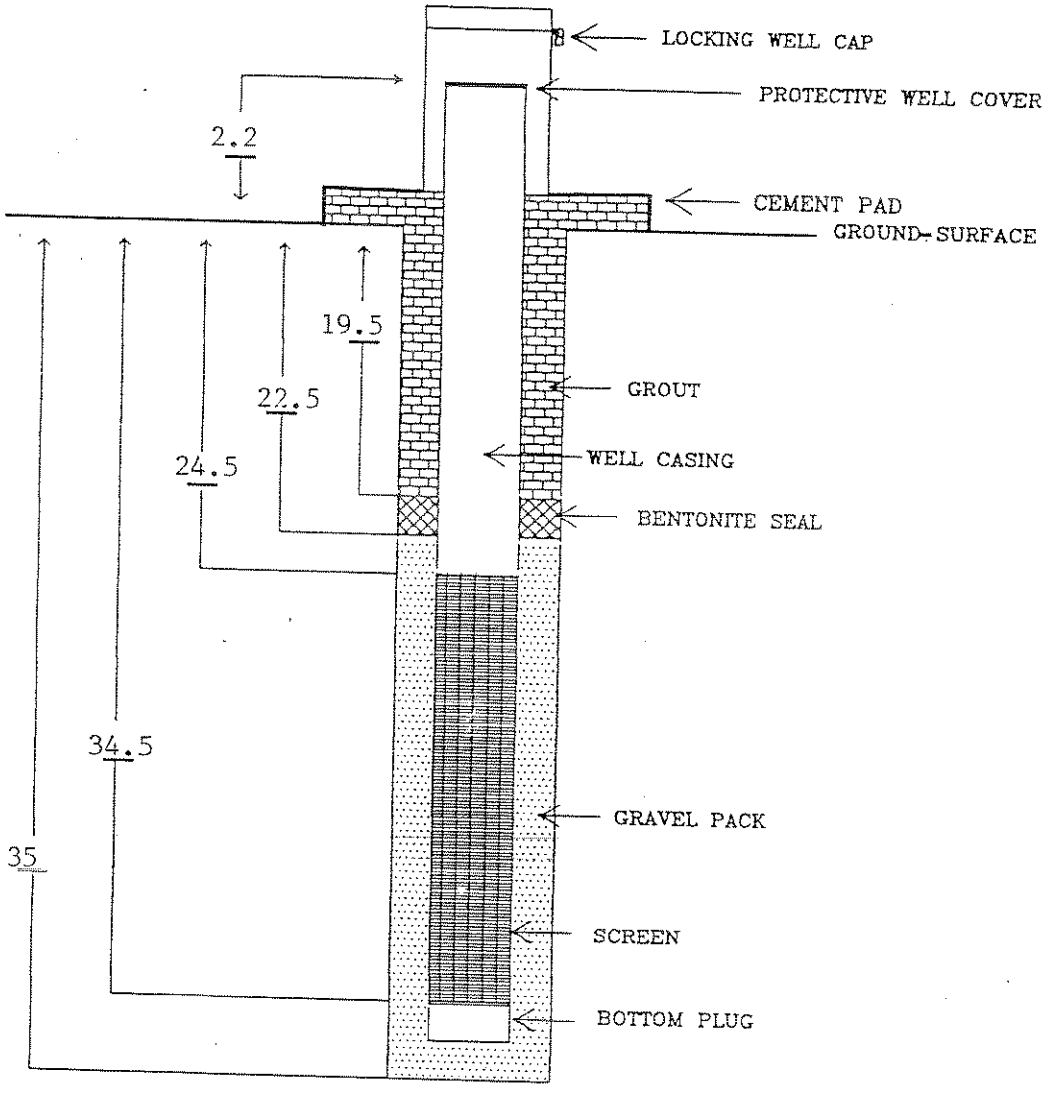


LOCATION Located at base of mineral filler bin

SCHREIBER GRANA & YONLEY, INC.
WELL COMPLETION FORM

JECT: Maryon Industries, Inc.	CONTRACTORS: Roberts Environmental Drilling
ADDRESS: 13570 St. Charles Rock Road	PROJECT MANAGER: EAS
SG&Y PROJECT #: MII02	DATE INSTALLED: 11/01/94
BORING #: MW-3A	ELEVATION – SURFACE: CASING: 99.31
CASING LENGTH: 26.7 DIAMETER: 2"	SCREEN LENGTH: 10' DIAMETER:
CASING MATERIAL: PVC	SCREEN MATERIAL: PVC
JOINT TYPE: Threaded	SCREEN TYPE: Slotted SIZE: .010"
FILTER PACK TYPE: Sand SIZE: WB-40	BENTONITE SEAL THICKNESS: 3'
WATER LEVEL BEFORE: 33.25 AFTER DEVELOPMENT	DEVELOPMENT METHOD: Hand Bail

COPY

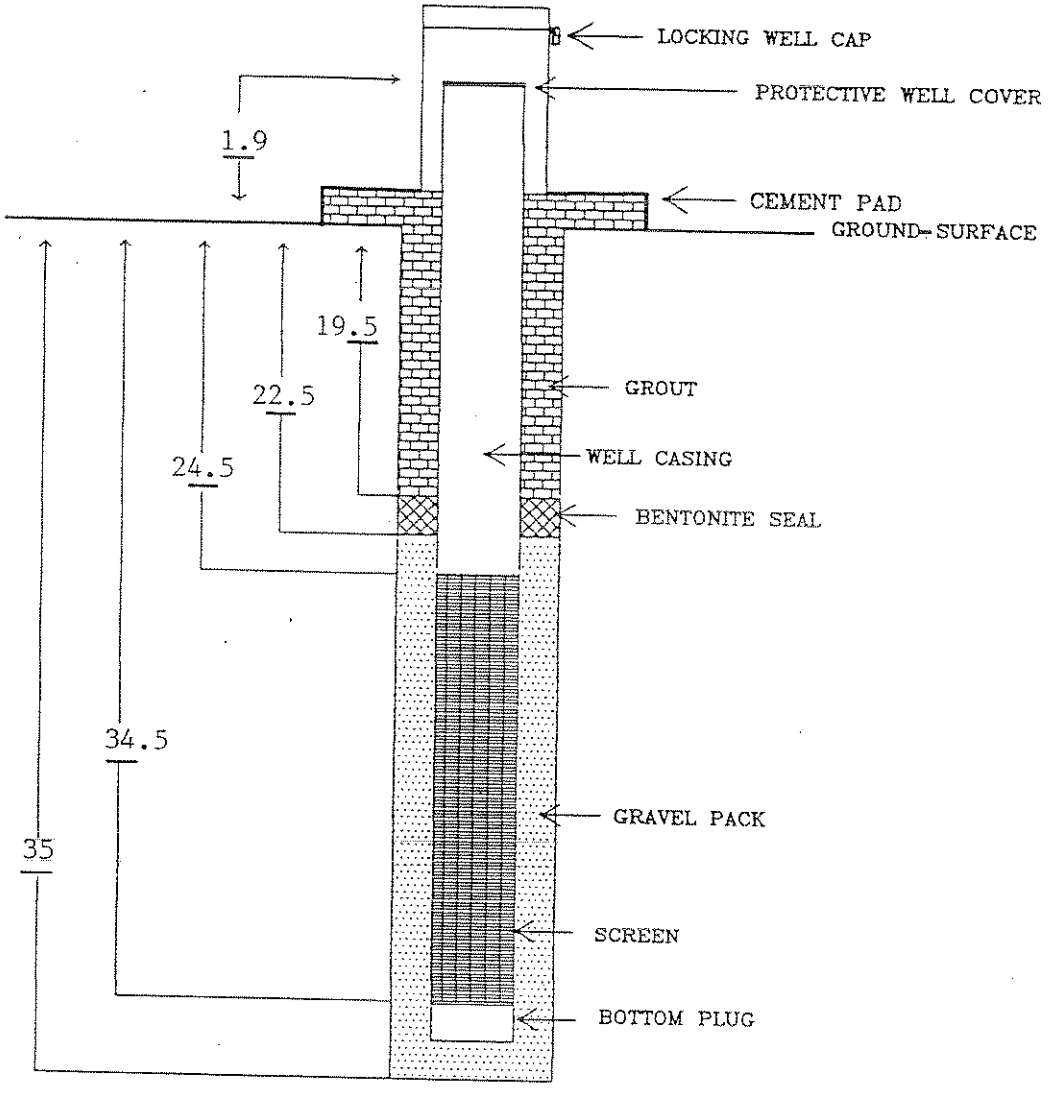


LOCATION Base of scrubber stack

SCHREIBER GRANA & YONLEY, INC.
WELL COMPLETION FORM

OJECT: Maryon Industries, Inc.	CONTRACTORS: Roberts Environmental Drilling
ADDRESS: 13570 St. Charles Rock Road	PROJECT MANAGER: EAS
SG&Y PROJECT #: MII02	DATE INSTALLED: 11/02/94
BORING #: MW-4A	ELEVATION – SURFACE: CASING: 100.0
CASING LENGTH: 26.4 DIAMETER: 2"	SCREEN LENGTH: 10' DIAMETER:
CASING MATERIAL: PVC	SCREEN MATERIAL: PVC
JOINT TYPE: Threaded	SCREEN TYPE: Slotted SIZE: .010"
FILTER PACK TYPE: Sand SIZE: WB-40	BENTONITE SEAL THICKNESS: 3'
WATER LEVEL BEFORE: 34.02 AFTER DEVELOPMENT	DEVELOPMENT METHOD: Hand Bail

COPY

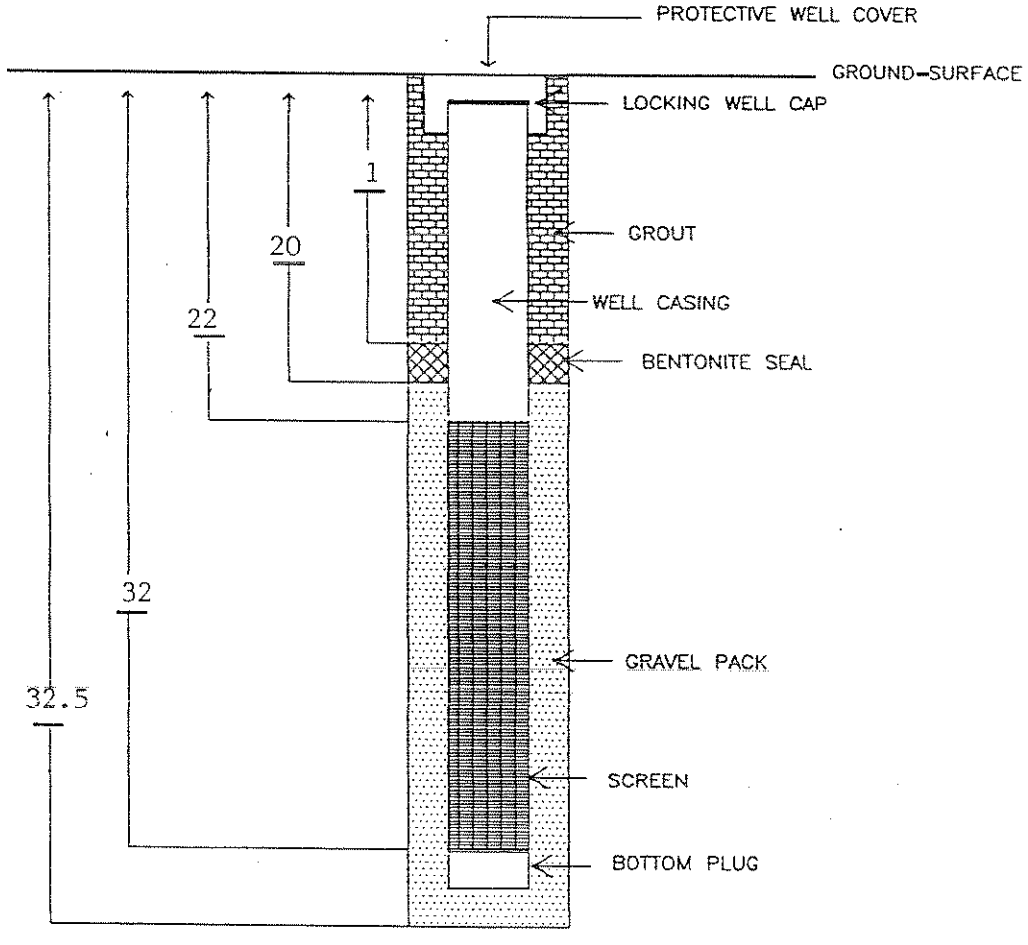


LOCATION North side of tank farm

SCHREIBER GRANA & YONLEY, INC.
WELL COMPLETION FORM

PROJECT: Maryon Industries, Inc.	CONTRACTORS: Roberts Environmental Drilling
ADDRESS: 13570 St. Charles Rock Road	PROJECT MANAGER: CEF
SG&Y PROJECT #: 953483	DATE INSTALLED: 3/24/95
BORING #: MW-5A	ELEVATION – SURFACE: CASING: 98.22
CASING LENGTH: 22.0 DIAMETER: 2"	SCREEN LENGTH: 10' DIAMETER: 2"
CASING MATERIAL: PVC	SCREEN MATERIAL: PVC
JOINT TYPE: Threaded	SCREEN TYPE: Slotted SIZE: .010"
FILTER PACK TYPE: Sand SIZE: WB-40	BENTONITE SEAL THICKNESS: 19'
WATER LEVEL BEFORE: 31.32 AFTER DEVELOPMENT:	DEVELOPMENT METHOD: Hand Bail

COPY



LOCATION: East of MW-1A approximately 75'

ATTACHMENT C

SOIL ANALYTICAL RESULTS SUMMARY

COPY

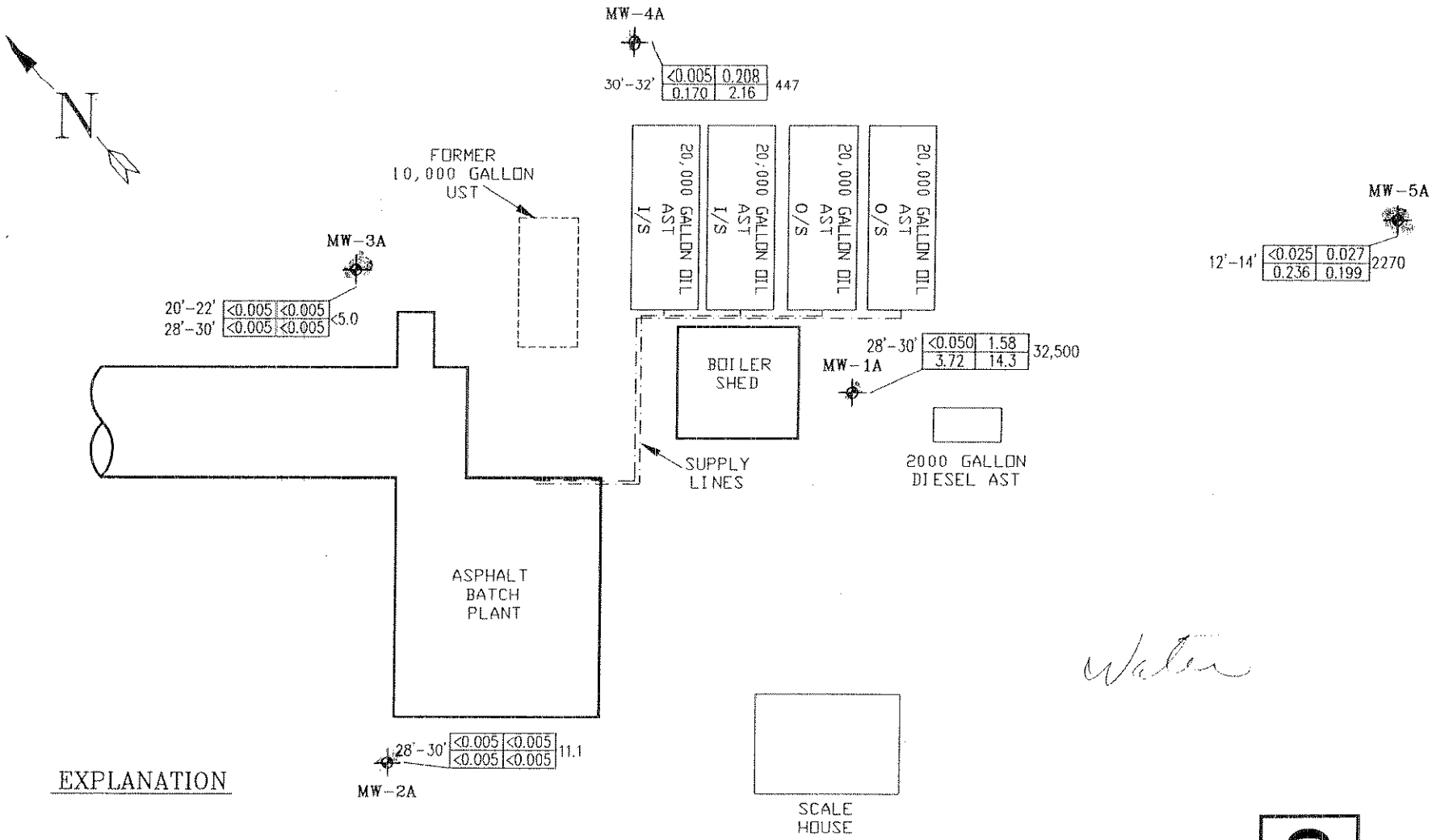
ATTACHMENT C

COPY

SOIL ANALYTICAL RESULTS
MARYON INDUSTRIES
BRIDGETON PLANT

Location	Depth	Benzene	Toluene	Ethylbenzene	Xylenes	TPH
MW-1A	14'-16'	<0.050	<0.050	<0.050	**10.7**	**14,900**
MW-1A	28'-30'	<0.050	1.58	3.72	**14.3**	**32,500**
MW-2A	18'-20'	<0.005	<0.005	<0.005	<0.005	<5.0
MW-2A	28'-30'	<0.005	<0.005	<0.005	<0.005	11.1
MW-3A	20'-22'	<0.005	<0.005	<0.005	<0.005	<5.0
MW-3A	28'-30'	<0.005	<0.005	<0.005	<0.005	<5.0
MW-4A	22'-24'	<0.005	0.015	0.040	0.078	**245**
MW-4A	30'-32'	<0.005	0.208	0.170	2.16	**447**
MW-5A	12'-14'	<0.025	0.027	0.236	0.199	**2270**
MW-5A	26'-28'	<0.005	<0.005	<0.005	<0.005	<5.0

Notes: Results in parts per million (ppm)
TPH - total petroleum hydrocarbons
Bold denotes exceedences of MDNR Soil Cleanup Guidelines
Samples for MW-1A through MW-2A were obtained 10-31-94 through 11-02-94, samples from MW-5A were obtained 03-24-95



Water

EXPLANATION

- ⌖ MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- UST UNDERGROUND STORAGE TANK

DEPTH (IN FEET)	Benzene	Toluene	TPH
	Ethylbenzene	Xylenes	

–RESULTS IN ppm

MAXIMUM ADSORBED-PHASE BTEX/TPH DISTRIBUTION MAP

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

ATTACHMENT C

SCALE: 1"=20'

DWG.# MI101-1

SCHREIBER GRANA & YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

COPY

ATTACHMENT D

COPY

COMPLETED LEAKING UNDERGROUND STORAGE TANK
SOIL CLEANUP GUIDELINES CHART

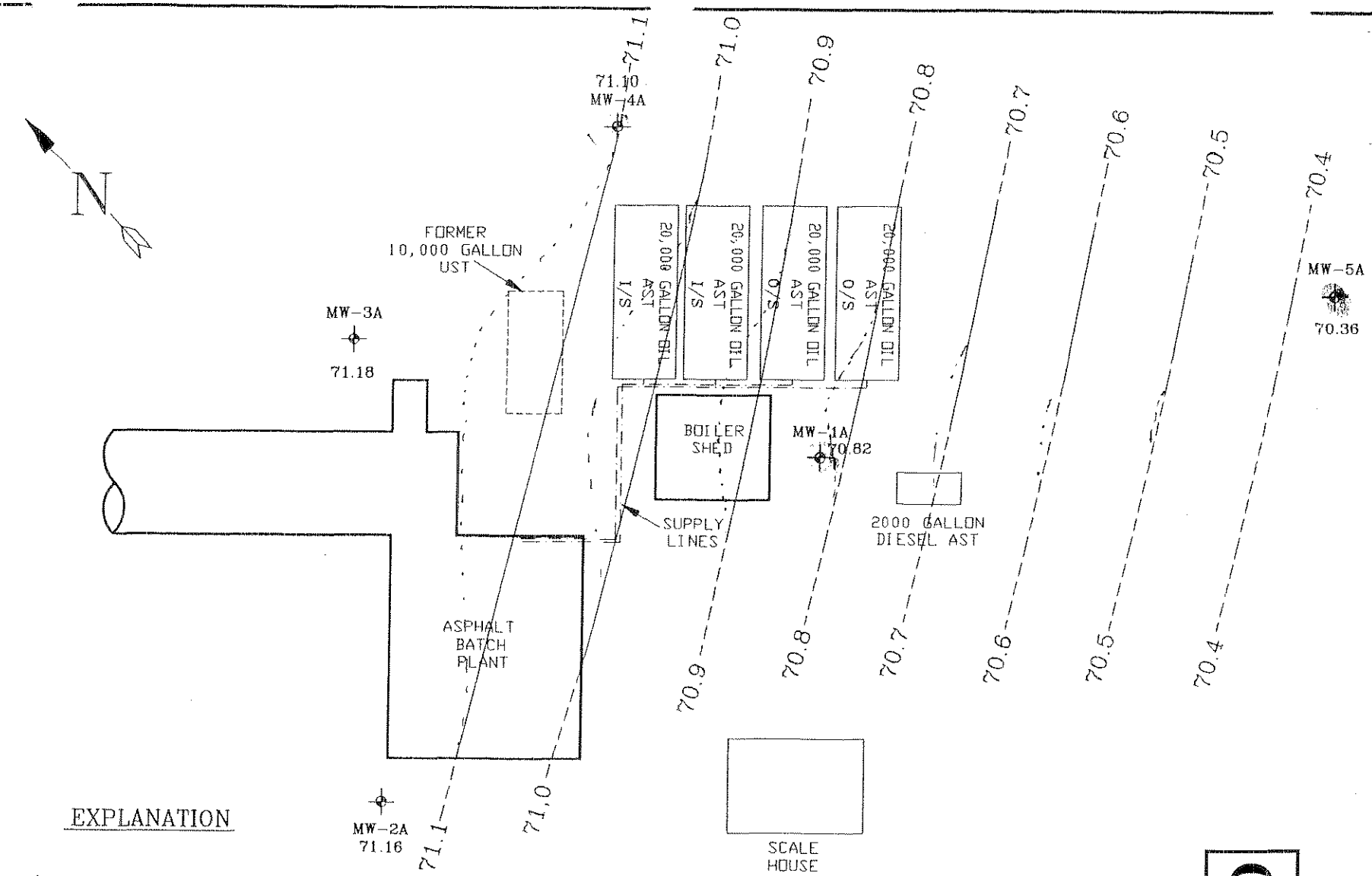
Leaking Underground Storage Tank Soil Cleanup Guidelines

COPY

Site Features	Score 15 if True		Score 10 if True		Score 5 if True		Score 0 if True	
Groundwater potable?	No	X	Unknown		Poor		Yes	
Depth to groundwater?	> 100 ft		51-100 ft		25-50 ft	X	< 25 ft	
Natural fractures present?	None		Unknown		Present	X	Predominant	
Man-made vertical conduits?	None	X	Unknown		Present		Predominant	
Man-made horizontal conduits?	None		Unknown		Present	X	Predominant	
Coarse soil or sand present?	None		Unknown		Present	X	Predominant	
Water wells nearby?	> 1000 ft away	X	501-1000 ft away		100-500 ft away		< 100 ft away	
Background levels present?	Above action levels		Unknown	X	Below action level		Nondetectable	
Subtotals		45		10		20		
						Total Score =		75

Soil Cleanup (ppm)

Total Score	101-120	71-100	41-70	40 or less
BTEX =	2/10/50/50	1/5/10/10	0.5/1/2/2	B+T+E+X < 2
TPH =	500	200	100	50



EXPLANATION

- MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- UST UNDERGROUND STORAGE TANK
- — 70.4 — GROUNDWATER ELEVATION (in feet), —dashed where inferred

CONTOURED GROUNDWATER ELEVATIONS MAP
Data Date: March 31, 1995

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

ATTACHMENT E

SCALE: 1"=20'

DWG.# MI101-1

SCHREIBER GRANA & YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

COPY

ATTACHMENT F

GROUNDWATER ANALYTICAL RESULTS SUMMARY

COPY

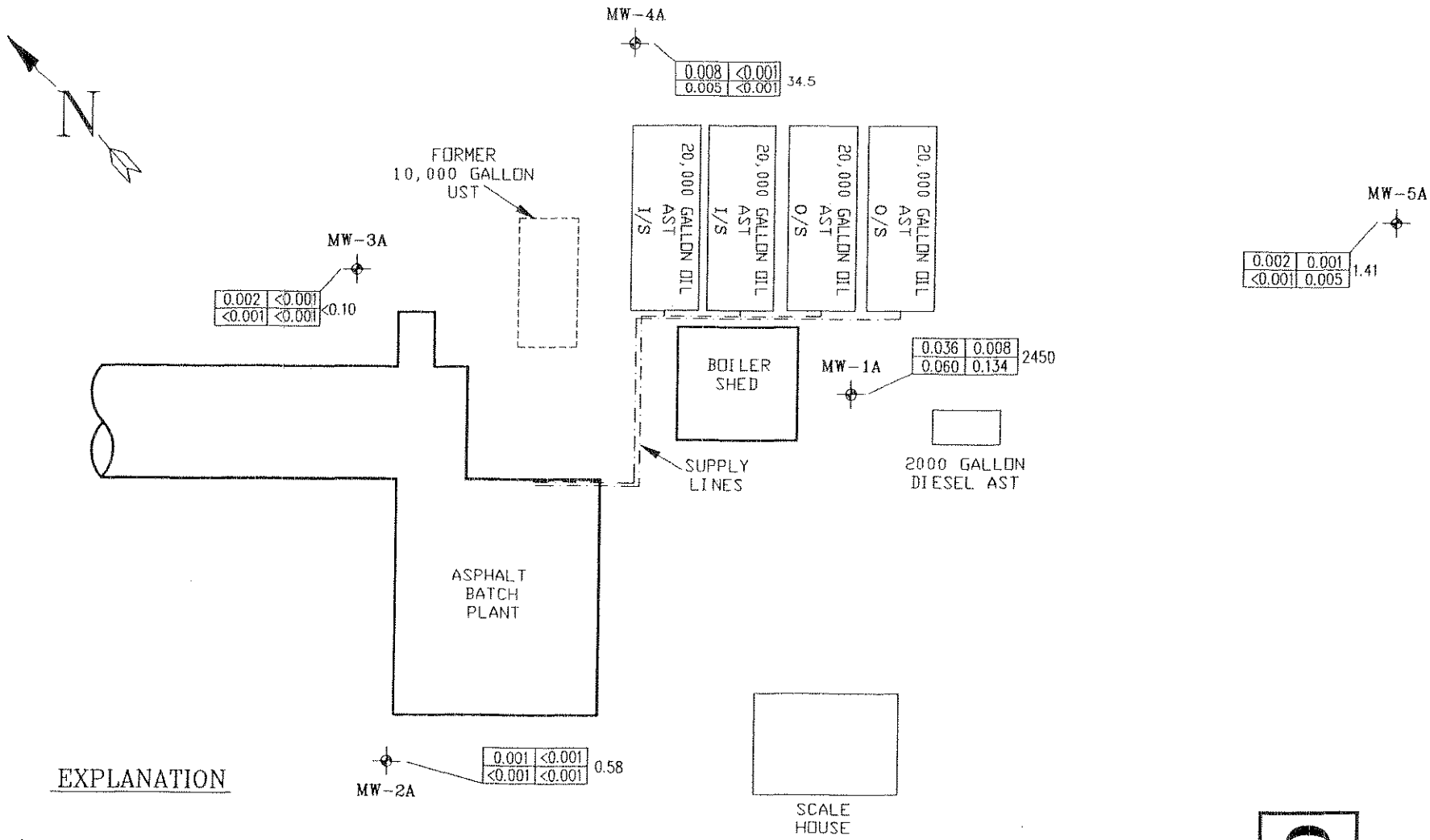
ATTACHMENT F

COPY

GROUNDWATER ANALYTICAL RESULTS SUMMARY
MARYON INDUSTRIES
BRIDGETON PLANT

Date	Location	Benzene	Toluene	Ethyl-benzene	Xylenes	Total BTEX	TPH
11-10-94	MW-1A	NS	NS	NS	NS	NS	ND
	MW-2A	0.001	<0.001	<0.001	<0.001	<0.004	<0.10
	MW-3A	<0.001	<0.001	<0.001	<0.001	<0.004	0.16
	MW-4A	<0.001	0.001	0.003	0.002	<0.007	**13.8**
03-31-95	MW-1A	0.036	0.008	0.060	0.134	0.238	**2450**
	MW-2A	0.001	<0.001	<0.001	<0.001	<0.004	0.58
	MW-3A	0.002	<0.001	<0.001	<0.001	<0.005	<0.10
	MW-4A	0.008	<0.001	0.005	<0.001	<0.015	**34.5**
	MW-5A	0.002	0.001	<0.001	0.005	<0.009	1.41

Notes: Results in ppm
TPH - Total petroleum hydrocarbons
Bold denotes exceedences of MDNR Non-Potable Groundwater Cleanup Guidelines
NS denotes not sampled



EXPLANATION

- MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- UST UNDERGROUND STORAGE TANK

Benzene	Toluene
Ethylbenzene	Xylenes

TPH

–RESULTS IN ppm

SOLUBLE-PHASE BTEX/TPH DISTRIBUTION MAP

Data Date: March 31, 1995

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

ATTACHMENT F

SCALE: 1"=20'

DWG.# M1101-1

SCHREIBER & GRANA YONLEY INCORPORATED
ENVIRONMENTAL ENGINEERS

COPY

June 30, 1995 Letter from Mr. Alan Reinkemeyer of the MDNR to Me. Vince Jones of Maryon Industries, Inc.

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

June 30, 1995

ESP FILE NO.
LU#3874

Mr. Vince Jones
Maryon Industries, Inc.
150 Weldon Parkway
Maryland Heights, MO 63043

Dear Mr. Jones:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources has received and reviewed the Schreiber, Grana & Yonley June 21, 1995, Site Investigation Report relevant to the subject site.

Based on excessive soil and groundwater contamination detected in the vicinity of MW-1A, MW-4A, and MW-5A, the LUST Unit requests that Maryon Industries, Inc. submit a corrective action plan proposal addressing these problems. This plan should comply with existing underground storage tank regulations and currently accepted guidance procedures and should be forwarded to this unit within 45 days from receipt of this letter.

If you have any questions, please do not hesitate to contact Steve Johnston at the Leaking Underground Storage Tank Unit at 314/526-6023 or 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:sjj

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. Ed Shepard, Schreiber, Grana & Yonley, Inc., 271 Wolfner Drive, St. Louis, MO 63026
Mr. William Whitaker, Westlake Companies, 12976 St Charles Rock Road, Bridgeton, MO 63044

RECYCLED PAPER

March 5, 1998 Letter from Mr. Jim Growney of the MDNR to Mr. Vince Jones of Maryon Industries, Inc.

ST 13618
R 3874

STATE OF MISSOURI
Mel Carnahan, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

March 5, 1998

Mr. Vince Jones
Maryon Industries, Incorporated
150 Weldon Parkway
Maryland Heights, MO 63043

RE: West Lake Quarry and Materials (former), 13570 St. Charles Rock Road, Bridgeton, MO - ST0013618, R0003874

Dear Mr Jones:

The Tanks Section of the Hazardous Waste Program would appreciate an update for the above referenced site. Please submit a project status report within forty-five days of receipt of this letter.

Please direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

If you have any questions regarding this letter, you may contact Mr. Marty Kasper of my staff at (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM

Jim Growney

Jim Growney, Unit Chief
Remediation Unit

JG:mks

c: Mr. Ed Shepard, Schreiber, Yonley, & Associates
Mr. David Pate, Williams and Company
Mr. Mike Struckhoff, St. Louis Regional Office

BC: Mr. Bruce Travis, HWP, Enforcement Section

RECYCLED PAPER

April 22, 1998 Letter from Schreiber Yonley & Associates to Mr. Marty Kasper of the MDNR

SCHREIBER & YONLEY ASSOCIATES
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

COPY

April 22, 1998

Mr. Marty Kasper
Missouri Department of Natural Resources
Tanks Section
P.O. Box 176
Jefferson City, Missouri 65102-0176

RE: West Lake Quarry and Materials (former), 13570 St. Charles Rock Road, Bridgeton, MO - ST0013618, R0003874

Dear Mr. Kasper:

Pursuant to your March 5, 1998 correspondence, Schreiber, Yonley & Associates, on behalf of Maryon Industries, Inc., is submitting this letter to update the status of activities at the above referenced facility.

Currently, a HORNER EZY SKIMMER®, distributed by Horner Creative Products, Inc., is being utilized to recover product from monitoring well MW-1. A site diagram is included as Attachment 1. This method of product recovery consists of suspending a skimmer tube in the well. The skimmer tube has a screen at the top which allows petroleum product to flow into the skimmer, but retards water from entering. The petroleum is collected in the tube and is emptied through a drain in the bottom of the skimmer.

Maryon Industries, Inc. personnel empty the contents of the skimmer into a drum located on-site on a regular basis. The amount of product in the skimmer is measured and recorded along with the date and time. Recovery logs from December 1995 through March 1998 are included as Attachment 2. Approximately five (5) gallons of product has been recovered during this period.

In addition to the continued free product recovery activities, Schreiber, Yonley & Associates is preparing a workplan and budget for the collection of one (1) groundwater sample from each on-site monitoring well. Upon completion of the sampling activities and sample analysis, a summary report will be submitted to the Missouri Department of Natural Resources (MDNR). Maryon Industries, Inc. will continue to monitor the groundwater, collect free product, and submit data to MDNR as required.

Should you have any questions, please do not hesitate to contact me at (314) 349-8399.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES

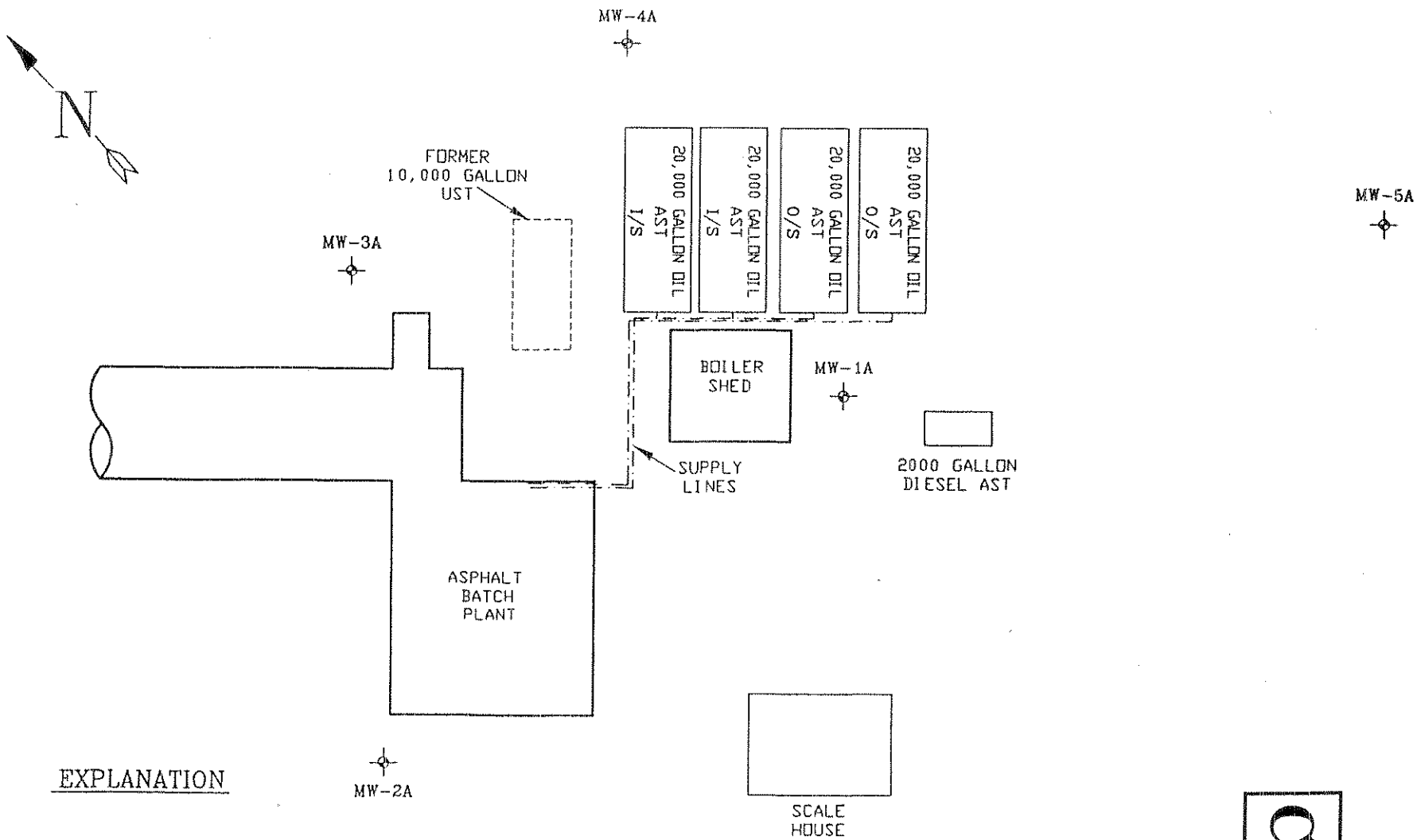
Edward A. Shepard, Jr., P.E.
Senior Engineer

cc: Mike Jones - Maryon Industries, Inc.

MIT980125KASPER.LTR

COPY

ATTACHMENT 1



EXPLANATION

⌖	MONITORING WELL
AST	ABOVEGROUND STORAGE TANK
I/S	IN SERVICE
O/S	OUT OF SERVICE
UST	UNDERGROUND STORAGE TANK

MONITORING WELL LOCATION MAP

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

ATTACHMENT A

SCALE:
1"=20'

DWG.#
MI101-1

SCHREIBER & YONLEY ASSOCIATES
ENVIRONMENTAL ENGINEERS

COPY

COPY

ATTACHMENT 2

PRODUCT RECOVERY LOG

COPY

Date	Time	Inches of Product
12.4.95	13.00	30"
12-5-95	0700	12"
12-6-95	0930	21.5"
12-7-95	0730	13"
12-[illegible]	0800	18.5"
12-11-95	0830	31"
12.12.95	1130	21.
12-13-95	1100	13"
4-2-96	14:45	5.25"
4-26-96	09:30	3"
4-30-96	09:30	10.5"
5-6-96	1400	1.5"
5-13-96	0630	2"
5-18-96	0630	1"
5-20-96	0630	1"
5-28-96	0700	2"
5-31-96	0700	2"
6-3-96	0630	3"
6-7-96	10:00	2"
6-11-96	700	1 3/4
6-14-96	1230	1" Tr.
6-18-96	0600	3"
6-21-96	0600	2"
6-24-96	0600	2"5
6-28-96	0100	3.
7-1-96	0600	1.5"

PRODUCT RECOVERY LOG

COPY

Date	Time	Inches of Product
7-5-96	0600	2.5"
7-8-96	0600	3."
7-12-96	1400	3"
7-15-96	0700	3"
7-24-96	1500	2 3/4
7-26-96	0430	3"
7-31-96	0930	3"
8-5-96	1300	3 1/4"
8-8-96	900	4 1/2
8-16-96	1100	3 1/4
8-19-96	1000	5
8-26-96	1200	4"
9-3-96	0830	3.75"
9-6-96	10:30	4"
9-9-96	0600	20"
9-13-96	1430	25"
9-16-96	0915	21"
9-25-96	1330	26"
9-27-96	0900	15"
9-30-96	1000	19"
10-4-96	1000	20.5
10-8-96	0630	21.5
10-11-96	1215	18"
10-16-96	1500	25"
10-18-96	0900	15"
10-23-96	0800	18"

PRODUCT RECOVERY LOG

COPY

Date	Time	Inches of Product
10-26-96	0930	23.5"
10-28-96	0600	18.5"
11-1-96	0630	24"
11-4-96	0700	23"
11-8-96	1030	18 in
11-12-96	7.30	6 in
11-15-96	9.30	6 in
11-18-96	8:30	3.5"
11-22-96	10:30	7.5"
11-26 96	1.30	4 in
12-3 96	1230	4 in
12-6-96	1200	4.5"
12-9-96	830	6 in
12-13-96	9.00	3 in
12-16-96	08:00	4 in

PRODUCT RECOVERY LOG

COPY

Date	Time	Inches of Product
2-21-97	1300	30"
2-24-97	0800	21"
3-3-97	0700	20"
3-10-97	0900	3"
3-14-97	0800	4.5"
3-17-97	0630	3"
3-21-97	0630	3"
3-24-97	0800	2.5
3-28-97	0700	4"
3-31-97	0700	3"
4-4-97	0630	4"
4-7-97	0630	6"
4-11-97	0800	6"
4-14-97	0615	4"
4-18-97	0700	4"
4-21-97	0630	4 1/2
4-25-97	0630	4"
5-2-97	0600	3 1/2
5-5-97	0700	4 1/2
5-9-97	0830	3"
5-12-97	0630	4
5-16-97	0700	4
5-23-97	0800	6.5"
5-27-97	0700	5"
5-30-97	0700	5"
6-2-97	830	4 1/2

PRODUCT RECOVERY LOG

COPY

Date	Time	Inches of Product
6.4.97	10.00	5 IN
6-5-97	1.00	3 IN
6-9-97	0630	4"
~~6.9.97~~	~~0700~~	~~3 IN~~
6.16.97	0730	5 IN
6-23-97	0730	3"
6-27-97	0730	4"
6-30-97	010	2½
7-7-97	0700	5 IN
7-13-97	0700	10"
7-14-97	1200	7 IN
7-21-97	0700	12"
7-28-97	0700	18"
8.1.-97	0700	18 IN
8.12.97	0100.	21 IN
8-25 97	0900	20½ IN
9.2.97	0700	27 IN
9-8-97	1300	15"
9 15 97	0700.	19 IN
9-19-97	1300	15"
9.22.97	0700	14 IN
9 27 97	0700	18 IN
9.30 97	0600	12 IN
10.8.97	0900	8 IN
9.14 97	0900	23 IN
9.17.97	0900.	16 IN

PRODUCT RECOVERY LOG

COPY

DATE	TIME	INCHES OF PRODUCT
10.20 97	0900	9 IN
10.24 97	0900	17 IN
10-27-97	0800	18½ IN
10-31-97	1430	20"
11-3-97	0800	17 IN
11-10-97	0700	23 IN
11-14-97	1000	15"
11-17-97	0830	13"
11-21-97	0900	15
11-24 97	0100	12
12-1 97	0700	23
12-8-97	0800	21.5"
12-22-97	0800	17 IN
2-2-98	1000	28"
2-9-98	1030	22.5"
2-18-98	700	23"
2-23-98	10:30	16"
3-2-98	09:30	18½
3-3-98	0800	17
3-6-98	0800	18
3-9-98	0700	11"
3-16-98	1200	6"
3-23-98	0600	19½"

May 18, 1998 Letter from Schreiber Yonley & Associates to Mr. Marty Kasper of the MDNR

SCHREIBER & YONLEY ASSOCIATES
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

COPY

May 18, 1998

Mr. Marty Kasper
Missouri Department of Natural Resources
Tanks Section
P.O. Box 176
Jefferson City, MO 65102-0176

RECEIVED
AUG 17 1998
HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

RE: Groundwater Sampling
Maryon Industries, Inc.
13570 St. Charles Rock Road
Bridgeton, Missouri
ST0013618, R0003874

Dear Mr. Kasper:

Schreiber, Yonley & Associates, on behalf of Maryon Industries, Inc., (MII) is submitting the following scope of work for sampling on-site groundwater monitoring wells. This work will take place at the MII facility located at 13570 St. Charles Rock Road, in Bridgeton, Missouri.

The following text describes the currently anticipated scope of work.

Scope of Work

1. Measure the depth to groundwater utilizing an electronic water level indicator or an electronic interface probe if free product is encountered.

2. Following the measurement of the groundwater depth in each well, the well will be purged by removing a minimum of three (3) well casing volumes of groundwater. Well purging activities will be accomplished using a dedicated, disposable polyethylene bailer.

   Purge water generated during the purging activities will be contained and stored on-site in labeled, 55-gallon, DOT-approved steel drums. Purge water will be stored on-site, pending receipt of the groundwater sample analytical results from the monitoring wells. Purge water generated from the monitoring well purging activities will be properly disposed.

COPY

3. Upon completion of well purging activities, a groundwater sample will be collected from each monitoring well utilizing a disposable, polyethylene bailer. The bailer will be lowered into the water column within the monitoring well. Upon removal of the bailer, the groundwater sample will be poured directly into precleaned, laboratory supplied sample containers. The sample containers will be labeled with the collection date and time, sample identification, type of preservative utilized, and collector's name. The sample containers will be placed in a cooler and cooled to approximately four (4) degrees Celsius and shipped via next day delivery to the selected analytical laboratory. A chain-of-custody form will be generated and included with the samples for transport to the laboratory.

4. The groundwater samples will be analyzed for total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); and methyl tertiary butyl ether (MTBE) in accordance with method OA-1/OA-2.

5. Upon completion of the monitoring well sampling activities and receipt of analytical results for the monitoring wells, Schreiber, Yonley & Associates will develop a summary report. The report will detail the monitoring well sampling activities as well as present field and analytical data from the previous sampling events.

Laboratory estimates are included as Attachment A and the Schreiber, Yonley & Associates cost estimate for professional services and field oversight activities is included as Attachment B.

Should you have any questions or need additional information, please do not hesitate to contact me at (314) 349-8399.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES

Edward A. Shepard, Jr., P.E.
Senior Engineer

EAS/jb

Attachments

cc: Mr. Mike Jones - Maryon Industries, Inc.

MII\980125\GWSMPLNG.LTR

COPY

ATTACHMENT A

LABORATORY ESTIMATES

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

COPY

May 12, 1998
Proposal # E549u

Ed Shepard
Schreiber, Yonley & Associates
271 Wolfner Drive
Fenton, MO 63026

Project: 980125

Dear Mr. Shepard,

Environmetrics, Inc. is pleased to submit this quotation based on your conversation with Ann Carlson on May 12, 1998. Environmetrics, Inc. will analyze five water samples, taken by your staff, for the following parameters:

Parameter	Method	Price/Sample
OA1:		
TPH(Gasoline Range-GRO)	8015V/8020	$ 35.00
BTEX + MTBE		
OA2:		
TPH(Diesel Range-DRO)	8015E	$ 35.00

The above prices reflect our normal turnaround time of 10 working days. All priority samples will be subject to the following surcharge factors:

5 working days	1.25 x
3 working days	1.75 x
1-2 working days	2.25 x
Sameday	3.5 x

Availability of priority turnaround times may be affected by the volume of samples. To ensure quality service, all priority samples must be scheduled with Environmetrics prior to sampling. Environmetrics will provide all sample containers, labels, preservatives, and coolers at no additional charge.

If you have any questions, please call me at (314) 432-0550.

Thank You For Your Business.

Sincerely,

Elizabeth Cuttright
Project Manager

SPECIALIZED ASSAYS INC. • 2960 Foster Creighton Dr. • P.O. Box 40566 • Nashville, Tennessee 37204-0566
615-726-0177 • 1-800-765-0980 • Fax 615-726-3404

COPY

Analytical Quotation

Company:	Schreiber Yonley & Associates
Client #:	5314
Attention:	Ed Shepard
Address:	271 Wolfner Drive
City/St/Zip:	St. Louis, MO 63026
Phone:	314-349-8399
Fax:	314-349-8384

Bid Date:	5/11/98
Valid Until:	7/15/98
Quote No:	051198BS199
Project:	980125

Parameters	Number Of Samples	Fee Per Sample
OA-1 (TPH as gas/BTEX/MtBE)	5 water	$40.00
OA-2	5 water	$32.00

Standard documentation and routine turnaround apply. ***BE SURE TO PUT THE QUOTE NUMBER ON THE CHAIN OF CUSTODY TO INSURE CORRECT BILLING.***

As a reminder, we provide these services as part of regular business:

- Supply sample containers and coolers, and ship them to you or your site.
- Provide printed chain of custody and FEDEX forms.
- Pay the FEDEX charges necessary to ship your samples to our laboratory.
- Accept delivery of samples on Saturday.
- At your request, notify you (by fax) when your samples arrive at the lab.
- Supply data by:
  - By fax, automatically from our LIMS.
  - Hardcopy, signed and mailed to you.
  - On diskette or electronically, via modem.

Sincerely,

Bruce C. Schlatter
Regional Account Manager

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.
875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 • FAX (314) 434-0080

COPY

May 12, 1998

Ed Shepard
Schreiber Yonley & Associates, Inc.
271 Wolfner Drive
St. Louis, MO 63026

RE: Cost Quotation -Ref. #980111(soils) Ref. #980125(waters)
ATAS # 2025

Dear Mr. Shepard:

On behalf of ATAS I am pleased to offer you the following quotation for analytical services. Samples will be taken by your staff and shipped to ATAS.

Parameter	Method	Sample #	Unit Price	MATRIX
Paint Filter	SW 9095	1	9.00	Soil
Open Cup Flash Point	SW 1010	1	20.00	Soil
TCLP Pb	SW 6010/SW 1310	1	75.00	Soil
BTEX & MTBE	OA-1	10/5	40.00	Soil/Water
TPH	OA-2	10/5	45.00	Soil/Water

Please note that the above prices are based on a 10 work day turnaround time. Samples must be received efore 12:00 noon to be considered a work day. Samples received after noon are considered the next work ay. Prices include the following:

- listed methodology
- a standard report format which consist of method blanks, sample data, and QA/QC summary
- sample containers and shipping material
- non-priority shipping of sample kits to your office or job site
- Normal quality control samples which include method blanks, laboratory control spikes, and batch MS/MSD
- Quotation is valid for 90 days. Our term is net 30 days

ATAS and the affiliate laboratories are currently participating in the USEPA- Contract Lab Program (CLP) for the analysis of organic and inorganic compounds. We are also working for clients nation wide under COE, EPA, AFCEE, HAZWRAP, DERP, NEESA CLEAN programs and have more than 25 state certifications.

If you have any questions please do not hesitate to call. ATAS is looking forward to working with you on this project.

Sincerely,

Wendy S.L. Hacker
Client Services Coordinator

COPY

ATTACHMENT B

SCHREIBER, YONLEY & ASSOCIATES ESTIMATE

COPY

COST ESTIMATE
13570 St. Charles Rock Road
Bridgeton, Missouri

Item 1 - Workplan Development			
Senior Engineer	$85/hr	5 hrs	$425.00
Clerical	$35/hr	3 hrs	$105.00
		Subtotal (Labor)	**$530.00**
Photocopying, Facsimile, Telephone, Postage			$30.00
		Subtotal (Materials)	**$30.00**
		ITEM 1 TOTAL COST	**$560.00**
Item 2 - Monitoring Well Sampling			
Engineering Technician	$40/hr	8 hrs	$320.00
Senior Engineer	$85/hr	2 hrs	$170.00
		Subtotal (Labor)	**$490.00**
Photocopying, Facsimile, Telephone, Postage			$25.00
PPE			$10.00
Bailers			$40.00
Drum			$25.00
Ice			$5.00
		Subtotal (Materials)	**$105.00**
Company Truck			$50.00
Water Level			$15.00
Interface Probe			$30.00
		Subtotal (Equipment)	**$95.00**
OA-1/OA-2	$81/Sample	5 Samples	$405.00
		Subtotal (Analytical)	**$405.00**
Drum Disposal	$175/Drum	1 Drum	$175.00
		Subtotal (Disposal)	**$175.00**
		ITEM 2 TOTAL COST	**$1,270.00**

COST ESTIMATE (cont'd)
13570 St. Charles Rock Road
Bridgeton, Missouri

COPY

Item 3 - Report Development/Submittal

Environmental Scientist/Engineer I	$60/hr	4 hrs	$240.00
Senior Engineer	$85/hr	1 hr	$85.00
CADD	$50/hr	3 hrs	$150.00
Clerical	$35/hr	2 hrs	$70.00
		Subtotal (Labor)	**$545.00**
Photocopying, Facsimile, Telephone, Postage			$35.00
		Subtotal (Materials)	**$35.00**
		ITEM 3 TOTAL COST	**$580.00**
		TOTAL PROJECT COST	**$2,410.00**

May 20, 1998 Letter From Mr. Jim Growney of the MDNR to Mr. Vince Jones of Maryon Industries

STATE OF MISSOURI
Mel Carnahan, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

May 20, 1998

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry & Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, R0003874

Dear Mr. Jones:

The Tanks Section of the Hazardous Waste Program has received the Schreiber, Yonley, & Associates free product recovery report dated April 22, 1998, for the site listed above. The Product Recovery Log contained in the report indicates significant amounts of petroleum product continues to appear in monitoring well MW-1. The amount of product observed (up to 30") would indicate that the problem is not attenuating. Please submit a corrective action plan to this department within sixty (60) days selecting a more aggressive approach to product recovery than is currently being applied. You may include in your correspondence the work plan for groundwater monitoring.

Direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

If you have any questions regarding this letter, you may contact Mr. Marty Kasper of my staff at (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM

Valerie Garrett for
Jim Growney, Unit Chief
Remediation Unit

JG:mkg

c: Mr. David Pate, Williams & Company
Mr. Ed Shepard, Schreiber, Yonley, & Associates
Mr. Mike Struckhoff, St Louis Regional Office
Mr. W.E. Whitaker, West Lake Quarry & Material Company

RECYCLED PAPER

November 13, 1998 Letter from Mr. Jim Growney of the MDNR to Mr. Vince Jones of Maryon Industries

STATE OF MISSOURI
Mel Carnahan, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

November 13, 1998

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, R0003874

Dear Mr. Jones:

The Tanks Section of the Hazardous Waste Program has received and reviewed a work plan for groundwater monitoring dated May 18, 1998, for the site referenced above. The work plan is approved as written for one-year of monitoring on quarterly basis.

Historical data indicates that the extent of groundwater contamination to the east of MW-4A was not completely defined. Therefore, the department requests a work plan for further investigation of soil and groundwater contamination east of MW-4A within 45 days of receipt of this letter. Please submit along with your work plan a corrective action plan for a more aggressive product recovery from MW-1 as requested in the department's letter dated May 20, 1998.

We are looking forward to reviewing the next groundwater monitoring report within the next 90 days.

Please direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

If you have any questions regarding this letter, you may contact Mr. Hashim Mukhtar of my staff at (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM

Jim Growney

Jim Growney, Chief
Remediation Unit

JLG:hml

c: Mr. David Pate, Williams & Company
Mr. Edward A. Shepard, Schreiber Yonley and Associates
St. Louis Regional Office

Recycled Paper

January 8, 1999 Letter from Mr. William Werner of Stolar Partnership to Mr. David Pate of Williams & Company

ST 13615
R 3874

THE STOLAR PARTNERSHIP
ATTORNEYS AT LAW
THE LAMMERT BUILDING
911 WASHINGTON AVENUE
ST. LOUIS, MISSOURI 63101-1290
(314) 231-2800
FAX (314) 436-8400

ILLINOIS OFFICE
MARKET SQUARE BUILDING
7 NORTH HIGH STREET
BELLEVILLE, ILLINOIS 62222-0484
(618) 277-1030
FAX (618) 277-1882

H. M. STOLAR
(RETIRED 1984)

WILLIAM R. WERNER
Email: WRW@STOLARLAW.COM

January 8, 1999

RECEIVED
JAN 11 1999
HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

Mr. David Pate
Williams & Company
P.O. Box 104116
Jefferson City, Missouri 65110

Re: West Lake Landfill UST Closure
ST0013618, R0003874 (Tank # 11)

Dear Mr. Pate:

This letter is in follow up to our telephone conference earlier this month regarding eligibility of the above-referenced tank for reimbursement of remediation expenses from the Missouri Petroleum Storage Tank Insurance Fund (the "Fund"). You indicated that MDNR's records show that our client, West Lake Quarry and Material Company ("West Lake"), continues to operate two tanks on the site, Tank #3 and Tank #11. As explained below, West Lake discontinued operating these tanks at least as early as 1988 and 1993, respectively.

Tank #11 is the tank which is the subject of the ongoing closure (with respect to which we understand that reimbursement has been or will be requested from the Fund on behalf of Maryon Industries, Inc., the operator of the site and the entity which has assumed responsibility for the tank). West Lake removed Tank #11 along with six other tanks on the West Lake site in April, 1993. Upon completion, a Closure Report dated June 14, 1993, documenting the removal of all seven tanks was submitted to the Missouri Department of Natural Resources. A copy of Part A and pertinent sections of Part B of the June 14, 1993 UST Closure Report is enclosed for your information. Please note that the above-referenced tank is referred to by MDNR as Tank #11 in accordance with tank registration information for this site; the tank is referred to in the Closure Report as Tank #7 (and cross-referenced as MDNR #11), because it was the 7th tank pulled in April 1993.

Tank #3 is located on property owned by Bridgeton Landfill, LLC (f/k/a Laidlaw Waste Systems (Bridgeton) Inc., f/k/a West Lake Landfill, Inc.). West Lake discontinued use of Tank #3 sometime prior to July, 1988 when the stock of West Lake Landfill, Inc. was sold to Laidlaw Waste Systems, Inc., and we have confirmed with Bridgeton Landfill that Tank #3 has not been

in operation since that time. As I explained on the phone, the location of Tank #3 is geographically distant from Tank #11. For your reference, I have enclosed a map of the site showing ownership as of July 1988, and upon which I have marked the approximate locations of Tank #3 and Tank #11. (Note that the tank referred to in the Closure Report as Tank #3 refers to the tank known to MDNR as Tank #5; the tank known to MDNR as Tank #3 is not discussed in the Closure Report.)

As we discussed, Tank #3 has not been removed because it is located in an area containing radioactive waste generated and disposed of by the Atomic Energy Commission (now, the United States Department of Energy) and sent to the West Lake landfill by Cotter Corporation, NSL, without the knowledge of the landfill. The radioactive materials and any other hazardous substances are being addressed as part of the West Lake Landfill Superfund Site. I have enclosed a copy of an overland gamma survey map, (copies of which have been provided previously to The United States Environmental Protection Agency as lead agency and to MDNR's Superfund Section) showing the area of radioactive contamination. I have marked on this map the approximate location of Tank #3. As can be seen from the enclosed maps, Tank #3 and the area of radioactive contamination is remote from and does not impact the property owned by West Lake and on which Tank #11 was located.

Please confirm that eligible remediation expenses in connection with Tank #11 (to be expended in accordance with a budget approved in advance by the Fund) will be reimbursable under the Fund. Do not hesitate to call me if you need any additional information or clarification.

Very truly yours,

William R. Werner

WRW/jvb
Enclosures
cc: Jim Growney, MDNR (w/ encl)
Vincent M. Jones, Maryon Industries
William E. Whitaker, West Lake

24 HR.
PHONE: 314-421-0328
FAX: 314-351-0894
EASYLINK: 62561520

THE KIESEL COMPANY
SINCE 1896

4801 FYLER AVENUE • ST. LOUIS, MISSOURI 63116
(314) 351-5500

May 18, 1993

ADR/Westlake Quarry
12976 St. Charles Rock Road
Bridgeton, Missouri 63044

Gentlemen:

This letter is to provide you with information as to the disposal of seven underground storage tanks that were removed on April 22, 23 and 26th 1993 from Westlake Quarry in Bridgeton. The tanks were taken to Branch Street where they were steam cleaned and cut up and disposed of as scrap. The 750 gallons of sludge and the wash water was collected and disposed of according to EPA regulations.

If I maybe of further assistance, please do not hesitate to contact me.

THE KIESEL COMPANY

Kathryn K. Cole

Kathryn K. Cole

ENVIRONMENTAL ASSISTANT

KKC: kb

STATE OF ILLINOIS ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 , SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 9-88) Form Approved.OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD092358548 | Manifest Document No. | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address | Location If Different
GATEWAY PETROLEUM CO., INC.
7200 West Main St. : Belleville, IL : 62223

4. Generator's Phone (618) 271-0880

5. Transporter 1 Company Name: GATEWAY PETROLEUM CO., INC. | 6. US EPA ID Number: ILD092358548

7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address | 10. US EPA ID Number
GATEWAY PETROLEUM CO., INC.
3000 Missouri Avenue
East St. Louis, IL 62205 | ILD092358548

A. Illinois Manifest Document Number: IL 3713768 | Fee Paid, If Applicable
B. Illinois Generator's ID: 1 6 3 0 4 5 0 0 3 2
C. Illinois Transporter's ID: 0 1 5 3
D. (618 271-0880 Transporter's Phone
E. Illinois Transporter's ID
F. ( ) Transporter's Phone
G. Illinois Facility's ID: 1 6 3 0 4 5 0 0 3 2
H. Facility's Phone: (618) 271-0880

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE OIL - NON-FLAMMABLE	1	T	2160		EPA HW Number: XX; Authorization Number: 9 9 5 4 0 1
b.					EPA HW Number: XX; Authorization Number:
c.					EPA HW Number: XX; Authorization Number:
d.					EPA HW Number: XX; Authorization Number:

J. Additional Descriptions for Materials Listed Above
NO Dept. of Natural Resources:
Generator I.D. # A-1837-4725 :
Hauler # H-1063 : Site # RR-05

K. Handling Codes for Wastes Listed Above In Item # 14
1 = Gallons 2 = Cubic Yards

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: R. Odenwald, Jr. | Signature | Date Month Day Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Philip Schaefer | Signature | Date Month Day Year: 04 12 93

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of ~~XXXXXX~~ materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: TOM JACKSON | Signature | Date Month Day Year: 4 12 93

This Agency is authorized to require, pursuant to Illinois Revised Statutes, Chapter 111½ Section 21, that this information be submitted to the Agency. Failure to provide the information may result in a civil penalty against the owner or operator of not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

COPY 1. TSD MAIL TO GENERATOR COPY

MISSOURI DEPARTMENT OF NATURAL RESOURCES
P.O. BOX 176, JEFFERSON CITY, MISSOURI 65102
314-751-3176

FORM DNR HWT-10 — WASTE OIL DAILY LOG

INSTRUCTIONS ON BACK

THIS FORM IS TO BE USED FOR WASTE OIL ONLY

OTHER HAZARDOUS WASTES MUST BE MANIFESTED SEPARATELY

PART 1 A. GENERATOR'S NAME: ADDRESS: CITY, STATE, ZIP:	PLEASE PRINT OR TYPE	B. MISSOURI GENERATOR I.D. NO.	C. WASTE OIL GALLONS RECEIVED	PART 2 TO BE COMPLETED BY GENERATOR. PRINT NAME, SIGNATURE DATE OF TRANSACTION
1 West Lake Quarry & Materials Co. 13570 St Charles Rock Rd. Bridgeton, Mo 63044			500	Patrick Reeves 4-12-93
2			300	K. Beers 4-12-93
3			150	Bill Frankey 4-12-93
4			50	Larry Brown 4-12-93
5			280	[illegible] 4-12-93
6			250	Tony Aiello 4-12-93
7			100	Craig Slattery 4-12-93
8			370	Jeff Moses 4-12-93
9			250	Doug Johnson 4-12-93
	D. WASTE OIL GALLONS (TOTAL THIS PAGE)		2160	

E. PAGE NUMBER 1 OF 1 WASTE OIL DAILY LOG PAGES FOR THIS SHIPMENT.

F. MANIFEST NUMBER ▶ A-18374725

G. MISSOURI TRANSPORTER I.D. NUMBER ▶ H-1063

H. TRANSPORTER CERTIFICATION: This is to certify that the waste oil listed above (as defined in 10 CSR 25-11.010) was collected, a signature was obtained from an authorized representative of the generator listed, that the above information is correct to my best knowledge and belief and that this shipment is in compliance with the applicable regulations of the MDNR, DOT, and EPA.

SIGNATURE OF DRIVER	DATE	PRINT OR TYPE NAME OF DRIVER
Philip Schaefer	4-12-93	Philip Schaefer

MO 780 0024 (3-89) DISTRIBUTION: WHITE/DEPT. FINAL COPY CANARY/TRANSPORTER FINAL COPY

GATEWAY PETROLEUM
7200 WEST MAIN ST.
BELLEVILLE, ILLINOIS 62223
EMERGENCY NUMBER 618-271-0880 • 314-231-2756

ENTERED

20899

WEST LAKE QUARRY & MATERIALS CO.

13570 St. Charles Rock Road
Bridgeton, MO 63044

4/9/93

314-739-1122

Ray Klinger

Route: North Route# 170
Stop# 30

P.U. last year: 4
Ave. Gal. Last Year: 625
Tank size : 2000
Interval : 90

2/5/93 Amt. 350
12/22/92 Amt. 200

~~WATER~~ ~~GALLONS:~~
OIL # 1 DEISEL GALLONS: 500

COMMENTS: Monday 4/12/93. 1 underground tanks in same area with Laid Law Send Reporting Copies to ADR. CM200) (100 Demurge) Billing to West Lake

SIGNATURE: [signature] DATE: 4-12-93 DRIVER: Phil #5

The above signed certifies that their petroleum material has not been mixed with a substance considered hazardous under RCRA, Section 3001 and/or CERCLA, Section 102.

Thank You For Your Business OFFICE COPY

JUNE 14,1993

UST CLOSURE REPORT & ESP RESPONSE

SITE: WESTLAKE COMPANIES, UT0013618
13570 St.Charles Rock Road
Bridgeton, Mo. 63044

OWNER: WESTLAKE COMPANIES, OW10412
12976 St.Charles Rock Road
Bridgeton, Mo. 63044

ESP FILE # LU3874

RECEIVED
JAN 1 1 1995
HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

UT 0013618

June 14,1993

CLOSURE RESPONSE INDEX

SECTION I

MDNR Closure Format Forms
Supplementary Information Report
Authorization Notice
Disposal Documents

SECTION II

Analytical Compilation Schedule
Laboratory Results
Chain of Custody Forms

SECTION III

Topographic/Locator Map
Site Drafts
Photographs

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM

RECEIVED
JAN 1 1 1993
HAZARDOUS WASTE
MISSOURI DEPT. OF
NATURAL RESOURCES

UST CLOSURE REPORT PART A (PAGE 1)

FOR MDNR USE ONLY

Date received _____ County St. Louis UT# 0013618 OWID 10412

Region SLRO LSP# LU 3874

SECTION I FACILITIES INFORMATION

Facilities name Westlake Companies UT# 0013618

Address 13570 St. Charles Rock Road Latitude

County St. Louis City Bridgeton Zip code 63044 Longitude

Telephone 314-739-1122 Section, township, and range

Date of Project Initiation April 10,1993 Date of Project Completion April 26,1993

SECTION II USTs CLOSED

Tank #	Capacity (gal)	Age	Date Removed from Service (use)	UST Construction Material	Product Stored	Method of Closure*
1	2,000	11	4/93	STL	Unlead	Removed
2	10,000	12	1/92	STL	Unlead	Removed
4	10,800	21	3/93	STL	Diesel	Removed
5	10,000	21	1/92	STL	Diesel	Removed
6	10,000	16	3/93	STL	Diesel	Removed
8	1,000	33	3/93	STL	Waste Oil	Removed
11	10,000	25	3/93	STL	Diesel	Removed

Attach Documentation of Tank Cleaning X

* Removal, In-place

SECTION III UST OWNER INFORMATION

Name Westlake Companies

Address 12976 St. Charles Rock Road

County St. Louis City Bridgeton Zip Code 63044

Contact Person B. Whitaker Telephone 314-739-1122

SECTION IV INFORMATION ON PARTY PERFORMING CLOSURE

Name ADR/St. Louis

Address P.O. Box 182

County St. Charles City St. Charles Zip Code 63302

Contact Person Patrick Reeves Telephone 314-947-9963

SECTION V TANK DISPOSAL INFORMATION

Tanks were transported to Kiesel Oil Company (name)

Branch Street Facility, St. Louis,Mo. (Address)

for: [X] recycle (salvage) or [ ] landfill or [ ] unregulated use

Attach appropriate documentation of tank disposal X

SECTION VI SOIL DISPOSAL INFORMATION

_____ cubic yards of soil excavated See Supplementary Data: Excavated soils returned to pit.

_____ cubic yards of non-contaminated soil returned to pit

_____ cubic yards of contaminated soil disposed or treated at _____

Attach appropriate documentation of soil disposal or treatment

Attach copy of "Virgin Product Disposal Form" or "Special Waste Form", as appropriate N/A

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM

UST CLOSURE REPORT PART A (PAGE 2)

SECTION VII SLUDGE/RINSATE DISPOSAL

1,750 gallons of sludge/rinsate were removed and disposed of by:

Hazardous waste disposal firm	Gateway Petroleum	Kiesel Oil Company
Address	7200 W. Main	4801 Fyler
	500 gl Belleville, Il.	750 gl St. Louis, Mo.

Attach appropriate documentation of waste disposal

SECTION VIII RESULTS OF SOIL ANALYSIS

(Report all results in ppm and attach lab results)

Sample ID	TPH	Benzene	Toluene	E-Benzene	Xylene	Heavy Metals*
		See Schedule & Analytical Data				

Attach chain of custody documentation

* For waste oil USTS only. List any results above detection limits.

SECTION IX LOCATION SKETCH

Attach a sketch of the location which includes:

- size and contents of all USTs and piping and lengths of pipe runs
- locations of all fuel lines and pump islands
- location of the tank pit boundaries

Attached

Indicate scale of the sketch in feet

Designate each sample location on the sketch using the specified labeling format

SECTION X PHOTOGRAPHS

Attach color photographs of the following:

- each side of the removed UST, if the UST is removed X
- each wall of the excavation pit, if UST is removed X
- each sealed vent or pipe line
- sealed UST, if closed in-place

Attached

Comments See General Summary & Supplementary Data

I certify that the information in this report is true and complete

Party performing closure [signature] Date 6-14-93

Owner/operator [signature] Date 6/14/93

MAILING ADDRESS

If TPH < 25 ppm, total BTEX < 1 ppm, and Benzene < 0.5 ppm AND the amount of soil excavated is less than (# of tanks x 100 cubic yards), complete Part A of the UST Closure Report and submit it to:

Missouri Department of Natural Resources
Attn: UST Coordinator
P.O. Box 176
Jefferson City, Missouri 65102

XXX If any of the preceeding conditions have been exceeded complete both Parts A and B of the UST Closure Report and submit it to:

Missouri Department of Natural Resources
Environmental Services Program
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, Missouri 65102

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM

UST CLOSURE REPORT PART B

SECTION XI INFORMATION ON POSSIBLE RECEPTORS (Attach completed Figure 3 matrix)

Depth to groundwater 350 ft

Distance to streams N/A ft

Distance to water wells N/A ft

Distance to lakes .5 mi. ft (that are within 0.5 miles of site) See Supplementary Data

SECTION XII ADDITIONAL INFORMATION ON EACH LOCATION

Add the following information to the location sketch:

X - all above ground tanks and associated piping on the site, plus the size and content of each

N/A all underground utilities within 100 ft of the site (sanitary sewers, power lines, storm sewers,

N/A utility trenches, water lines, pipelines, etc.)

- direction and degree of slope in area Identified in Supplementary Data

X - depth to bottom of each tank

SECTION XIII SOIL INFORMATION

Types of soil encountered during excavation and depth to each:

(or attach a drilling log with this information or a sketch of a side wall)

Type	Depth
Limestone (crushed)	Grade
Limestone rock	3-5'
Clay Soils	3-10'
Clay silts/gravel	9-20'

Additional information provided in Supplementary Data

Figure 3
Leaking Underground Storage Tank Soil Cleanup Guidelines for Undisturbed Soil

WESTLAKE COMPANIES UT 0013618

Site Features	Score 15 if True		Score 10 if True		Score 5 if True		Score 0 if True	
Groundwater potable?	No	XXX	Unknown		Poor		Yes	
Depth to groundwater?	> 100 ft	XXX	51-100 ft		25-50 ft		< 25 ft	
Natural fractures present?	None		Unknown	XXX	Present		Predominant	
Man-made vertical conduits?	None	XXX	Unknown		Present		Predominant	
Man-made horizontal conduits?	None	XXX	Unknown		Present		Predominant	
Coarse soil or sand present?	None		Unknown	XXX	Present		Predominant	
Water wells nearby?	> 1000 ft away	XXX	501-1000 ft away		100-500 ft away		< 100 ft away	
Background levels present?	Above action levels		Unknown	XXX	Below action level		Nondetectable	
Subtotals		75		30				
						Total Score =	105	

	XXXXXX	Soil Cleanup (ppm)		
Total Score	101-120	71-100	41-70	40 or less
BTEX =	2/10/50/50	1/5/10/10	0.5/1/2/2	B + T + E + X < 2
TPH =	500	200	100	50

SUPPLEMENTARY INFORMATION

1.0 Area/Location

2.0 Background

3.0 Preliminary Site Inspection

4.0 UST Identification

5.0 Mechanical Removal

6.0 UST Inspection

7.0 Soil Sample & Screening Methods

8.0 Topography & Soils

9.0 Groundwater/Aquifers

1.0 AREA / LOCATION

The referenced site is located approximately one mile due north of the Mark Twain Expressway (Highway 70) and the I-270 Bypass junction, west of St. Louis,Missouri. Access to the property is thru the northeast perimeter traveling south off of highway 115 (St. Charles Rock Road), and is recognized as part of the local jurisdiction within the city of Bridgeton,Missouri. A topographic section and locator map are provided elsewhere in this report.

The general vicinity is relatively limited in development, with some industrial and commercial operations. Agricultural areas are predominant, outside the immediate adjoining parcels of property.

2.0 BACKGROUND

Prior to 1988, Westlake Companies owned the present site which included all immediate surrounding land parcels located south of Highway 115. With various business concerns, primary activities were divided by mining/quarry operations on the eastern parcels and operating a landfill on the western side. Production plants for material screening, asphalt batching, and mixing concrete were maintained in the central access area between the two primary operations, on what is recognized as the southern portion of the current property.

In 1988, the surrounding land parcels were acquired from Westlake Companies by Laidlaw Waste Systems,Inc., to conduct landfill operations. The various operating plants, have since been purchased from Westlake Companies. With the reduction in property and sale of the plants, use of the underground tanks has ceased. In compliance with the current UST laws, removal and closure were implemented.

3.0 PRELIMINARY SITE INSPECTION

During March of 1993, a site inspection was conducted regarding the status and condition of underground storage tanks (UST's) located at the referenced facility. A work plan was established for removal of six ust's and Notice of Removal issued to the MDNR.

Removal of three tanks would involve working in the immediate area of structural pylon footings, thus limiting directional access and presenting potential risk to the integrity of the foundations. Other tanks were located in areas directly adjacent to traffic thoroughfare of heavy equipment providing limited working space.

Based on inspection, four of the ust's have been out of service for some time. Only two tanks scheduled for removal were active,(Waste Oil & 10,000 Unlead).

4.0 UST IDENTIFICATION

During the course of removal, a numerical reference was established in chronological order. Subsequently all activity including the tank reference and associated data collection continue to reflect this sequence, throughout this report.

In order to substantiate a relation between the numerical reference and the current UST registration/Closure Notice, we have produced the following table.

Removal	Description	MDNR
# 1	10,800 gl. Diesel	# 4
# 2	10,000 gl. Diesel	# 6
# 3	10,000 gl. Diesel	# 5
# 4	2,000 gl. Waste Oil	# 8
# 5	2,000 gl. Unlead	# 1
# 6	10,000 gl. Unlead	# 2
# 7*	10,000 gl. Diesel	# 11

*This tank was added to the removal project after completing the first six tanks.

5.0 General Comments

Removal was conducted in accordance with recommended industry practices. Gateway Petroleum provided removal of tank fluids prior to project initiation. Electrical service was disconnected and pump units (when required) were removed. Supply lines (where applicable) were drained of any remaining product. Monitoring for explosive vapors was conducted during each phase of work. Excavation was directed to provide adequate clearance for the tank(s) to be lifted freely. A significant problem encountered with these removals is due to the low cohesion properties of the subsurface materials, in the initial 5 foot range and resulted in frequent excavation collapse. Compounded with structure integrity and thoroughfares, excavations were backfilled almost immediately following removal and sample acquisition.

Tank #1

Initiated with removal of surface soils. No existing supply line was evident, indicating a non-service status. Removal of this tank presented a structural threat to the footing and pylon for an overhead conveyor. Action was taken to minimize disturbance of the surrounding base. As seen in the photographs of removal, soils were migrating from the base, and backfill was immediately conducted. In order to obtain soil samples, a GEO-PROBE tm, was utilized for acquiring representative samples covering a vertical span of 2 feet (18-20' below grade) in two areas.

Tank #2

Initiated with removal of surface soils. No existing supply line was evident, indicating a non-service status. Removal of this tank was not as threatening as tank #1, However, based on the proximity and soil conditions, the excavation was limited and upon securing soil samples, was immediately backfilled.

Tank #3

Same as tank #1 & 2, with respect to soils at grade and the absence of piping. This tank was located directly below the conveyor, between two smaller footings. The clearance from tank end-caps to footings was less than 3.5 feet total space and required the excavation be drawn at a 45° angle to remove the tank. Upon securing the tank bed samples, the excavation was backfilled. As shown in the photographs, the tank was drawn/removed in a roll-out fashion.

MECHANICAL / REMOVAL cont.

Tank #4

Initiated with surface soils removal. Drain piping was intact, requiring isolation. Excavation was expanded due to repeated falling of surrounding fill material. As shown in the photographs, the excavation had expanded to within a foot of the foundation wall for the building. Upon tank removal and sample acquisition, the pit was backfilled.

Tank #5

Initiated with electrical disconnect and removal of the suction pump. This system had been out of service for some time, However, explosive vapors were detectable and proper purging was conducted prior to continuance. Appropriate removal of grade cover and the tank bulkhead allowed the tank to be removed with little difficulty.

Tank #6

Conducted simultaneously with #5. The increase in area excavation provided undermining problems with the traffic thoroughfare surface along the southeast wall. Upon removal and sample collection, the excavation was backfilled.

Tank #7

Access for this removal was limited by the close proximity of above-ground tanks and operating equipment associated with the asphalt batching plant. In addition, repeated collapse of the excavation walls occurred during equipment operation each time the plant went into batch production. As shown in the photographs, distinct voids were noted in the foundation area along with the fallen excavation walls. The excavation was immediately filled following sample acquisition.

6.0 UST INSPECTION

Upon mechanical removal, tanks were secured on grade and inspected for cracks, corrosion and leaks. As identified in photodocumentation, confirmations were identified with each tank.

#1 Corrosion pits in two areas, 1 hole on each endcap.
#2 Corrosive pit and small hole on tank bottom.
#3 Multiple holes in Endcap and corroded seam.
#4 Multiple holes on endcaps
#5 Multiple holes on lower portion of endcaps and bottom.
#6 Holes 1"Ø, on encaps, seam corrosions and holes on bottom.
#7 Multiple holes on endcaps,lower seams.

7.0 SOIL SAMPLING & SCREENING

Soil samples for tank #2 thru #7, were obtained by use of the excavator to collect soil from native soils beneath the tank bed area. Representative samples were labeled and identified using the recommended format provided by MDNR in the 1992 guidelines. Ice was used to preserve samples during storing and transport to American Technical & Analytical Services (ATAS), where samples were analyzed in accordance with regulatory protocol and requirements.

Acquisition of the samples for tank #1, were performed using a GEO-PROBE unit to collect a representative sample from two locations at a vertical depth covering 18 to 20 feet below grade surface.

Two independent field screening techniques were utilized in examining excavated soils, a Photo-Ionization Detector (PID) and calibrated sampling tubes (SYN-TEC). No significant or detectable levels were observed with the excavated soils.

8.0 TOPOGRAPHY/SOILS

As provided with in the Closure Report section, there are no substantial elevation changes regarding the immediate site. Elevation has been determined as 460 feet above mean sea level (MSL). Existing slope contours on the property have been made over the past two decades, attributed to the traffic thoroughfare and operating areas. The grade surface is crushed rock and silts with variable depths to eight feet below grade. The underlying soils in the southern property area appear to be clay, clayey gravel and clay silts overlying bedrock formation. Limestone bedrock has been observed in depths from surface to twenty feet below grade and extend in depth in excess of 200'. Soil conditions in the northern area appear to be a mix of clayey sands, sand and gravel overlying a shallow bed of sand-silt. Bedrock is located in depths from 20 to 60 feet below grade and extend 200 to 250 feet.

9.0 GROUND WATER/AQUIFER

Groundwater has been established below the bedrock areas approximately 350 feet below grade. There is no evidence of a conduit pertaining to the property, such as the emergence of a stream or creek. Three lagoons on the property are on the southern area where bedrock is visible at grade. With the recent rains, no outfall from the lagoons has occurred.

The Missouri River is two miles west of the property and flows in a northern direction. Cowmire Creek is located east of the site and flows in a northern direction.

A comparison of various ponds and lakes in the region would offer the potential for an aquifer to be in the area. However, based on the topographic elevations and the known formation of bedrock, the potential is greatly limited with respect to developing a flow without a primary feed. Recent precipitation may influence the ability of perched water or high saturation areas near the bedrock surfaces, however,no investigation or characterization has been conducted under this scope of work.

1-Mar 2 6 1993

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTON CONTROL PROGRAM
UST CLOSURE NOTICE

FILE COPY

FOR STATE AGENCY USE ONLY

Date received 3-26-93 County St. Louis UT# 0013618 OW ID 0W10412

Region SLRO

SECTION I FACILITIES INFORMATION

Facilities name Westlake Quarry & Material Co. UT# 13618

Address 13570 St Charles Rock Rd.

County St. Louis City Bridgeton Zip code 63044

Telephone 314-739-1127

Estimated Date of Project Initiation: 4/10/93 Estimated Date of Project Completion: 4/26/93

SECTION II USTs CLOSED

Tank #	Capacity (gal)	Year Installed	Date Removed from Service (use)	UST Construction Material	Product Stored	Method of Closure*
1	2000	82	3-93	STEEL	UNLEAD	R
2	10,000	81	1-92	"	UNLEAD	R
4	10,800	72	3-93	"	DIESEL	R
5	10,000	72	1-92	"	DIESEL	R
6	10,000	77	3-93	"	DIESEL	R
8	1,000	60	3-93	"	WASTE OIL	R

Attach additional sheets if necessary

* Removal, In-place

SECTION III USTs REGISTRATION

Are USTs registered? [X] Yes [ ] No

If no, attach completed notification of UST form.

Are or were USTs in use on or after August 28, 1989? [X] Yes [ ] No

If yes, has $100 fee per UST been paid? [X] Yes [ ] No

If no, attach $100/UST check

SECTION IV UST OWNER INFORMATION

Name Westlake Quarry & Material Co.

Address 12976 St. Charles Rock Rd.

County St Louis City Bridgeton Zip Code 63044

Contact Person B. Whitaker Telephone 739-1127

SECTION V PARTY PERFORMING CLOSURE

Name ADR/St Louis

Address P.O. Box 182

County St Charles City St Charles Zip Code 63302

Contact Person Pat Reynolds Telephone 947-1993

SECTION VI CERTIFICATION OF PROPER CLOSURE

I (name) Pat Reynolds (please print) certify that API-1604 and MDNR procedures will be followed for safety, excavation, handling and disposal of soils and of other materials; and that soils from beneath the tanks, distribution lines and pump islands will be analyzed in accordance with the requirements outlined in the Underground Storage Tank Closure Guidance Document

SIGNATURE OF RESPONSIBLE PARTY Pat Reynolds DATE 5/3-5/93

SECTION VII CLOSURE DATE

Closure may be completed on or after (Date) April 26, 1993

Signature of authorized MDNR representative James Harris (Date) 3/30/93

SECTION VIII WAIVER OF 30-DAY PERIOD

Alternative date of planned closure completion

Authorized MDNR representative [signature] Date 4-7-93 Regional Office SLRO

State Agency Use Only

State Agency Use Only

North

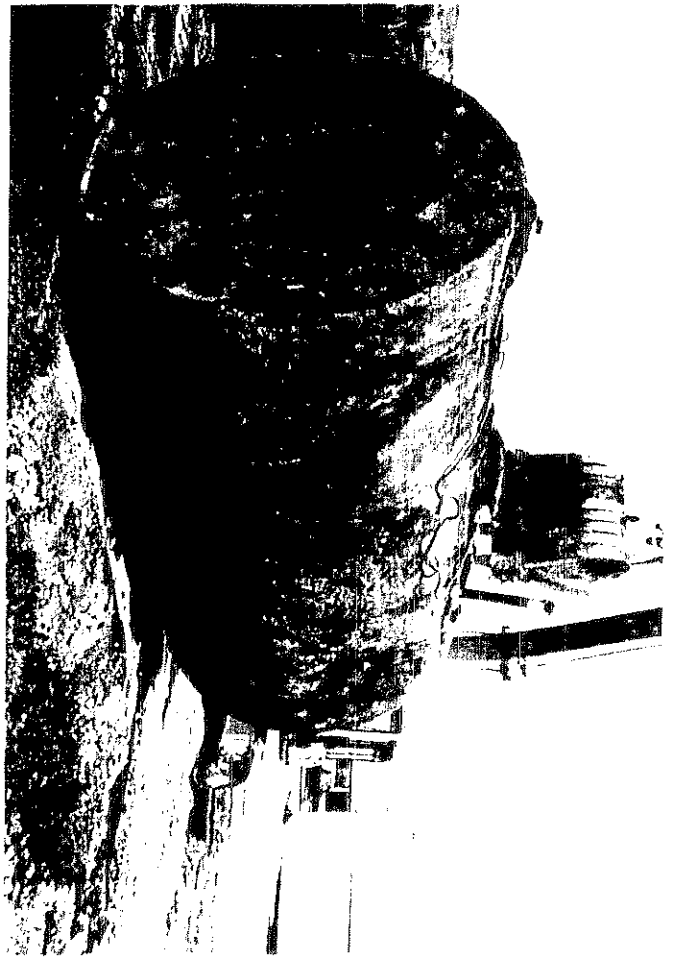
TANK # 7- Excavation

West

South

TANK # 7- Excavation

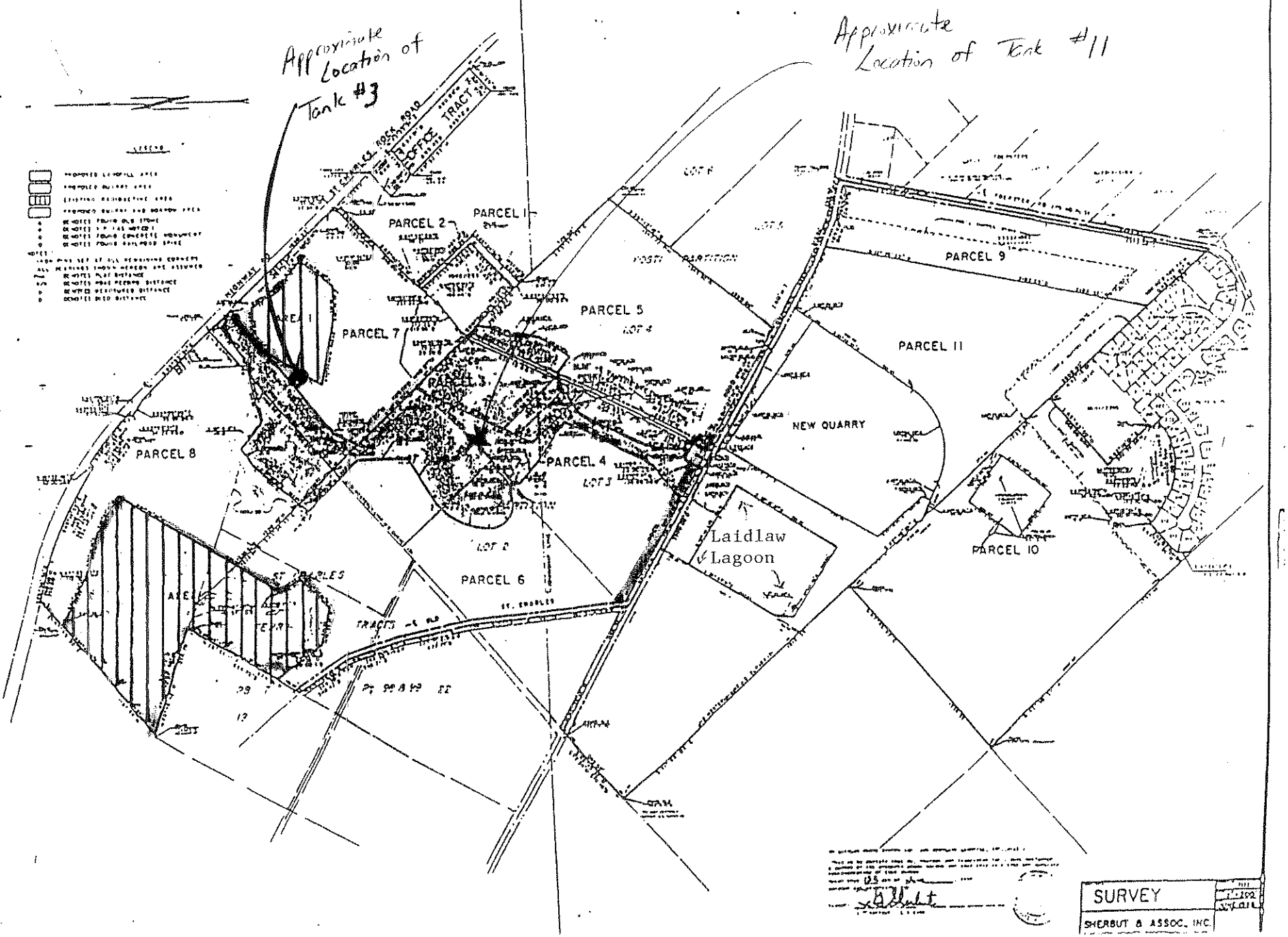
East



TANK # 7- Sidewalls, Endcaps & Bottom

SURVEY

OF LOTS 1, 2, 3, & 4 OF YOSTI[illegible] [illegible]TION IN
U.S. SURVEY 131, PART OF LOTS 2[illegible] [illegible]22 OF
ST CHARLES FERRY CO. TRACTS [illegible] [illegible]S SURVEY
47 & 1934 PART OF U.S. SURVEYS 47 [illegible] 131, 282
AND 729, ALL IN TOWNSHIPS 46
AND 47 NORTH, RANGE 5 EAST OF THE
5th. PRINCIPAL MERIDIAN,
ST. LOUIS COUNTY, MISSOURI.



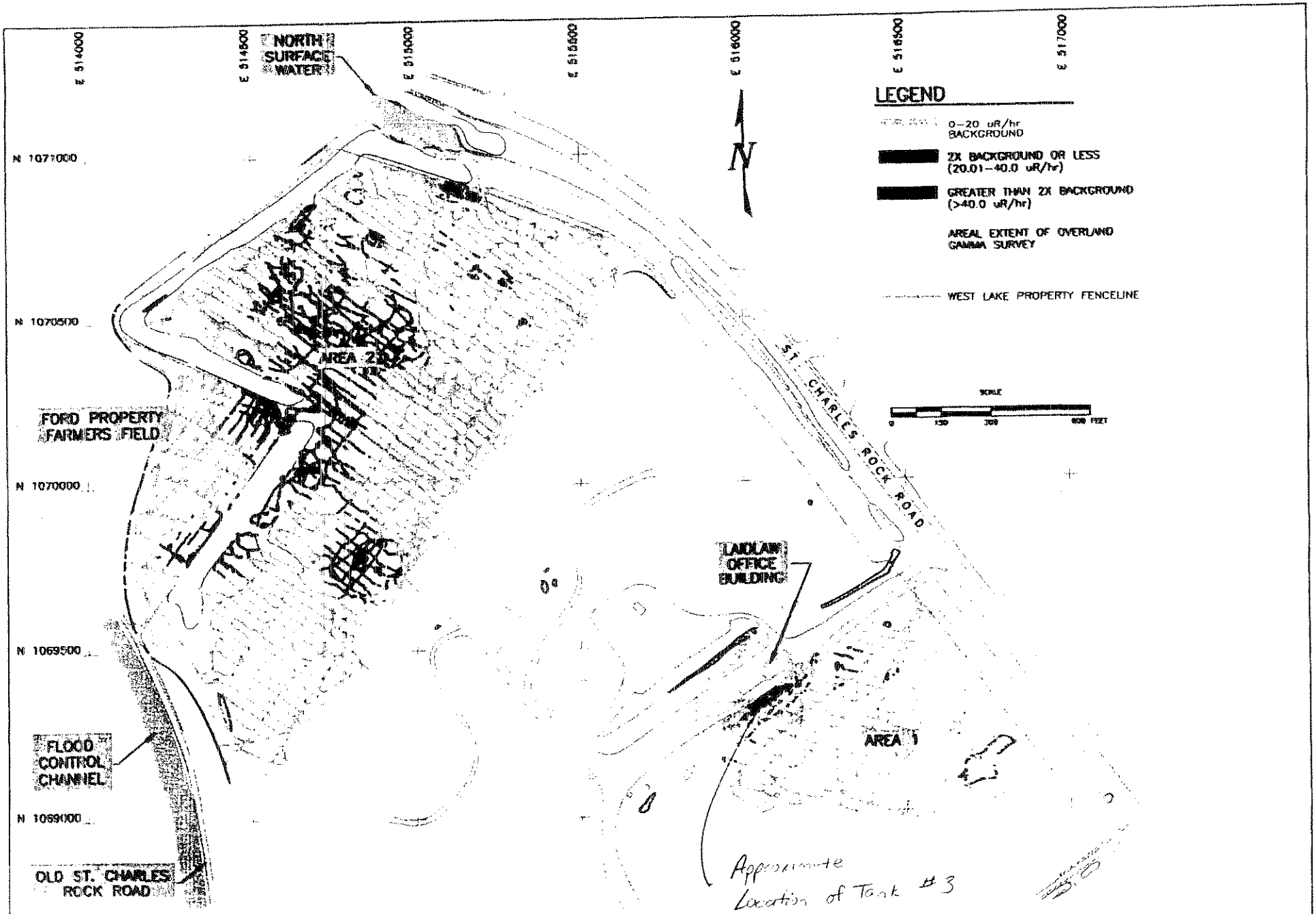


Figure 4-8 : Overland Gamma Survey Results Compared to a 20 μR/hr Background Value

January 13, 1999 Letter from Mr. David Pate of Missouri Petroleum Storage Tank Insurance Fund to Mr. Vince Jones of Maryon Industries

MISSOURI PST INSURANCE FUND

R- 3874

WILLIAMS & COMPANY CONSULTING, INC.
THIRD PARTY ADMINISTRATOR

January 13, 1999

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, Claim 50554

Dear Mr. Jones:

We have reviewed the cost proposal letter for groundwater monitoring activities at the referenced location. Based on information available at this time, it has been determined that the site is eligible to receive benefits from the Petroleum Storage Tank Insurance Fund (PSTIF). The PSTIF reserves the right to deny all or part of the costs based upon our investigation of this project.

Please carefully review the PSTIF Claim Kit for guidance on the claim process. Page 12 of the Claim Kit specifically references claims involving long term groundwater monitoring. It is your responsibility to understand what you must do to document your claim. Call this office or your claims adjuster for a free copy of the Claim Kit if you do not have one.

The costs outlined in your cost proposal are generally reasonable. With this letter we are authorizing total expenditures **not to exceed $8,000.00** for completion of four (4) quarters of groundwater monitoring. If you believe costs will exceed the amount budgeted, you must get our approval before proceeding.

Should you have any questions, please call me at (800) 765-2765.

Sincerely,

WILLIAMS & COMPANY CONSULTING, INC.

David L. Pate, PG
PSTIF Claims Manager

DLP/bls

C: Hashim Mukhtar, DNR
Ed Shepard, Schreiber Yonley and Associates
William Werner, The Stolar Partnership

June 14, 1999 Quarterly Groundwater Monitoring Report, April 13, 1999

SCHREIBER & YONLEY ASSOCIATES
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

COPY

June 14, 1999

Missouri Department of Natural Resources
Hazardous Waste Program
Tanks Section
P.O. Box 176
Jefferson City, Missouri 65102-0176

RECEIVED
JUN 16 1999
HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

RE: Maryon Industries, Inc.
13570 St. Charles Rock Road
Bridgeton, Missouri 63044
Quarterly Groundwater Monitoring Report – April 13, 1999
ST0013618, R0003874

Gentlemen:

Schreiber, Yonley & Associates, on behalf of Maryon Industries, Inc., has enclosed for your review one (1) copy of the Quarterly Groundwater Monitoring Report for the above-referenced site. This report provides a summary of environmental activities conducted on April 13, 1999, at the site by Schreiber, Yonley & Associates.

If you have any questions, please do not hesitate to contact me at (314) 349-8399.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES

Edward A. Shepard, Jr., P.E.
Senior Engineer

Enclosure

cc: Mr. Mike Jones – Maryon Industries, Inc.

MII\980125\QUARTERLY GW REPORT.DOC

RECEIVED
COPY
JUN 16 1999
HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

QUARTERLY GROUNDWATER MONITORING REPORT, April 13, 1999

MARYON INDUSTRIES, INC.
13570 ST. CHARLES ROCK ROAD
BRIDGETON, MISSOURI 63044

ST0013618, R0003874

June 14, 1999

PREPARED FOR:

MR. MIKE JONES
MARYON INDUSTRIES, INC.
2579 ROCK HILL ROAD
ST. LOUIS, MISSOURI 63144

PREPARED BY:

SCHREIBER, YONLEY & ASSOCIATES
271 WOLFNER DRIVE
ST. LOUIS, MISSOURI 63026

PROJECT NO. 980125

TABLE OF CONTENTS

COPY

1.0 INTRODUCTION 1

2.0 METHODS OF INVESTIGATION 1
- 2.1 Groundwater Monitoring Well Fluid Level Measurements 1
- 2.2 Groundwater Sampling Procedures 4

3.0 ANALYTICAL RESULTS 4

LIST OF FIGURES

FIGURE 1 GROUNDWATER ELEVATIONS MAP 3
FIGURE 2 SOLUBLE PHASE BTEX/TPH DISTRIBUTION MAP 6

LIST OF TABLES

TABLE 1 GROUNDWATER ELEVATIONS 2
TABLE 2 GROUNDWATER ANALYTICAL RESULTS 5

APPENDICES

APPENDIX A MONITORING WELL REPORT
APPENDIX B GROUNDWATER MONITORING FIELD FORM
APPENDIX C ANALYTICAL REPORT

1.0 INTRODUCTION

COPY

Schreiber, Yonley & Associates, on behalf of Maryon Industries, Inc. (MII) is submitting the following report for groundwater sampling activities conducted at the MII facility located at 13570 St. Charles Rock Road in Bridgeton, Missouri on April 13, 1999. This report is the first of four quarterly reports to be submitted under the current workplan. There is a total of five (5) groundwater monitoring wells associated with the site, designated MW-1A, MW-2A, MW-3A, MW-4A and MW-5A.

The work described herein was conducted/completed in accordance with the Groundwater Sampling Workplan (Workplan), dated May 18, 1998. The Missouri Department of Natural Resources (MDNR) approved the Workplan without revisions on November 13, 1998.

2.0 METHODS OF INVESTIGATION

The objectives of this sampling event are to monitor for the presence of total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); and methyl tertiary butyl ether (MTBE) in the uppermost groundwater beneath the property, and to evaluate if the concentrations are in excess of MDNR groundwater cleanup guidelines.

2.1 Groundwater Monitoring Well Fluid Level Measurements

The fluid levels of the five (5) groundwater monitoring wells were gauged by a Schreiber, Yonley & Associates representative on April 13, 1999. This was done to determine the presence of liquid-phase hydrocarbons and/or groundwater in the wells. The measurements of groundwater depths were taken from the top of the well casing with an ORS® Interface Probe. This device is an audible electronic probe which measures fluid levels to an accuracy of 0.01 feet.

The fluid level measurements gathered at the site are presented on the Monitoring Well Report included in Appendix A. Table 1 includes the groundwater surface elevation data collected to date.

The measurements were then referenced to the top of the casing survey data and utilized for the determination of the groundwater surface elevation and groundwater flow direction and gradient. Figure 1 presents the groundwater elevations as determined from the April 13, 1999 data.

Liquid-phase hydrocarbons were observed in MW-1A with a thickness of 3.71 (feet) during the gauging event.

The fluid level measurement data was also utilized to calculate the water column within each monitoring well and the required volume of water to purge from each monitoring well prior to sampling.

COPY

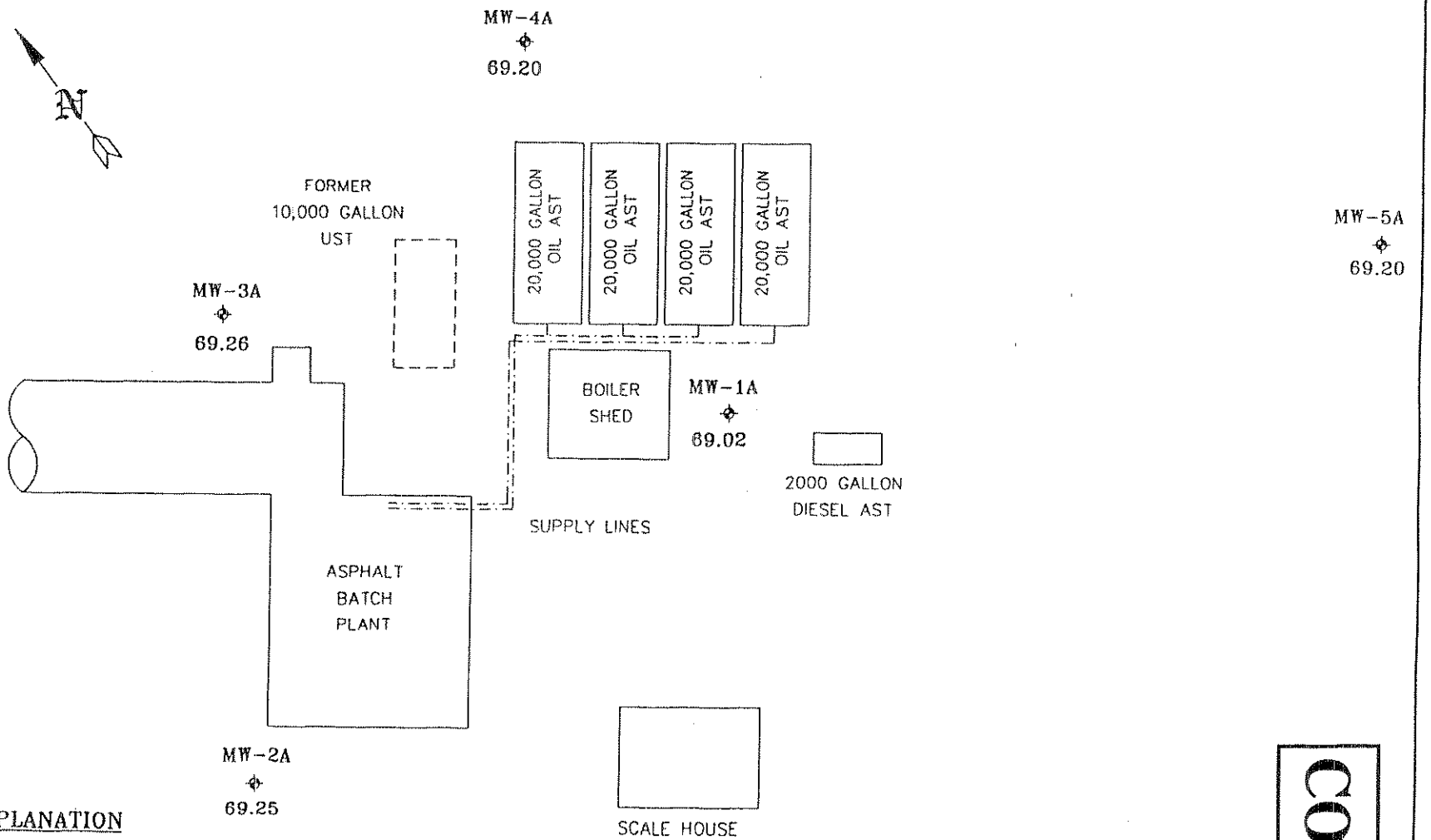
TABLE 1

GROUNDWATER ELEVATIONS
MARYON INDUSTRIES, INC.
BRIDGETON, MISSOURI

Date	Well Designation	Casing Elevation	Depth to Groundwater (BCT)	Product Thickness	Groundwater Elevation
11-10-94	MW-1A	100.32	35.02	0.85	65.98**
	MW-2A	99.14	33.11	-	66.03
	MW-3A	99.31	33.25	-	66.06
	MW-4A	100.00	34.02	-	65.98
3-31-95	MW-1A	100.32	34.45	-	65.87
	MW-2A	99.14	32.30	-	66.84
	MW-3A	99.31	32.48	-	66.83
	MW-4A	100.00	33.17	-	66.83
	MW-5A	98.22	31.32	-	66.90
4-13-99	MW-1A	100.32	34.31	3.71	69.02**
	MW-2A	99.14	29.89	-	69.25
	MW-3A	99.31	30.05	-	69.26
	MW-4A	*97.32	28.12	-	69.20
	MW-5A	98.22	29.02	-	69.20

Note: BCT denotes below casing top.
Measurements and elevations are in feet.

*New top of casing elevation after damaged well was repaired in May 1995.
** Groundwater elevation corrected for product thickness.



EXPLANATION

⌖ MONITORING WELL

AST ABOVEGROUND STORAGE TANK

UST UNDERGROUND STORAGE TANK

GROUNDWATER ELEVATIONS MAP
APRIL 13, 1999
MARYON INDUSTRIES, INC.
BRIDGETON, MISSOURI

FIGURE 1

NOT TO SCALE

CHECKED BY:	DRAWN BY:	DATE DRAWN:	DRAWING #:	REVISION:
	WKS	06-10-99	MII980125	

SCHREIBER & YONLEY ASSOCIATES
ENVIRONMENTAL ENGINEERS

COPY

2.2 Groundwater Sampling Procedures

COPY

During the 1st quarterly groundwater sampling event (April 13, 1999), groundwater samples were collected from five (5) monitoring wells: MW-1A, MW-2A, MW-3A, MW-4A and MW-5A. The samples were collected utilizing dedicated, disposable, polyethylene bailers. A new bailer was utilized at each monitoring well to preclude the need for bailer washing/decontamination, and to prevent cross-contamination between monitoring wells and samples. New bailer twine and latex gloves were utilized for each monitoring well sampled to aid in the prevention of cross contamination.

A minimum of three (3) volumes of water was purged via hand bailing from each monitoring well to obtain a representative groundwater sample from the underlying sediments/formation. Purge water was contained and stored on-site. After completion of the purge activities, groundwater samples were obtained from each monitoring well and placed into laboratory provided sample containers. The sample containers were cooled to approximately 4° Celsius and shipped next day for delivery to Specialized Assays, Inc. in Nashville, Tennessee. The samples were labeled with the collection date, sample I.D., type of preservative utilized, and person collecting the sample. A chain-of-custody form was generated and included with the samples for transport to the laboratory. The groundwater samples were analyzed for BTEX, MTBE and TPH in accordance with Method OA-1/OA-2.

Appendix B presents a copy of the Groundwater Monitoring Field Form generated during the purging and sampling activities of the five (5) monitoring wells.

3.0 ANALYTICAL RESULTS

Groundwater analytical results from the April 13, 1999, sampling event produced nondetectable concentrations of toluene, ethylbenzene and xylenes in monitoring wells 2A, 3A and 4A. The sampling event produced nondetectable concentrations of toluene, ethylbenzene and MTBE in monitoring well 5A. Monitoring well 1A produced detectable concentrations of BETX, TPH and MTBE. Monitoring wells 2A, 3A and 4A produced detectable concentrations of benzene, TPH and MTBE. Monitoring well 5A produced detectable limits of benzene, xylenes, and TPH.

As identified in Table 5 of the MDNR "Underground Storage Tank Closure Guidance Document" dated March 1996, the cleanup guideline for non-potable groundwater sources is 10 ppm for TPH, 0.05 ppm for benzene, 0.15 ppm for toluene, 0.32 ppm for ethylbenzene, 0.32 ppm for xylenes, and 0.75 ppm for total BTEX.

The cleanup guideline for non-potable groundwater sources for TPH has been exceeded in monitoring wells 1A (563.54 ppm), 4A (10.76 ppm) and 5A (16.35 ppm).

Table 2 includes the analytical results collected to date. Figure 2 depicts the distribution of the BTEX/TPH concentrations at the site for the April 13, 1999, sampling event. A copy of the Analytical Report and the chain-of-custody form is contained in Appendix C.

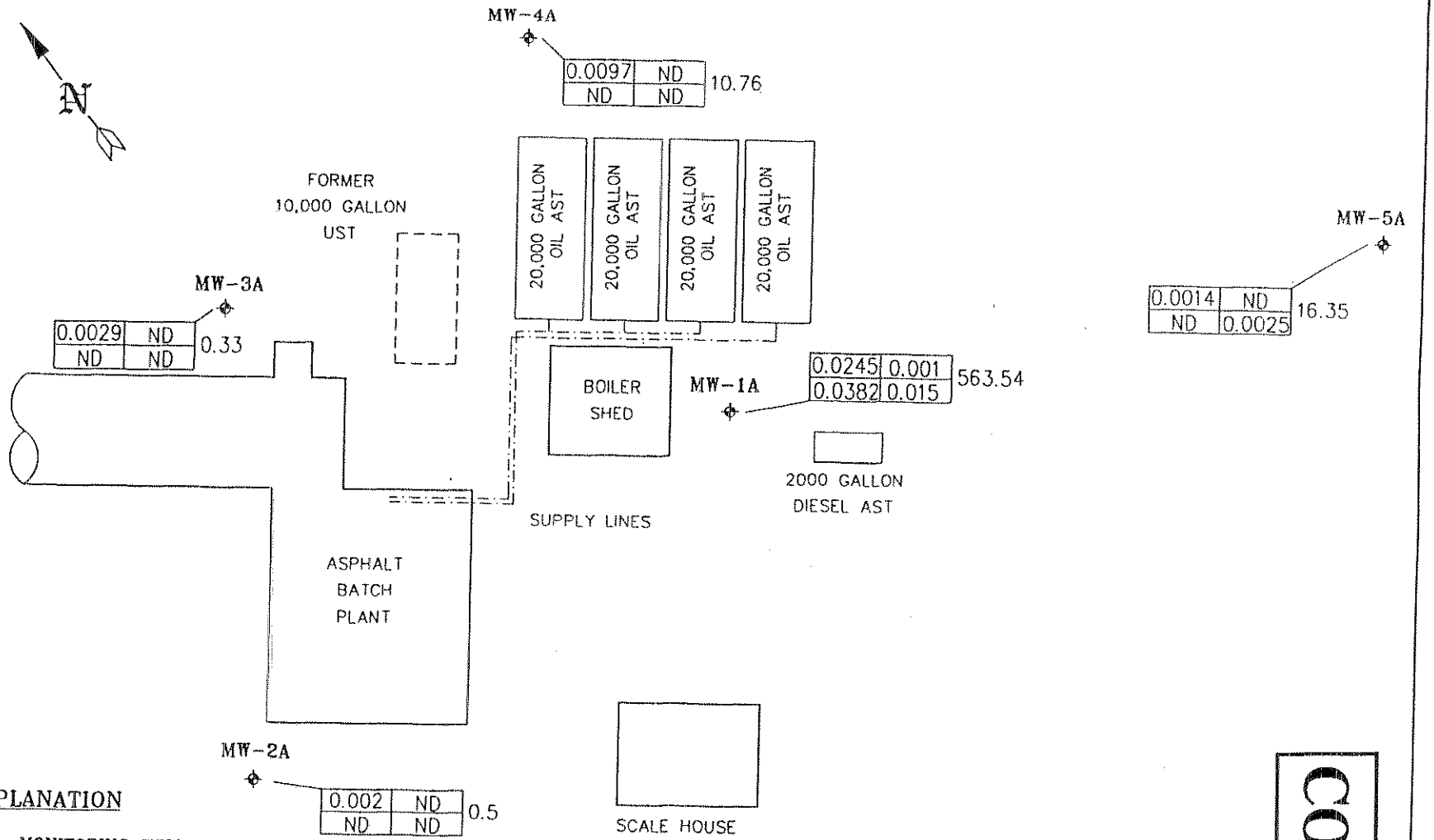
COPY

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
MARYON INDUSTRIES, INC.
BRIDGETON, MISSOURI

Date	Location	Benzene	Toluene	Ethyl-benzene	Xylenes	Total BTEX	TPH	MTBE
11-10-94	MW-1A	NS	NS	NS	NS	NS	NS	NA
	MW-2A	0.001	<0.001	<0.001	<0.001	<0.004	<0.10	NA
	MW-3A	<0.001	<0.001	<0.001	<0.001	<0.004	0.16	NA
	MW-4A	<0.001	0.001	0.003	0.002	<0.007	**13.8**	NA
03-31-95	MW-1A	0.036	0.008	0.060	0.134	0.238	**2450**	NA
	MW-2A	0.001	<0.001	<0.001	<0.001	<0.004	0.58	NA
	MW-3A	0.002	<0.001	<0.001	<0.001	<0.005	<0.10	NA
	MW-4A	0.008	<0.001	0.005	<0.001	<0.015	**34.5**	NA
	MW-5A	0.002	0.001	<0.001	0.005	<0.009	1.41	NA
4-13-99	MW-1A	0.0245	0.001	0.0382	0.015	0.0787	**563.54**	0.0064
	MW-2A	0.002	ND	ND	ND	0.002	0.5	0.0066
	MW-3A	0.0029	ND	ND	ND	0.0029	0.33	0.009
	MW-4A	0.0097	ND	ND	ND	0.0097	**10.76**	0.0068
	MW-5A	0.0014	ND	ND	0.0025	0.0039	**16.35**	ND

Notes: Results in ppm
Bold denotes exceedances of MDNR Non-Potable Groundwater Cleanup Guidelines of 0.05 for Benzene, 0.15 ppm for Toluene, 0.32 ppm for Ethylbenzene and 0.32 ppm for Xylenes; 0.75 ppm for Total BTEX; 10 ppm for TPH and 0.4 ppm for MTBE as identified in Table 5 of the MDNR "Underground Storage Tank Closure Guidance Document" dated March 1996.
NS – denotes not sampled.
NA – Not Analyzed
ND – not detected



EXPLANATION

- ⌖ MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- UST UNDERGROUND STORAGE TANK
- ND NON DETECTED

Benzene	Toluene
Ethylbenzene	Xylenes

TPH

SOLUBLE-PHASE BTEX/TPH DISTRIBUTION MAP
APRIL 13, 1999
MARYON INDUSTRIES, INC.
BRIDGETON, MISSOURI

FIGURE 2

NOT TO SCALE

CHECKED BY:	DRAWN BY:	DATE DRAWN:	DRAWING #:	REVISION:
	WKS	06-10-99	MIIBTEX	

SCHREIBER & YONLEY ASSOCIATES
ENVIRONMENTAL ENGINEERS

COPY

COPY

APPENDIX A

MONITORING WELL REPORT

SCHREIBER & YONLEY ASSOCIATES
ENVIRONMENTAL ENGINEERS

MONITORING WELL REPORT

Client: Maryon Industries, Inc.	Project No.: 980125
Project: Monitoring Well Sampling	Page: 1 of 1
Observed by: H. Pope	Date: 4/13/99
Prepared by: H. Pope	Date: 4/14/99
Checked by:	Date:

COPY

MONITORING WELL #	CASING ELEVATION (ft)	DEPTH TO PRODUCT (ft)	DEPTH TO WATER (ft)	PRODUCT THICKNESS (ft)	WATER ELEVATION (ft)
MW-1A	100.32	30.60	34.31	3.71	69.02 **
MW-2A	99.14	—	29.89	—	69.25
MW-3A	99.31	—	30.05	—	69.26
MW-4A	97.32 *	—	28.12	—	69.20
MW-5A	98.22	—	29.02	—	69.20

Remarks: * Corrected elevation after damaged well was repaired in May of 1995.
** Corrected elevation for product thickness.

COPY

APPENDIX B

GROUNDWATER MONITORING FIELD FORM

GROUNDWATER MONITORING FIELD FORM

PURGING PHASE									
WELL NO.	DATE	TIME	DEPTH TO SWL (FT)	TOTAL DEPTH (FT)	LENGTH WATER COL (FT)	LENGTH OF SAND PACK (FT)	REQ GALS TO PURGE 3 VOLS	AMOUNT PURGED (GAL)	DEPTH TO SWL AFTER PURGE (FT)
-1A	4-13	—	34.31	37.50	3.19	—	1.5 *	4.0	—
-2A	4-13	—	29.89	36.50	6.61	—	3.2	3.5	—
-3A	4-13	—	30.05	36.95	6.90	—	3.3	3.5	—
-4A	4-13	—	28.12	33.95	5.83	—	2.8	3.0	—
-5A	4-13	—	29.02	31.80	2.78	—	1.3	1.5	—

SAMPLING PHASE											
DATE	TIME	PH	SPEC COND AT 25°C	TEMP (°C)	COLOR	COLOR AFTER FILTER	ODOR	TURB BEFORE FILTER	TURB	# OF FILTERS	VOLUME FILTERED (ML)
4-13	11:30	—	—	—	cloudy	—	Strong	—	Mod	—	—
4-13	12:10	—	—	—	gray	—	ND	—	High	—	—
4-13	13:00	—	—	—	gray	—	ND	—	High	—	—
4-13	13:30	—	—	—	gray	—	slight	—	High	—	—
4-13	13:50	—	—	—	cloudy	—	Mod	—	Mod	—	—

TEMPERATURE/WEATHER CONDITIONS: cloudy, turning partly cloudy 50°-57° F

EQUIPMENT USED: Interface Probe, disposable bailers, Latex gloves, D.I. Water

OTHER REMARKS: * There was 3.71' of product on top of water level noted at MW-1A. slight sheen noticed on purged water from MW-5A.

CASING I.D. (INCHES)	GAL/FT/CASING	BOREHOLE DIA. (INCHES)	GAL/FT/WELL VOLUME (V1+V2)
1.25	0.06	4	.24
1.25	0.06	6	.48
1.5	0.09	4	.26
1.5	0.09	6	.50
2	0.16	6	0.55
2	0.16	8	0.89
2	0.16	10	1.33
4	0.65	8	1.23
4	0.65	10	1.67
4	0.65	12	2.21
6	1.47	10	2.33
6	1.47	12	2.76
6	1.47	14	3.40

COPY

SCHREIBER & YONLEY ASSOCIATES
ENVIRONMENTAL ENGINEERS
271 Wolfner Drive
Saint Louis, Missouri 63026

SITE NAME: Marion Industries, Inc. Bridgeton, MO

PERSONNEL: H. Pope

CLIENT: Marion Ind. Inc. PROJECT #: 980103

PROJECT: Monitoring Well Sampling PAGE: 1 of 1

PREPARED BY: H. Pope DATE: 4-13-99

CHECKED BY: DATE:

COPY

APPENDIX C

ANALYTICAL REPORT

SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

COPY

CHRIEBER & YONLEY, INC. 5314
D SHEPPARD
271 WOLFNER DRIVE
T. LOUIS, MO 63026

Lab Number: 99-A53032
Sample ID: MW-1A
Sample Type: Water
Site ID:

Date Collected: 4/13/99
Time Collected: 11:30
Date Received: 4/15/99
Time Received: 9:00

Project: 980125
Project Name: MARYON INDUSTRIES, INC.
Sampler: HOMER POPE

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Benzene	24.5	ug/l	1.0	1.0	1	4/21/99	14:08	F.Gundi	DA-1	8485
Toluene	1.0	ug/l	1.0	1.0	1	4/21/99	14:08	F.Gundi	DA-1	8485
Ethylbenzene	38.2	ug/l	1.0	1.0	1	4/21/99	14:08	F.Gundi	DA-1	8485
Xylenes, total	15.0	ug/l	1.0	1.0	1	4/21/99	14:08	F.Gundi	DA-1	8485
Methyl-t-butylether	6.4	ug/l	1.0	1.0	1	4/21/99	14:08	F.Gundi	DA-1	8485
TPH as Gasoline	2540	ug/l	100.	100.	1	4/21/99	14:08	F.Gundi	DA-1	8485
Extractable Petroleum Products										
Mineral Spirits	ND	ug/l	51000	100.	500	4/19/99	1:23	K.Walkup	DA-2	339
Kerosene	ND	ug/l	51000	100.	500	4/19/99	1:23	K.Walkup	DA-2	339
Diesel Fuel	561000	ug/l	51000	100.	500	4/19/99	1:23	K.Walkup	DA-2	339
Fuel Oil	ND	ug/l	51000	100.	500	4/19/99	1:23	K.Walkup	DA-2	339
Motor Oil	ND	ug/l	51000	100.	500	4/19/99	1:23	K.Walkup	DA-2	339
Hydraulic Fluid	ND	ug/l	51000	100.	500	4/19/99	1:23	K.Walkup	DA-2	339

ND = Not detected at the report limit.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
EPH	980. ml	1.00 ml	4/16/99	M. Cauthen	3510

DA-1 Sample pH <2.0
DA-2 Sample pH 8

Surrogate	% Recovery	Target Range
A/GRO Surr., a,a,a-trifluorotoluene	95.	50. - 150.

DA-2 surrogate was diluted out due to sample matrix.

SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

COPY

Laboratory Number: 99-A53032
Sample ID: MW-1A

Report Approved By: Michael D. Dunn Report Date: 4/21/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

COPY

SCHRIEBER & YONLEY, INC. 5314
ATTN SHEPPARD
8271 WOLFNER DRIVE
ST. LOUIS, MO 63026

Lab Number: 99-A53033
Sample ID: MW-2A
Sample Type: Water
Site ID:

Project: 980125
Project Name: MARYON INDUSTRIES, INC.
Sampler: HOMER POPE

Date Collected: 4/13/99
Time Collected: 12:10
Date Received: 4/15/99
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Benzene	2.0	ug/l	1.0	1.0	1	4/20/99	21:50	F.Gundi	DA-1	8485
Toluene	ND	ug/l	1.0	1.0	1	4/20/99	21:50	F.Gundi	DA-1	8485
Ethylbenzene	ND	ug/l	1.0	1.0	1	4/20/99	21:50	F.Gundi	DA-1	8485
Xylenes, total	ND	ug/l	1.0	1.0	1	4/20/99	21:50	F.Gundi	DA-1	8485
Methyl-t-butylether	6.6	ug/l	1.0	1.0	1	4/20/99	21:50	F.Gundi	DA-1	8485
TPH as Gasoline	ND	ug/l	100.	100.	1	4/20/99	21:50	F.Gundi	DA-1	8485
Extractable Petroleum Products										
Mineral Spirits	ND	ug/l	100.	100.	1	4/18/99	15:26	K.Walkup	DA-2	339
Kerosene	ND	ug/l	100.	100.	1	4/18/99	15:26	K.Walkup	DA-2	339
Diesel Fuel	ND	ug/l	100.	100.	1	4/18/99	15:26	K.Walkup	DA-2	339
Fuel Oil	500.	ug/l	100.	100.	1	4/18/99	15:26	K.Walkup	DA-2	339
Motor Oil	ND	ug/l	100.	100.	1	4/18/99	15:26	K.Walkup	DA-2	339
Hydraulic Fluid	ND	ug/l	100.	100.	1	4/18/99	15:26	K.Walkup	DA-2	339

ND = Not detected at the report limit.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
EPH	1000 ml	1.00 ml	4/16/99	M. Cauthen	3510

DA-1 Sample pH <2.0
DA-2 Sample pH 8

Surrogate	% Recovery	Target Range
o-Terphenyl	71.	50. - 150.
BTEX/GRO Surr., a,a,a-trifluorotoluene	100.	50. - 150.

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

COPY

Laboratory Number: 99-A53033
Sample ID: MW-2A

Report Approved By: Michael A. Dunn Report Date: 4/21/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

SPECIALIZED ASSAYS, INC.
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P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

COPY

CHRIEBER & YONLEY, INC. 5314
D SHEPPARD
271 WOLFNER DRIVE
T. LOUIS, MO 63026

Lab Number: 99-A53034
Sample ID: MW-3A
Sample Type: Water
Site ID:

Date Collected: 4/13/99
Time Collected: 13:00
Date Received: 4/15/99
Time Received: 9:00

Project: 980125
roject Name: MARYON INDUSTRIES, INC.
ampler: HOMER POPE

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Benzene	2.9	ug/l	1.0	1.0	1	4/20/99	23:30	F.Gundi	DA-1	8485
Toluene	ND	ug/l	1.0	1.0	1	4/20/99	23:30	F.Gundi	DA-1	8485
Ethylbenzene	ND	ug/l	1.0	1.0	1	4/20/99	23:30	F.Gundi	DA-1	8485
Xylenes, total	ND	ug/l	1.0	1.0	1	4/20/99	23:30	F.Gundi	DA-1	8485
Methyl-t-butylether	9.0	ug/l	1.0	1.0	1	4/20/99	23:30	F.Gundi	DA-1	8485
TPH as Gasoline	140.	ug/l	100.	100.	1	4/20/99	23:30	F.Gundi	DA-1	8485
? Extractable Petroleum Products										
ineral Spirits	ND	ug/l	100.	100.	1	4/18/99	15:55	K.Walkup	DA-2	339
Kerosene	ND	ug/l	100.	100.	1	4/18/99	15:55	K.Walkup	DA-2	339
Diesel Fuel	ND	ug/l	100.	100.	1	4/18/99	15:55	K.Walkup	DA-2	339
Fuel Oil	190.	ug/l	100.	100.	1	4/18/99	15:55	K.Walkup	DA-2	339
Motor Oil	ND	ug/l	100.	100.	1	4/18/99	15:55	K.Walkup	DA-2	339
Hydraulic Fluid	ND	ug/l	100.	100.	1	4/18/99	15:55	K.Walkup	DA-2	339

ND = Not detected at the report limit.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
EPH	1000 ml	1.00 ml	4/16/99	M. Cauthen	3510

DA-1 Sample pH <2.0
DA-2 Sample pH 8

Surrogate	% Recovery	Target Range
o-Terphenyl	88.	50. - 150.
BTEX/GRO Surr., a,a,a-trifluorotoluene	101.	50. - 150.

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

COPY

Laboratory Number: 99-A53034
Sample ID: MW-3A

Report Approved By: Michael D. Dunn Report Date: 4/21/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

COPY

CHRIEBER & YONLEY, INC. 5314
D SHEPPARD
271 WOLFNER DRIVE
ST. LOUIS, MO 63026

Project: 980125
Project Name: MARYON INDUSTRIES, INC.
Sampler: HOMER POPE

Lab Number: 99-A53035
Sample ID: MW-4A
Sample Type: Water
Site ID:

Date Collected: 4/13/99
Time Collected: 13:30
Date Received: 4/15/99
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Benzene	9.7	ug/l	1.0	1.0	1	4/21/99	14:42	F.Gundi	DA-1	8485
Toluene	ND	ug/l	1.0	1.0	1	4/21/99	14:42	F.Gundi	DA-1	8485
Ethylbenzene	ND	ug/l	1.0	1.0	1	4/21/99	14:42	F.Gundi	DA-1	8485
Xylenes, total	ND	ug/l	1.0	1.0	1	4/21/99	14:42	F.Gundi	DA-1	8485
Methyl-t-butylether	6.8	ug/l	1.0	1.0	1	4/21/99	14:42	F.Gundi	DA-1	8485
TPH as Gasoline	560.	ug/l	100.	100.	1	4/21/99	14:42	F.Gundi	DA-1	8485
2 Extractable Petroleum Products										
Mineral Spirits	ND	ug/l	1010	100.	10	4/19/99	0:32	K.Walkup	DA-2	339
Kerosene	ND	ug/l	1010	100.	10	4/19/99	0:32	K.Walkup	DA-2	339
Diesel Fuel	ND	ug/l	1010	100.	10	4/19/99	0:32	K.Walkup	DA-2	339
Fuel Oil	10200	ug/l	1010	100.	10	4/19/99	0:32	K.Walkup	DA-2	339
Motor Oil	ND	ug/l	1010	100.	10	4/19/99	0:32	K.Walkup	DA-2	339
Hydraulic Fluid	ND	ug/l	1010	100.	10	4/19/99	0:32	K.Walkup	DA-2	339

ND = Not detected at the report limit.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
EPH	990. ml	1.00 ml	4/16/99	M. Cauthen	3510

DA-1 Sample pH <2.0
DA-2 Sample pH 8

Surrogate	% Recovery	Target Range
Surr-o-Terphenyl	50.	50. - 150.
BTEX/GRO Surr., a,a,a-trifluorotoluene	103.	50. - 150.

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

COPY

Laboratory Number: 99-A53035
Sample ID: MW-4A

Report Approved By: Michael D. Dunn Report Date: 4/21/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

COPY

CHRIEBER & YONLEY, INC. 5314
D SHEPPARD
271 WOLFNER DRIVE
ST. LOUIS, MO 63026

Project: 980125
Project Name: MARYON INDUSTRIES, INC.
Sampler: HOMER POPE

Lab Number: 99-A53036
Sample ID: MW-5A
Sample Type: Water
Site ID:

Date Collected: 4/13/99
Time Collected: 13:50
Date Received: 4/15/99
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Benzene	1.4	ug/l	1.0	1.0	1	4/21/99	15:16	F.Gundi	OA-1	8485
Toluene	ND	ug/l	1.0	1.0	1	4/21/99	15:16	F.Gundi	OA-1	8485
Ethylbenzene	ND	ug/l	1.0	1.0	1	4/21/99	15:16	F.Gundi	OA-1	8485
Xylenes, total	2.5	ug/l	1.0	1.0	1	4/21/99	15:16	F.Gundi	OA-1	8485
Methyl-t-butylether	ND	ug/l	1.0	1.0	1	4/21/99	15:16	F.Gundi	OA-1	8485
TPH as Gasoline	850.	ug/l	100.	100.	1	4/21/99	15:16	F.Gundi	OA-1	8485
Extractable Petroleum Products										
Mineral Spirits	ND	ug/l	1010	100.	10	4/19/99	1:01	K.Walkup	OA-2	339
Kerosene	ND	ug/l	1010	100.	10	4/19/99	1:01	K.Walkup	OA-2	339
Diesel Fuel	ND	ug/l	1010	100.	10	4/19/99	1:01	K.Walkup	OA-2	339
Fuel Oil	15500	ug/l	1010	100.	10	4/19/99	1:01	K.Walkup	OA-2	339
Motor Oil	ND	ug/l	1010	100.	10	4/19/99	1:01	K.Walkup	OA-2	339
Hydraulic Fluid	ND	ug/l	1010	100.	10	4/19/99	1:01	K.Walkup	OA-2	339

ND = Not detected at the report limit.

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
EPH	990. ml	1.00 ml	4/16/99	M. Cauthen	3510

OA-1 Sample pH <2.0
OA-2 Sample pH 8

Surrogate	% Recovery	Target Range
o-Terphenyl	60.	50. - 150.
BTEX/GRO Surr., a,a,a-trifluorotoluene	100.	50. - 150.

SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

COPY

Laboratory Number: 99-A53036
Sample ID: MW-5A

Report Approved By: Michael H. Dunn Report Date: 4/21/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

SPECIALIZED ASSAYS, INC.

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P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

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PROJECT QUALITY CONTROL DATA

Matrix Spike Recovery

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch
Benzene	mg/l	< 0.0010	0.0183	0.0200	92	75. - 125.	8485
Toluene	mg/l	< 0.0010	0.0185	0.0200	92	70. - 125.	8485
Ethylbenzene	mg/l	< 0.0010	0.0210	0.0200	105	71. - 129.	8485
Xylenes, total	mg/l	< 0.0010	0.0390	0.0400	98	71. - 133.	8485
Methyl-t-butylether	mg/l	< 0.0010	0.0176	0.0200	88	75. - 125.	8485
TPH as Gasoline	mg/l	< 0.10	1.17	1.11	105	80. - 120.	8485
Diesel Fuel	mg/l	< 0.10	2.01	2.00	100	52. - 112.	339

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
Benzene	mg/l	0.0183	0.0210	13.74	20.	8485
Toluene	mg/l	0.0185	0.0213	14.07	20.	8485
Ethylbenzene	mg/l	0.0210	0.0200	4.88	20.	8485
Xylenes, total	mg/l	0.0390	0.0440	12.05	20.	8485
Methyl-t-butylether	mg/l	0.0176	0.0210	17.62	20.	8485
TPH as Gasoline	mg/l	1.17	1.13	3.48	20.	8485
Diesel Fuel	mg/l	2.01	1.99	1.00	19.	339

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
Benzene	mg/l	0.0200	0.0216	108	70 - 130	8485
Toluene	mg/l	0.0200	0.0213	106	70 - 130	8485
Ethylbenzene	mg/l	0.0200	0.0203	102	70 - 130	8485
Xylenes, total	mg/l	0.0400	0.0449	112	70 - 130	8485
Methyl-t-butylether	mg/l	0.0200	0.0208	104	70 - 130	8485
TPH as Gasoline	mg/l	1.11	1.17	105	70 - 130	8485
Diesel Fuel	mg/l	2.00	2.10	105	70 - 130	339

Blank Data

Analyte	Blank Value	Units	Q.C. Batch
Benzene	< 0.0010	mg/l	8485
Toluene	< 0.0010	mg/l	8485
Ethylbenzene	< 0.0010	mg/l	8485
Xylenes, total	< 0.0010	mg/l	8485
Methyl-t-butylether	< 0.0010	mg/l	8485
TPH as Gasoline	< 0.10	mg/l	8485
Mineral Spirits	< 0.10	mg/l	339
Kerosene	< 0.10	mg/l	339
Diesel Fuel	< 0.10	mg/l	339
Fuel Oil	< 0.10	mg/l	339

SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

COPY

SCHRIEBER & YONLEY, INC. 5614
ED SHEPPARD
271 WOLFNER DRIVE
ST. LOUIS, MO 63126

CHAIN OF CUSTODY

Project Number: 980125 | Sampler: Homer Pope

Project Name: Marmon Industries, Inc. | BAE Quote:

Analysis Requested: OA-1/OA-2

Lab No.	Field Number	Date	Time	Matrix	Grab	Comp	Bottles	BTEX	MTBE	TPH
99-A53032	1W-1A	4/13/99	11:30	H_2O	X		3	X	X	X
99-A53033	1W-2A	4/13/99	12:10	H_2O	X		3	X	X	X
99-A53034	1W-3A	4/13/99	13:00	H_2O	X		3	X	X	X
99-A53035	1W-4A	4/13/99	13:30	H_2O	X		3	X	X	X
99-A53036	1W-5A	4/13/99	13:50	H_2O	X		3	X	X	X

Relinquished by:	D/T	Received by:	D/T	Relinquished by:	D/T	Received by:
Homer Pope	4/14/99 11:00					
Relinquished by:	D/T	Received by:	D/T	Relinquished by:	D/T	Received by:

Cooler Temperature When Received: 4°c

Laboratory Project Number: 139106

Cooler Seals Intact?

SPECIAL INSTRUCTIONS:

July 8, 1999 Letter from Mr. Jim Growney of the MDNR to Mr. Vince Jones of Maryon Industries

STATE OF MISSOURI
Mel Carnahan, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

July 8, 1999

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, R0003874

Dear Mr. Jones:

The Tanks Section of the Hazardous Waste Program has received and reviewed the June 14, 1999, Schreiber, Yonley & Associates, Quarterly Groundwater Monitoring Report for the above-cited facility. The analytical data in the report indicates that significant contamination still exists in the area of monitoring wells MW-1A, MW-4A, and MW-5A. Incidentally, the department requested a corrective action plan for more aggressive product recovery from MW-1A in two letters from the department dated May 20, 1998, and November 13, 1998. Please explain the delay in the completion of this plan. Please submit a corrective action plan for aggressive product recovery from MW-1A within 45 days of receipt of this letter.

The department looks forward to reviewing the next groundwater monitoring report as soon as it is available.

If you have any questions regarding this letter, you may contact Mr. Hugh Murrell of my staff at (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM

Jim Growney

Jim Growney, Unit Chief
Remediation Unit

JG:hmg

c: Mr. David Pate, Williams and Company
Mr. Edward A. Shepard, Schreiber, Yonley & Associates
Mr. Mike Struckhoff, St. Louis Regional Office

Recycled Paper

August 16, 1999 Letter from Amy Stewart of Screiber, Yonley & Associates to Mr. Hugh Murrell of the MDNR

ST13618 /R3874

SCHREIBER & YONLEY ASSOCIATES
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

COPY

August 16, 1999

Mr. Hugh Murrell
Hazardous Waste Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102-0176

RECEIVED
AUG 18 1999
HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

RE: West Lake Quarry and Material
13570 St. Charles Rock Road
Bridgeton, Missouri
ST0013618, R0003874

Dear Mr. Murrell:

Schreiber, Yonley & Associates has received correspondence from MDNR, dated July 8, 1999 requesting a corrective action plan for aggressive product recovery for MW-1A be submitted within 45 days of receipt of the letter. Per our telephone conversation on August 16, 1999, Schreiber, Yonley & Associates is requesting on behalf of Maryon Industries, a thirty day extension for submission of this corrective action plan.

Please contact Mr. Edward Shepard at (636) 349-8399 with questions or comments regarding this correspondence.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES

Amy Stewart

Amy R. Stewart
Environmental Engineer

August 27, 1999 Letter from Mr. Jim Growney of the MDNR to Mr. Vince Jones of Maryon Industries

ST13618
R3874

STATE OF MISSOURI
Mel Carnahan, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

COPY

August 27, 1999

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, R0003874

Dear Mr. Jones:

The Tanks Section of the Hazardous Waste Program has received and reviewed the August 16, 1999, Schreiber Yonley & Associates request for an extension for submittal of a corrective action plan for the above-cited facility. The department approves a 30-day extension. Please submit the corrective action plan no later than September 27, 1999.

If you have any questions regarding this letter, you may contact Mr. Hugh Murrell of my staff at (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM

Jim Growney

Jim Growney, Chief
Remediation Unit

JG:hml

c: Mr. David Pate, Williams and Company
Mr. Edward A. Shepard, Schreiber Yonley & Associates
Mr. Mike Struckhoff, St. Louis Regional Office

Recycled Paper

September 24, 1999 Letter from Mr. Edward Shepard Jr. of Schreiber, Yonley & Associates to Mr. Hugh Murrell of the MDNR

SCHREIBER & YONLEY ASSOCIATES
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

COPY

September 24, 1999

Mr. Hugh Murrell
Missouri Department of Natural Resources
Tanks Section
1738 East Elm
Jefferson City, MO 65101

RECEIVED
SEP 27 1999
HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

RE: West Lake Quarry & Material
13570 St. Charles Rock Road
Bridgeton, Missouri
ST0013618, R0003874

Dear Mr. Murrell:

Schreiber, Yonley & Associates, on behalf of Maryon Industries, Inc., is submitting the following scope of work for free product recovery from the above referenced facility. This submittal is in response to the Missouri Department of Natural Resources (MDNR) correspondence dated July 8, 1999 requesting a workplan and budget be prepared to perform aggressive free product recovery at the above referenced facility.

The following text describes the currently anticipated scope of work.

SCOPE OF WORK

Task 1 Product Recovery

1. Install one (1) Ferret™ (Manufactured by QED Environmental Systems, Inc.) product recovery pump in monitoring well MW-1A. The Ferret™ pump is a pneumatically operated pump which recovers product only and leaves water in the well. The pump will be equipped with an automatic controller and an automatic shut off valve to prevent overfilling of the recovered product container.

2. Product will be collected and containerized in properly labeled, DOT approved, 55-gallon, steel drums. The drums will be stored on-site pending proper disposal.

COPY

Task 2 Product Recovery Monitoring

1. Monitor the pump and product level on a weekly basis for the first month, bi-weekly the second month, and then on a monthly basis.

2. Submit a monthly free product recovery report summarizing amount of free product collected and depth of product remaining in the monitoring well.

Task 3 Quarterly Groundwater Monitoring

1. Measure the depth to groundwater utilizing an electronic water level indicator or an electronic interface probe if free product is encountered.

2. Following the measurement of the groundwater depth in each well, the well will be purged by removing a minimum of three (3) well casing volumes of groundwater. Well purging activities will be accomplished using a dedicated, disposable polyethylene bailer.

   Purge water generated during the purging activities will be contained and stored on-site in labeled, 55-gallon, DOT-approved steel drums. Purge water will be stored on-site, pending receipt of the groundwater sample analytical results from the monitoring wells. Purge water generated from the monitoring well purging activities will be properly disposed.

3. Upon completion of well purging activities, a groundwater sample will be collected from each monitoring well utilizing a disposable, polyethylene bailer. The bailer will be lowered into the water column within the monitoring well. Upon removal of the bailer, the groundwater sample will be poured directly into precleaned, laboratory supplied sample containers. The sample containers will be labeled with the collection date and time, sample identification, type of preservative utilized, and collector's name. The sample containers will be placed in a cooler and cooled to approximately four (4) degrees Celsius and shipped via next day delivery to the selected analytical laboratory. A chain-of-custody form will be generated and included with the samples for transport to the laboratory.

4. The groundwater samples will be analyzed for total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); and methyl tertiary butyl ether (MTBE) in accordance with method OA-1/OA-2.

5. Upon completion of the monitoring well sampling activities and receipt of analytical results for the monitoring wells, Schreiber, Yonley & Associates will develop a summary report. The report will detail the monitoring well sampling activities as well as present field and analytical data from the previous sampling events.

COPY

Schreiber, Yonley & Associates is proposing to perform Tasks 2 and 3 for a period of one (1) year. At the end of one (1) year, the data will be evaluated to determine if further remedial activities are needed.

Pump estimates and specifications are included as Attachment A and the Schreiber, Yonley & Associates cost estimate is included as Attachment B.

Should you have any questions or need additional information, please do not hesitate to contact me at (636) 349-8399.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES

Edward A. Shepard, Jr., P.E.
Senior Engineer

Attachments

cc: Mr. Mike Jones – Maryon Industries, Inc.

MII\980125\WEST LAKE QUARRY RPT.DOC

COPY

ATTACHMENT A

PUMP ESTIMATES AND SPECIFICATIONS

QED ENVIRONMENTAL SYSTEMS, INC.

P.O. Box 3726 Ann Arbor, MI 48106 Phone: 1-800-624-2026 Fax: 1-734-995-1170

Estimate #
R0999-27555

September 23, 1999

COPY

To: **Ed Shepard**
Schrieber Grana & Yonley
271 Wolfner Drive

Fenton, MO 63026

Phone: 314-349-8399
Fax: 314-349-8384

Your QED Rep: **Gunnar Peterson**
A-Better Earth
Phone: 913-888-0024 800-386-5134
Fax: 913-888-8566
E-mail: abeinc@swbell.net
Prepared by: Sunita Whitehead

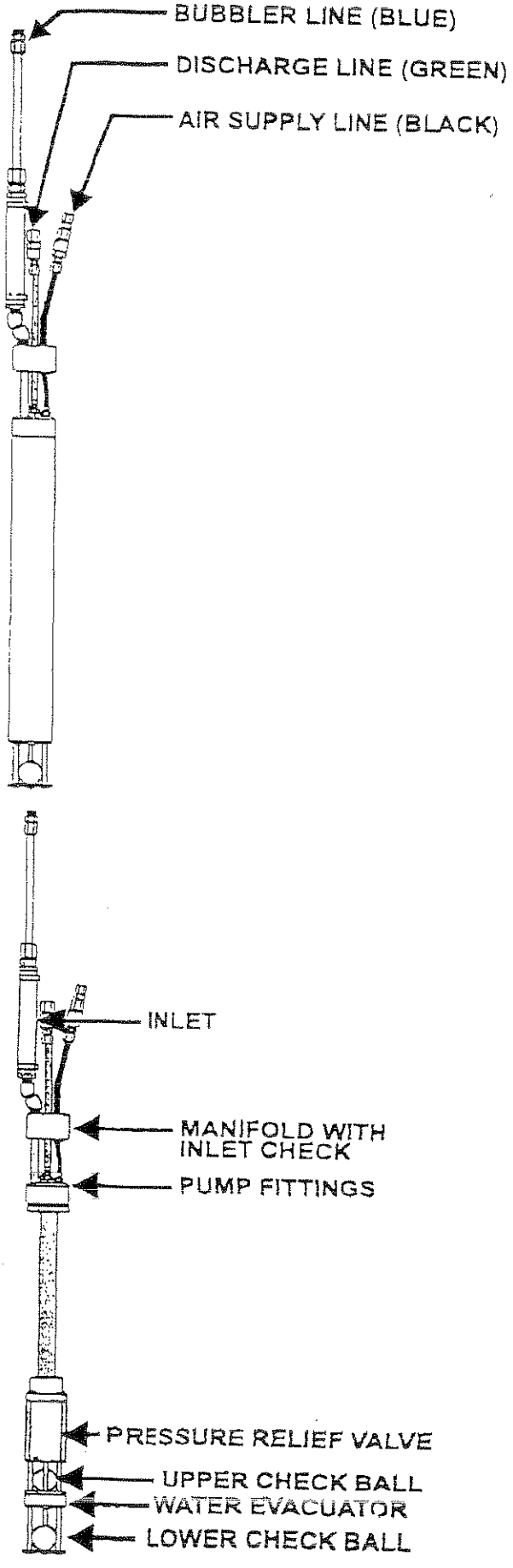
Site/Reference: Diesel at Asphalt Plant

Item	Qty	Unit	Product Description / Part Number	Unit Price	Extended Price
1)	1	EA	FPR7 Alpha Ferret Free-Product Recovery Package. Includes (1) Alpha Style Ferret (AIWS22 or AIWSFI12), (1) C100 Solar / Electric Controller, (1) TH3 portable compressor, (1) L374 Full-Tank shut off system, (1) 37880 Exhaust valve, (1) 37342 Ferret Positioning Tool, (1) Ferret slip fit well cap (S2M or S4M), and up to 25 feet of downwell product discharge / air supply / locater line tubing. **FPR7**	3,495.00	3,495.00
2)	1	FT	Gasoline resistant, UV protected, black nylon tubing, 1/2" OD. *Surface Discharge Tubing. Per ft pricing.* **35097**	1.40	1.40
3)	1	FT	Gasoline resistant, UV protected, black nylon tubing, 1/4" OD. *Surface Air Supply Tubing. Per ft pricing.* **35715**	0.85	0.85

ESTIMATE TOTAL 3,497.25

OPTIONAL ITEM(S)

4)	1	EA	Electric Auto Tank Drain Kit for TH3 Compressor. Compressor tanks need to be drained regularly, either manually or with an auto drain kit. **THDRAIN**	205.00	205.00
5)	1	EA	TH3 Series Desiccant Air Dryer Pkg. Capable of drying up to 4,400 SCF of air. Recommended for use with up to 3 Standard Ferret In-Well Separator's. Includes Particulate and After filter assemblies. **THDESDRIER**	285.00	285.00



Separator Type: Positive Air Displacement

Dimensions:

COPY

O.D.: 1.75" (45mm)
Length: 26" (67cm)
Weight: 2.5 lbs.
Minimum Well Diameter: 2" (50mm) or larger
Inlet Port: 21" (54 cm) above bottom of device

Materials:

Stainless Steel, Brass, Delrin, Polypropylene and Viton O-rings.

Fittings:

Type: Brass Compression
Discharge Size: 1/2" O.D. (13 mm)
Air Supply Size: 3/8" O.D. (6 mm)
Level Gauge: 1/4" O.D. (6 mm)

Separator Performance:

Operating Pressure Range: 50-100 P.S.I. (350-700 kPa)
Maximum Lift: 150 FEET (45 m)
Estimated Air Flow: 0.5-1.0 S.C.F.M. at 50 P.S.I. (350 kPa)

Separator Flow Rates:

Up to 100 G.P.D. (379 L.P.D.) possible with 6" (15 cm) or more of product submergence over inlet. Rate will vary depending on conditions.

Discharge Amount:

Maximum product volume per cycle 0-.05 gal. (180 ml), varies depending upon amount of water that enters and is expelled by the separator. THE IN-WELL SEPARATOR WILL ONLY DISCHARGE PRODUCT TO THE SURFACE.

Product Pumped Density: 0.7-0.90 g/cc

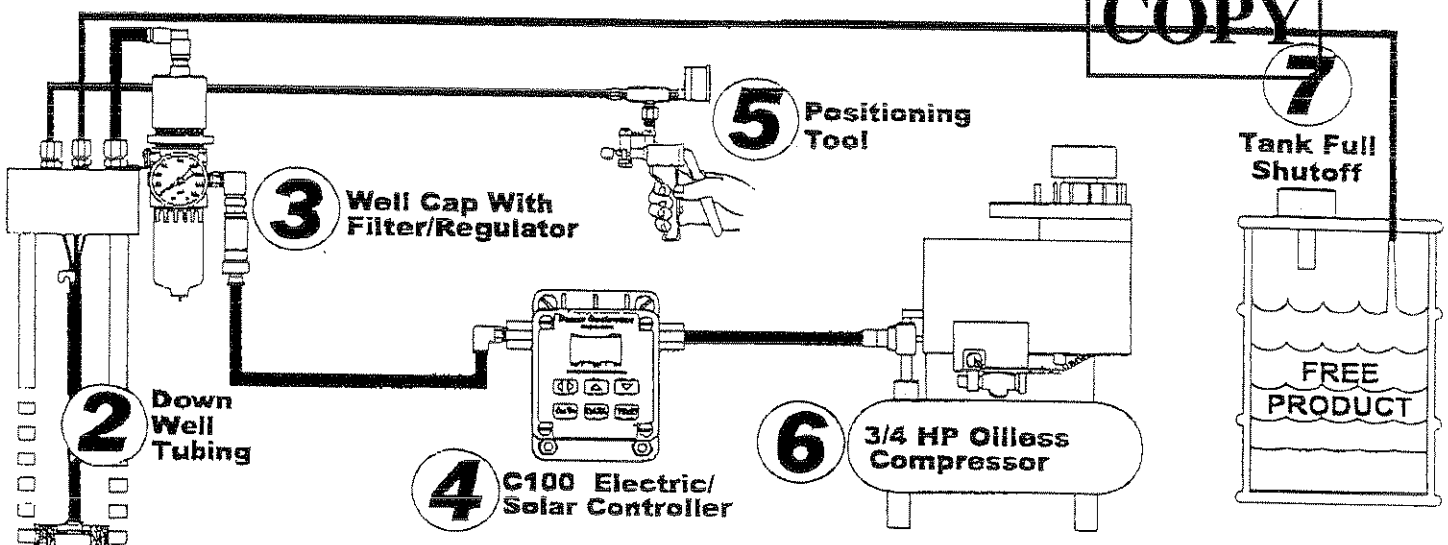
Viscosity Range:

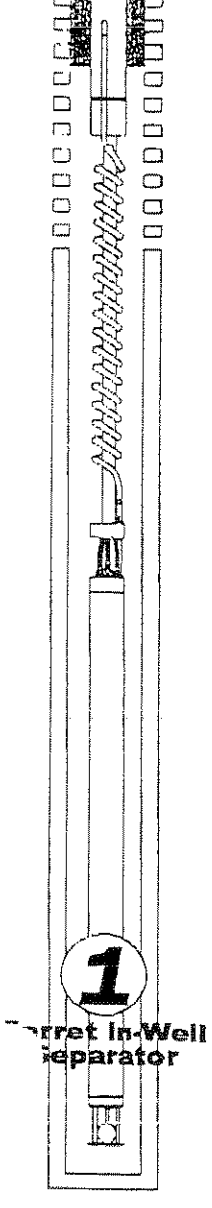
The short In-Well Separator is recommended for liquids with kinematic viscosities ≤ 40 centistokes. Suitable liquids that may meet the viscosity recommendations are gasoline, JP4, JP5, Kerosene, Diesel Fuel, #2 Fuel Oil and #3 Fuel Oil. Incompatible liquids include #5 (and above) Fuel Oil, SAE 10 (and above) Motor Oil, and Hydraulic Fluids.

FERRET™ IN WELL SEPARATOR

FREE PRODUCT RECOVERY PACKAGES

COPY





New... Specially Priced Free Product Recovery Packages

The Ready-to-Use Package Includes:

1. Ferret In-Well Separator
Unique product recovery system that delivers pure product to the surface without troublesome hydrophobic screens.

2. Down Well Tubing
25 feet of down well Nylon 12 tubing for Ferret air, liquid and positioning lines.

3. Well Cap With Filter/Regulator
Available for 2" or 4" wells.

4. Electric/Solar Controller
Easy digital control to optimize product recovery. 110V or solar capabilities.

5. Positioning Tool
Easy to use hand pump makes positioning the Ferret a snap.

6. Reliable 3/4 HP Oilless Compressor
Lightweight, designed for portable use.

7. Pneumatic Tank Full Shutoff
Explosion-proof sensor, for reliable shut down to prevent tank overfill.

QED Environmental Systems, Inc.
P.O. Box 3726, Ann Arbor, Michigan 48106 734-995-2547 800-624-2026 Fax: 734-995-1170
E-Mail: info@qedenv.com Website: http://www.qedenv.com

P/N 2142 REV. #2 2-25-99

FERRET™ IN WELL SEPARATOR PRODUCT RECOVERY PACKAGES

SPECIFICATIONS:

COPY

	STANDARD FERRET PACKAGE FPR7	HIGH CAPACITY FERRET PACKAGE FPR10	AUTOMATIC FERRET PACKAGE FPR15
Ferret Pump Model:	**AIWS22** **Inlet Type:** Fixed Inlet **Advantages:** Requires little liquid depth, higher gallons per day **Max. Viscosity:** 100 Centistokes **Min. Liquid Depth:** 21" (53 cm) **(OR)** **AIWSFI12** **Inlet Type:** Floating Inlet **Advantages:** Requires little liquid depth, follows liquid level changes **Max. Viscosity:** 4 Centistokes **Min. Liquid Depth:** 35" (89 cm)	**HIWS42** **Inlet Type:** Fixed Inlet **Advantages:** Highest Viscosity & gallons/day, passes more solids, needs little liquid depth **Max. Viscosity:** 1000 Centistokes **Min. Liquid Depth:** 18" (46 cm) **(OR)** **HIWSFI12** **Inlet Type:** Floating Inlet **Advantages:** Higher viscosity & gallons/day, passes solids, follows liquid level changes **Max. Viscosity:** 4 Centistokes **Min. Liquid Depth:** 35" (89 cm)	**SIWS24** **Inlet Type:** Fixed Inlet **Advantages:** Controllerless, higher gallons per day **Max. Viscosity:** 40 Centistokes **Min. Liquid Depth:** 45" (114 cm) **(OR)** **IWS26** **Inlet Type:** Floating Inlet **Advantages:** Controllerless, follows liquid level changes **Max. Viscosity:** 4 Centistokes **Min. Liquid Depth:** 60" (153 cm)
Compressor:	**Dimensions:** 19" (48.2 cm)(L) x 15.6" (39.6 cm)(W) x 16.5" (41.9 cm) (H) **Shipping Weight:** 54 LBS. (24.5 Kg) **AMPS:** 11.4 **Voltage:** 115V **Motor Size:** 3/4 HP **Compressor Type:** Oilless Single Piston **Air Delivery:** 2.1 C.F.M. @ 100 P.S.I. **Receiver Tank:** 4.5 Gal. (17 Ltr.)	**Dimensions:** 19" (48.2 cm)(L) x 15.6" (39.6 cm)(W) x 16.5" (41.9 cm) (H) **Shipping Weight:** 54 LBS. (24.5 Kg) **AMPS:** 11.4 **Voltage:** 115V **Motor Size:** 3/4 HP **Compressor Type:** Oilless Single Piston **Air Delivery:** 2.1 C.F.M. @ 100 P.S.I. **Receiver Tank:** 4.5 Gal. (17 Ltr.)	**Dimensions:** 19" (48.2 cm)(L) x 15.6" (39.6 cm)(W) x 16.5" (41.9 cm) (H) **Shipping Weight:** 54 LBS. (24.5 Kg) **AMPS:** 11.4 **Voltage:** 115V **Motor Size:** 3/4 HP **Compressor Type:** Oilless Single Piston **Air Delivery:** 2.1 C.F.M. @ 100 P.S.I. **Receiver Tank:** 4.5 Gal. (17 Ltr.)
Well Cap:	**Well Diameter:** 2" or 4" **Materials:** PVC **Type:** "Slip Fit"	**Well Diameter:** 4" **Materials:** PVC **Type** "Slip Fit"	**Well Diameter:** 2" or 4" **Materials:** PVC **Type** "Slip Fit"
Filter/Regulator:	**Gauge Range:** 0-125 P.S.I. **Filtration:** 5 Micron	**Gauge Range:** 0-125 P.S.I. **Filtration:** 5 Micron	**Gauge Range:** 0-125 P.S.I. **Filtration:** 5 Micron
Pneumatic Tank Full Shutoff:	**Weight:** 8 LBS. (3.2 Kg) **Pressure Range:** 40-100 P.S.I. **Max. Air Tube Length:** 250 FT. (76.2 m)	**Weight:** 8 LBS. (3.2 Kg) **Pressure Range:** 40-100 P.S.I. **Max. Air Tube Length:** 250 FT. (76.2 m)	**Weight:** 8 LBS. (3.2 Kg) **Pressure Range:** 40-100 P.S.I. **Max. Air Tube Length:** 250 FT. (76.2 m)
Ferret Positioning Tool:	**Gauge Range:** 0-20 Inches	**Gauge Range:** 0-20 Inches	**Gauge Range:** 0-20 Inches
Controller:	**Dimensions:** 3.5" (8.9 cm)(W) x 3.65" (9.3 cm)(H) x 3.5" (8.9 cm) (D) **Shipping Weight:** 3 LBS. (1.4 Kg) **Operating Temperature Range:** -20° F to 150° F (29° C to 65° C)	**Dimensions:** 3.5" (8.9 cm)(W) x 3.65" (9.3 cm)(H) x 3.5" (8.9 cm) (D) **Shipping Weight:** 3 LBS. (1.4 Kg) **Operating Temperature Range:** -20 F to 150 F (29 C to 65 C)	**Not Required**

COPY

ATTACHMENT B

SCHREIBER, YONLEY & ASSOCIATES ESTIMATE

COST ESTIMATE
13570 ST. CHARLES ROCK ROAD
BRIDGETON, MISSOURI

COPY

TASK 1 – FREE PRODUCT RECOVERY

Item 1 – Workplan Development			
Senior Engineer	$90/hr	8 hrs	$720.00
Clerical	$35/hr	3 hrs	$105.00
		Subtotal (Labor)	**$825.00**
Photocopying, Facsimile, Telephone, Postage			$35.00
		Subtotal (Materials)	**$35.00**
		Item 1 Total Cost	**$860.00**
Item 2 – Pump Installation			
Engineering Technician	$45.00/hr	20 hrs	$900.00
Senior Engineer	$90.00/hr	2 hrs	$180.00
		Subtotal (Labor)	**$1,080.00**
Photocopying, Facsimile, Telephone, Postage			$45.00
Pump (QED Ferret™), Includes Product Recovery Package, Dryer, Drain Kit			$3,985.00
Tubing (Discharge, Air Supply)			$115.00
Miscellaneous			$250.00
		Subtotal (Materials)	**$4,395.00**
Truck			$200.00
Miscellaneous Tools			$100.00
		Subtotal (Equipment)	**$300.00**
		Item 2 Total Cost	**$5,775.00**
Item 3 – Product Recovery (1 year period)			
Senior Engineer	$90.00/hr	12	$1,080.00
		Subtotal (Labor)	**$1,080.00**
Photocopying, Facsimile, Telephone, Postage			$45.00
Drums	$35.00	24	$840.00
Drum Disposal	$125.00/drum	24	$3,000.00
		Subtotal (Materials)	**$3,885.00**
		Item 3 Total Cost	**$4,965.00**
		TOTAL COST TASK 1	**$11,600.00**

COST ESTIMATE
13570 ST. CHARLES ROCK ROAD
BRIDGETON, MISSOURI

COPY

TASK 2 – FREE PRODUCT RECOVERY MONITORING

Item 1 – Site Visits

Engineering Technician	$45/hr	2 hrs	$90.00
Senior Engineer	$90/hr	1/2 hrs	$45.00
		Subtotal (Labor)	**$135.00**
Photocopying, Facsimile, Telephone, Postage			$10.00
PPE			$5.00
		Subtotal (Materials)	**$15.00**
Company Truck			$25.00
Interface Probe			$10.00
		Subtotal (Equipment)	**$35.00**
		Item 1 Trip Cost	**$185.00**
		x 16 Trips/Year	**$2,960.00**

Item 2 – Monthly Reports

Environmental Engineer	$75.00/hr	2 hrs	$150.00
Senior Engineer	$90.00/hr	½ hrs	$45.00
Clerical	$35.00	1 hr	$35.00
		Subtotal (Labor)	**$230.00**
Photocopying			$15.00
		Subtotal (Materials)	**$15.00**
		Item 2 Cost Per Report	**$245.00**
		x 12 Reports/Year	**$2,940.00**
		Task 2 Total Cost	**$5,900.00**

COST ESTIMATE
13570 ST. CHARLES ROCK ROAD
BRIDGETON, MISSOURI

COPY

TASK 3 – QUARTERLY GROUNDWATER MONITORING

Item 1 – Monitoring Well Sampling

Engineering Technician	$45.00/hr	8 hrs	$360.00
Senior Engineer	$90.00/hr	2 hrs	$180.00
		Subtotal (Labor)	**$540.00**
Photocopying, Facsimile, Telephone, Postage			$25.00
PPE			$10.00
Bailers			$40.00
Drum			$35.00
Ice			$5.00
		Subtotal (Materials)	**$115.00**
Company Truck			$100.00
Water Level			$15.00
Interface Probe			$30.00
		Subtotal (Equipment)	**$145.00**
OA-1/OA-2	$90/Sample	5 Samples	$450.00
		Subtotal (Analytical)	**$450.00**
Drum Disposal	$125/Drum	1 Drum	$125.00
		Subtotal (Disposal)	**$125.00**
		Item 1 Total Cost	**$1,375.00**

Item 2 – Report Development/Submittal

Environmental Scientist/Engineer I	$75/hr	4 hrs	$300.00
Senior Engineer	$90/hr	1 hr	$90.00
CADD	$50/hr	3 hrs	$150.00
Clerical	$35/hr	2 hrs	$70.00
		Subtotal (Labor)	**$610.00**
Photocopying, Facsimile, Telephone, Postage			$35.00
		Subtotal (Materials)	**$35.00**
		Item 2 Total Cost	**$645.00**
		Total Task 3 Cost	**$2,020.00**
		x 4 Events/Year	**$8,080.00**
		TOTAL PROJECT COST	**$25,580.00**

October 12, 1999 Letter from Mr. Jim Growney of the MDNR to Mr. Vince Jones of Maryon Industries

STATE OF MISSOURI
Mel Carnahan, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

October 12, 1999

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, R0003874

Dear Mr. Jones:

The Tanks Section of the Hazardous Waste Program has received and reviewed the September 24, 1999, Schreiber, Yonley & Associates work plan for free product recovery for the above-cited facility. The plan involves the installation of a free product recovery pump and quarterly groundwater monitoring for one year.

- ☑ The scope of work as written is approved.
- ☐ The scope of work as written is rejected. If this box is checked, justification for the rejection will follow.
- ☐ The scope of work is approved with modification. If this box is checked, you must ensure the below listed conditions are met.

Please direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

If you have any questions regarding this letter, you may contact Mr. Hugh Murrell of my staff at (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM

Jim Growney

Jim Growney, Chief
Remediation Unit

JG:hml

c: Mr. David Pate, Williams and Company
Mr. Edward A. Shepard, Schreiber Yonley & Associates
Mr. Mike Struckhoff, St. Louis Regional Office

Recycled Paper

December 15, 1999 Letter from Mr. David Pate of the Missouri Petroleum Storage Tank Insurance Fund to Mr. Vince Jones of Maryon Industries

ST-13618
R-3874

MISSOURI PST INSURANCE FUND

WILLIAMS & COMPANY CONSULTING, INC.
THIRD PARTY ADMINISTRATOR

December 15, 1999

RECEIVED
DEC 16 1999
HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, Claim 50554

Dear Mr. Jones:

We have reviewed the cost proposal dated September 24, 1999, submitted on your behalf by Schreiber, Yonley & Associates, requesting authorization for installation of a free product recovery pump, free product recovery activities, and quarterly groundwater monitoring for a period of one year. Based on information available at this time, it has been determined that the site is eligible to receive benefits from the Petroleum Storage Tank Insurance Fund (PSTIF). The PSTIF reserves the right to deny all or part of the costs based upon our investigation of this project.

Please carefully review the PSTIF Claim Kit for guidance on the claim process. Page 12 of the Claim Kit specifically references claims involving corrective action. It is your responsibility to understand what you must do to document your claim. The Claim Kit and the PSTIF regulations are available on the Internet at www.pstif.org or call this office for a free copy if you do not have one.

The costs proposed by Schreiber, Yonley & Associates are reasonable. With this letter, we are authorizing the following:

- Task one, free product recovery (including free product purchase and installation), total costs **not to exceed $11,600.00**.
- Task two, free product recovery monitoring, total costs **not to exceed $5,900.00**.
- Task three, quarterly groundwater monitoring, total costs for four monitoring events **not to exceed $8,080.00**.

This results in a combined total project authorization of **$25,580.00** for the referenced activities. Please note that reimbursement for drilling and laboratory analytical costs will be based upon actual subcontractor invoices. No mark up by your environmental consultant will be recognized. Please note that we expect your environmental consultant to use the most cost effective means available for handling and disposal of fluids generated by these activities. Please coordinate all fluid related activities with John Stone of our office before proceeding. If additional work is required, please contact us before proceeding.

Petroleum Storage Tank Insurance Fund
P.O. BOX 104116 • JEFFERSON CITY, MO 65110-4116 • PHONE (800) 765-2765 • FAX (573) 761-4062

Should you have any questions, please call me at (800) 765-2765.

Sincerely,

WILLIAMS & COMPANY CONSULTING, INC.

David L. Pate, PG
PSTIF Claims Manager

DLP/vsy

C: Hashim Mukhtar, DNR
Ed Shepherd, Schreiber, Yonley & Associates
John Stone, Williams & Company

February 7, 2001 Letter from Mr. Jim Growney of the MDNR to Mr. Vince Jones of Maryon Industries

STATE OF MISSOURI
Bob Holden
XXXXXXXXXXX Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

FEB 7 2001

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, R0003874

Dear Mr. Jones:

The Missouri Department of Natural Resources' Hazardous Waste Program, Tanks Section, has reviewed the above referenced facility file. The file contains a letter requesting additional information (copy enclosed). To date, the department has not received any response to this request. Please submit this documentation within 30 days of receipt of this letter.

The department looks forward to the receipt of the above documentation.

Please direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

Thank you for your cooperation in our efforts to protect Missouri's environment, as together we address contamination at this site. If you have any questions regarding this letter, you may contact me at (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM

Jim Growney

Jim Growney, Chief
Remediation Unit

JG:hrl

Enclosure

c: Mr. David Pate, Petroleum Storage Tank Insurance Fund
Mr. Mike Struckhoff, St. Louis Regional Office

Recycled Paper

September 5, 2001 Letter of Warning

ST 13618
R 3874

STATE OF MISSOURI

Bob Holden, Governor • Stephen M. Mahfood, Director

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

SEP - 5 2001

CERTIFIED MAIL – 7099 3220 0009 3709 8558
RETURN RECEIPT REQUESTED

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, R0003874

LETTER OF WARNING

Dear Mr. Jones:

The Missouri Department of Natural Resources' Hazardous Waste Program, Tanks Section, has reviewed the above referenced facility file. The file contains a February 7, 2001, letter requesting an update on the proposed free product recovery and quarterly groundwater monitoring that was approved by the department on October 12, 1999 (enclosed). To date, the department has not received any documentation that the work has been preformed.

This constitutes the first letter of warning for failure to cooperate with the department for requests for documentation in accordance with 10 CSR 20-10.034 and 10 CSR 20-10.066, failure to implement the approved corrective action plan.

Please direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

If you have any questions regarding this letter, you may contact Mr. Terry Hawkins of my staff at (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM

Jim Growney

Jim Growney, Chief
Remediation Unit

JG:thm

Enclosures

c: Mr. David Pate, Petroleum Storage Tank Insurance Fund
Mr. Edward A. Shepard, Schreiber Yonley & Associates
Mr. Mike Struckhoff, St. Louis Regional Office

RECYCLED PAPER

January 25, 2002 Letter from Mr. Edward Shepard Jr. of Schreiber, Yonley & Associates to Mr. Terry Hawkins of the MDNR

SCHREIBER & YONLEY ASSOCIATES
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive • Fenton, Missouri 63026
636/349-8399 • Fax 636/349-8384

FEB 0 5 20

R 3874

January 25, 2002

Mr. Terry Hawkins
Missouri Department of Natural Resources
Tanks Section
1738 East Elm
Jefferson City, MO 65101

RE: West Lake Quarry & Material
13570 St. Charles Rock Road
Bridgeton, Missouri
ST0013618, R0003874

Dear Mr. Murrell:

Schreiber, Yonley & Associates, on behalf of Maryon Industries, Inc. (Maryon), is submitting this correspondence in response to the letter of warning sent to Maryon Industries, Inc. dated September 5, 2001.

The letter of warning inquired about the progress of the implementation of the workplan for free product recovery. The workplan, dated September 24, 1999, was approved by the Missouri Department of Natural Resources. The workplan includes the installation and monitoring of a free product recovery pump in one monitoring well and the quarterly groundwater monitoring of five on-site monitoring wells. Recent monitoring well fluid measurements are included with this letter.

Maryon is currently in the process of acquiring the free product recovery pump. It is estimated that the pump should be in place and operating within thirty days, with the first of the monthly free product recovery reports to be submitted within sixty days. The quarterly groundwater monitoring of the five monitoring wells will also proceed within this time period.

If you have any questions please call me at (636) 349-8399.

Sincerely,

Schreiber Yonley & Associates

Edward A. Shepard Jr., P. E.
Senior Engineer

EAS:bah
Attachment
cc: Mr. Mike Jones – Maryon Industries, Inc.
x:\MII\010181\correspondence\responseletter

Maryon Industries, Inc.

Water and Product Measurements

Monitoring Well	Static Water Level	Product Level	Product Thickness
MW-1A	35.95'	33.71'	2.22'
MW-2A	32.80'	ND	NA
MW-3A	32.89'	ND	NA
MW-4A	30.95'	ND	NA
MW-5A	31.37'	ND	NA

- Wells gauged on 10/03/01
- ND = Not Detected
- NA = Not Applicable

July 19, 2002 Letter from Mr. Bryan Elledge of Screiber, Yonley Associates to Mr. Terry Hawkins of the MDNR

SCHREIBER & YONLEY ASSOCIATES
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive • Fenton, Missouri 63026
636/349-8399 • Fax 636/349-8384

ST 13618
R 3874

RECEIVED
JUL 22 2002
HAZARDOUS WASTE PROGRAM
MO DEPT OF NATURAL RESOURCES

July 19, 2002

Mr. Terry Hawkins
Missouri Department of Natural Resources
Hazardous Waste Program
Tanks Section
P.O. Box 176
Jefferson City, MO 65102-0176

RE: West Lake Quarry & Landfill
13570 St. Charles Rock Road
Bridgeton, Missouri
Facility ST0013618
LUST R0003874

Dear Mr. Hawkins:

On behalf of Simpson Construction Materials, LLC (Simpson), Schreiber, Yonley & Associates (SYA) is pleased to provide this status update for the above-referenced site. Maryon Industries, Inc. formerly operated a portion of the site as an asphalt batch plant. On July 16, 2002, the facility and operations of the plant were transferred to Simpson Construction Materials, LLC, and they have assumed the responsibility to continue the investigation and corrective action activities associated with the site.

Communication with Mr. John Stone of the Missouri Petroleum Storage Tank Insurance Fund (MPSTIF) on June 27, 2002 indicated the site is eligible for reimbursement. A free product recovery and groundwater monitoring workplan and budget was submitted for the site in 1999. The technical scope of the workplan was approved by the MDNR in correspondence dated October 12, 1999. The MPSTIF approved the budget in correspondence dated December 15, 1999. The activities approved in the workplan will now be performed under the direction of Simpson, contingent on reaffirmation of the technical approval by MDNR and budget approval by MPSTIF.

As part of the assets transfer from Maryon to Simpson, a Phase II Baseline Assessment was performed in June 2002. The results of the assessment indicated free product on the groundwater surface in monitoring well MW-1A and concentrations of dissolved-phase petroleum hydrocarbons above MDNR cleanup levels for non-potable water in the groundwater samples obtained from monitoring wells MW-4A and MW-5A. Concentrations of dissolved benzene,

toluene, ethylbenzene, and total xylenes (BTEX) and methyl-tertiary-butyl-ether (MTBE) constituents were below the MDNR cleanup levels in the groundwater samples obtained from monitoring wells MW-2A, MW-3A, MW-4A, and MW-5A. Approximately five gallons of free product and 25 gallons of purge water were recovered from the monitoring wells and stored on-site for later disposal.

If you have any questions concerning this submittal, please do not hesitate to contact our office.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES

Bryan S. Elledge, R.G., P.G.
Environmental Scientist

BSE:bah
cc: Mr. Mark Simpson, Simpson Construction Materials LLC
Mr. John Stone, MPSTIF
x:\simpso\020100\correspondence\MDNR and MPSTIF letter.doc

August 19, 2002 Letter from Mr. Fred Huston of the MDNR to Mr. Mark Simpson of Simpson Construction Materials, LLC

STATE OF MISSOURI Bob Holden, Governor • Stephen M. Mahfood, Director

DEPARTMENT OF NATURAL RESOURCES

www.dnr.state.mo.us

AUG 19 2002

Mr. Mark T. Simpson
Simpson Construction Materials, L.L.C.
P.O. Box 250
Valley Park, MO 60388

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, St. Louis County, MO - ST0013618, R0003874

Dear Mr. Simpson:

The Missouri Department of Natural Resources' Hazardous Waste Program, Tanks Section, has received and reviewed a status update for the above referenced file. The update letter indicates Simpson Construction Materials, L.L.C., has assumed responsibility to continue investigation and corrective action. The department is pleased to see this site moving forward. Please submit the groundwater monitoring and free product recovery report that was approved by the department as soon as possible.

Please direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

If you have any questions regarding this letter, please contact the project manager for this facility, Mr. Terry Hawkins of the Hazardous Waste Program, P.O. Box 176, Jefferson City, MO 65102-0176, or at (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM

Frederick J. Hutson, R.G., Chief
Remediation Unit

FJH:thg

c: Mr. Bryan S. Ellege, Schreiber, Yonley & Associates
Mr. David Pate, Petroleum Storage Tank Insurance Fund
Mr. Mike Struckhoff, St. Louis Regional Office

Integrity and excellence in all we do

RECYCLED PAPER

September 1, 2004 Letter from the MDNR to Mr. Mark Simpson Construction Materials, LLC

ST 13618
R 3874

STATE OF MISSOURI Bob Holden, Governor • Stephen M. Mahfood, Director

DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

SEP 0 1 2004

Mr. Mark Simpson
Simpson Construction Materials L.L.C.
P.O. Box 68
Valley Park, MO 63088

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, St. Louis County, MO - ST0013618, R0003874

Dear Mr. Simpson:

The Missouri Department of Natural Resources' Hazardous Waste Program, Tanks Section, has reviewed the file for the above referenced site. In a letter dated October 12, 1999 (copy enclosed), the department approved a work plan for the installation of a free product (FP) recovery pump and quarterly groundwater monitoring at this site. The department requested a report on these activities in letters dated February 7, 2001, and August 19, 2002. The department has not received a report on the activities listed above.

The department has developed a new guidance document for the cleanup of petroleum contamination called the Missouri Risk-Based Corrective Action (MRBCA) Process for Petroleum Storage Tanks. A copy of this document is available on our web site at http://www.dnr.state.mo.us/alpd/hwp/index.html. Please review this document and make recommendations for further actions at this site. Additionally, please make sure that analytical analysis is accomplished by the procedures in this document.

Please submit the requested FP recovery and groundwater monitoring report and recommendations for further action at this site under MRBCA within 90 days of receipt of this letter.

Please direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

February 1, 2005 Letter from Edward Shepard of Schreiber, Yonley & Associates to Mr. David Fulbright of the Missouri Petroleum Storage Tank Insurance Fund

SCHREIBER & YONLEY ASSOCIATES
ENVIRONMENTAL ENGINEERS

271 Wolfner Drive • Fenton, Missouri 63026
636/349-8399 • Fax 636/349-8384

R3874
ST13618

February 1, 2005

RECEIVED
FEB 0 4 2005
Hazardous Waste Program
MO Dept. of Natural Resources

Mr. David L. Fulbright
Missouri Petroleum Storage Tank Insurance Fund
P.O. Box 104116
Jefferson City, Missouri 65110-4116

RE: MRBCA Tier 1 Workplan and Cost Estimate
Simpson Construction Materials West Lake Quarry Site
13570 St. Charles Rock Road
Bridgeton, Missouri
Facility ST0013618
PST Claim C50554
SYA Project No. 050019

Dear Mr. Fulbright:

On behalf of Simpson Construction Materials L.L.C. (Simpson), and pursuant to Missouri Petroleum Storage Tank Insurance Fund (MPSTIF) correspondence dated January 21, 2005 and our telephone conversation of January 24, 2005, Schreiber, Yonley & Associates (SYA) is pleased to provide this workplan and cost estimate for the performance of fieldwork and reporting activities at the above-referenced site. The proposed work outlined in this workplan is in compliance with the Missouri Risk-Based Corrective Action (MRBCA) guidance for site characterization at petroleum release sites.

As a result of the findings of previous work at the site, including underground storage tank (UST) closure activities in April 1993 and subsequent groundwater investigation and monitoring activities, the MPSTIF requested MRBCA data be gathered for the site. The proposed scope of work includes the following activities: hollow stem auger (HSA) drilling and soil sampling for geotechnical testing; hand auger surficial soil sampling and analytical testing; monitoring well gauging; groundwater sampling and analytical testing; and development of a MRBCA Tier 1 report consistent with Missouri Department of Natural Resources (MDNR) guidelines. Geotechnical drilling will be performed in select areas to collect soil samples representative of the soil horizons at the site in non-contaminated areas. Surficial soil sampling will be performed to potentially identify the nature and extent of shallow petroleum hydrocarbon contamination sourced from the UST system components formerly utilized at the site, particularly with regard to possible vapor migration into on-site structures.

A MRBCA summary investigation report will be developed in compliance with the requirements of MDNR guidance. The report will include a description of the site, including background information and site history, and the results of field activities and analytical testing. The report will also include our summary conclusions regarding potential contaminant sources, migration

pathways, and receptors. Conceptual corrective action alternatives and the protocol for continued monitoring of the site, if warranted, will also be included in the report.

Scope of Work

Drilling and Soil Sampling

Based on the data accumulated at the site to-date, two soil borings will be advanced for geotechnical sampling. The proposed locations of the borings will be in an area outside the delineated petroleum hydrocarbon release zone. The boring locations are designed to obtain background samples for the appropriate MRBCA geotechnical testing protocol.

It is anticipated the depth of the soil borings dedicated to geotechnical sample collection will be approximately 30 to 35 feet below ground surface (bgs). A contractor licensed in the State of Missouri will perform the drilling, and a geologist registered in the State of Missouri will supervise the work. The field personnel will complete field notes, boring log descriptions, and sampling logs. The drilling will be performed with a truck-mounted drill rig equipped with 4.25-inch inside diameter (ID) HSA. Soil samples will be collected continuously from the surface using 24-inch split spoon and 24-inch Shelby Tube samplers. Field screening of soil will be performed using a split sample containerized separately and equilibrated to ambient temperature. The split samples will be field screened for visual, olfactory, and photoionization detector (PID) response indications of petroleum hydrocarbon contamination. The PID will be calibrated daily prior to field activities using a span gas composed of 100 parts per million (ppm) isobutylene standard. Additional borings may be drilled at the site based on the results of field screening, if contaminant impact is indicated, after consultation with the MDNR and MPSTIF.

Soil samples representative of the surficial, vadose, and saturated zones collected during drilling of the geotechnical borings will be submitted for the following parameters: dry bulk density by American Society of Testing and Materials (ASTM) test method D2937-94; specific gravity by ASTM test method D854; volumetric water content (dry weight basis) by ASTM test method D2216-92; grain size distribution by ASTM test method D422; and fractional organic content by ASTM test method D2974.

Laboratory quality assurance/quality control will follow USEPA protocol for sample analysis. In addition, decontamination procedures will be utilized on site to minimize the potential for cross-contamination. The drilling and sampling equipment will be decontaminated prior to use on site and between borings and sampling intervals using a pressure washer or Alconox™ wash and deionized water rinse. Clean sampling tools and personal protective equipment will be utilized during site activities. Soil cuttings generated as part of this work will be containerized in Department of Transportation (DOT)-approved 55-gallon drums, labeled, and stored on site for later disposal.

Monitoring Well Gauging

The presence of light, non-aqueous-phase liquid (LNAPL) and depth to static groundwater elevation for the five existing monitoring wells will be measured and recorded. The depth to water and presence of LNAPL will be measured using an oil-water interface tape accurate to 0.01 foot. The total depth of each monitoring well and measured depths to LNAPL, if indicated, and groundwater from the top-of-casing will be recorded.

Groundwater Sampling and Testing

Two quarters of groundwater sampling will be performed at the site following the monitoring well gauging. If LNAPL is indicated, the free product will be removed from the monitoring well to the maximum extent practical using a disposable bailer. The LNAPL, if indicated, will be containerized on site in DOT-approved drums for later disposal. If LNAPL is not indicated, the monitoring well will be purged using a dedicated, disposable, polyethylene bailer. The purge water will be monitored for groundwater quality parameters, including pH, temperature, and specific conductance. The monitoring well will be considered purged if bailed dry, if a minimum of three saturated well volumes of water has been removed, or if measured groundwater quality parameters remain relatively stable, indicating the presence of formation water within the well. The purge water will be containerized on site in DOT-approved drums for later disposal.

In monitoring wells with no indication of LNAPL and following purging, groundwater samples will be collected in laboratory-provided sample containers using the dedicated bailer. The groundwater samples will be appropriately preserved according the USEPA testing protocol and stored on ice for shipment to Test America, Inc. laboratory in Nashville, Tennessee under chain-of-custody procedures. The groundwater samples will be submitted for analytical testing of the following parameters: benzene, toluene, ethylbenzene, and xylenes (BTEX) USEPA test method 8260; total petroleum hydrocarbons – diesel range organics (TPH-DRO) by USEPA test method 8270C; and polynuclear aromatic hydrocarbons (PAHs) by USEPA test method 8270C.

Aquifer Testing

Slug-out testing will be performed on one monitoring well at the site. The data collected during the testing will be utilized to determine the relative saturated zone hydraulic conductivity of the unconfined aquifer using the Bouwer-Rice methodology. Waste generated during the slug-out testing will be containerized for later disposal.

Surficial Soil Sampling and Testing

Eight surficial soil samples from the site will be collected and submitted for analytical testing. The samples will be collected in the zone of known impact, especially from the area surrounding the on-site structure to potentially identify vapor-phase migration

pathways. The samples will be collected using decontaminated stainless steel sampling tools at depths of one to three feet bgs. The samples will be submitted for analytical testing of BTEX by USEPA test method 8260B, TPH-DRO by USEPA test method 8270C, and PAHs by USEPA test method 8270C.

Summary Report

A summary report will be prepared following receipt of field data and analytical testing results. The report will include a detailed summary of the field activities as part of this investigation, including boring logs, monitoring well construction diagrams, groundwater sampling forms, analytical reports, and tabulated results of analytical testing. The report will also include the following: chronology of site events; estimate of nature, magnitude, and location of the spill and/or release; site information, including local area land use; vadose zone characteristics; saturated zone characteristics; groundwater characteristics; location and characteristics of proximate surface water bodies; distribution of chemicals of concern in soil and groundwater; and summary conclusions concerning proposed corrective action or risk management alternatives. Scaled site maps showing the approximate locations of sampling points and isoconcentration maps for the relevant contaminants of concern will be included. In addition, the report will include a scaled land use map for the area surrounding the site and information concerning the location(s) of local surface water bodies and public/private water supply wells.

Cost Estimate

The work proposed in this workplan will be performed for an estimate cost of $15,250.00. This cost estimate reflects the fieldwork, analytical testing, data reduction, and report preparation tasks outlined in this workplan. This cost estimate does not include the costs associated with the disposal of soil and/or groundwater waste generated as part of the investigation. Work requested by the MDNR, MPSTIF, and/or client beyond the scope of this workplan will be billed at the unit rates quoted on the attached cost estimate.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES

Edward A. Shepard, Jr., P.E.
Senior Engineer

EAS:bah
Attachments
cc: Missouri Department of Natural Resources HWP Tanks Section
Mark Simpson, Simpson Construction Materials
X:\SIMPSO\050019\Proposal\Simpson MRBCA Tier 1 Proposal.doc

SIMPSON MATERIALS WESTLAKE SITE
MRBCA Tier 1 Cost Estimate
Project 050019

TASK 1. PROJECT MANAGEMENT

LABOR

Principal Engineer		@	$	124.80	/hour	$	-
Sr. Eng/Sci I	2	@	$	114.40	/hour	$	228.80
Env. Eng/Sci III	3	@	$	93.60	/hour	$	280.80
Env. Eng/Sci I	3	@	$	72.80	/hour	$	218.40
CADD Operator		@	$	57.20	/hour	$	-
Technician III		@	$	57.20	/hour	$	-
Clerical	2	@	$	41.60	/hour	$	83.20
	TOTAL LABOR					**$**	**811.20**

OTHER DIRECT COSTS

Telephone, fax, etc.	1	@	$	25.00	/each	$	25.00
Document Production	1	@	$	75.00	/each	$	75.00
	TOTAL OTHER DIRECT COSTS					**$**	**100.00**

TASK TOTAL **$ 911.20**

TASK 2. QUARTERLY (2) GROUNDWATER SAMPLING, AQUIFER TESTING, AND TIER 1 SOIL SAMPLING AND TESTING

LABOR

Principal Engineer		@	$	124.80	/hour	$	-
Sr. Eng/Sci I		@	$	114.40	/hour	$	-
Env. Eng/Sci III		@	$	93.60	/hour	$	-
Env. Eng/Sci I	24	@	$	72.80	/hour	$	1,747.20
CADD Operator		@	$	57.20	/hour	$	-
Technician III		@	$	57.20	/hour	$	-
Clerical		@	$	41.60	/hour	$	-
	TOTAL LABOR					**$**	**1,747.20**

OTHER DIRECT COSTS

Subcontracted Drilling:							
Mobilization	1	@	$	250.00	/lump	$	250.00
4-1/4" HSA with Continuous Sampler	70	@	$	12.50	/foot	$	875.00
Decontamination Crew	2	@	$	75.00	/boring	$	150.00
Decontamination Equipment	1	@	$	87.50	/day	$	87.50
Drums	4	@	$	60.00	/each	$	240.00
Shelby tubes	4	@	$	125.00	/each	$	500.00
Truck Charge	3	@	$	100.00	/day	$	300.00
Misc. Field Supplies (ice, gloves, etc.)	3	@	$	50.00	/day	$	150.00
Sampling Shipping (FEDEX)	3	@	$	75.00	/each	$	225.00
PID	3	@	$	95.00	/day	$	285.00
Oil-Water Interface Probe	2	@	$	90.00	/day	$	180.00

SIMPSON MATERIALS WESTLAKE SITE
MRBCA Tier 1 Cost Estimate
Project 050019

Soil Geotechnical:	3	@	$	215.00	/sample	$	645.00	
Dry bulk density (ASTM D2937-94)								
Specific gravity (ASTM D854)								
Moisture content (ASTM D2216-92)								
Fractional organic carbon (ASTM 2974)								
Groundwater Analytical:	10	@	$	200.00	/sample	$	2,000.00	
BTEX (8260B)								
TPH-DRO (8270C)								
PAHs (8270C)								
Hand Auger	1	@	$	25.00	/day	$	25.00	
Surficial Soil Analytical:	8	@	$	200.00	/sample	$	1,600.00	
BTEX (8260B)								
TPH-DRO (8270C)								
PAHs (8270C)								
Bailers	10	@	$	12.50	/each	$	125.00	
Drums	2	@	$	60.00	/each	$	120.00	
Soil Waste Disposal	4	@	$	155.00	/drum	$	620.00	
Water Waste Disposal	1	@	$	155.00	/drum	$	155.00	
Soil Waste Analytical:								
BTEX, MTBE, GRO (OA-1)	1	@	$	45.00	/sample	$	45.00	
DRO (OA-2)	1	@	$	45.00	/sample	$	45.00	
Paint Filter	1	@	$	20.70	/sample	$	20.70	
Flash Point (open cup)	1	@	$	25.30	/sample	$	25.30	
TCLP Lead	1	@	$	110.00	/sample	$	110.00	
pH	1	@	$	12.65	/sample	$	12.65	
	TOTAL OTHER DIRECT COSTS					**$**	**8,791.15**	
	TASK TOTAL							**$ 10,538.35**

TASK 2. TIER 1 TECHNICAL SUMMARY REPORT DEVELOPMENT

LABOR

Principal Engineer		@	$	124.80	/hour	$	-	
Sr. Eng/Sci I	2	@	$	114.40	/hour	$	228.80	
Env. Eng/Sci III	22	@	$	93.60	/hour	$	2,059.20	
Env. Eng/Sci I	12	@	$	72.80	/hour	$	873.60	
CADD Operator	6	@	$	57.20	/hour	$	343.20	
Technician III		@	$	57.20	/hour	$	-	
Clerical	4	@	$	41.60	/hour	$	166.40	
	TOTAL LABOR					**$**	**3,671.20**	

OTHER DIRECT COSTS

Telephone, fax, etc.	1	@	$	75.00	/each	$	75.00	
Document Production	1	@	$	75.00	/each	$	75.00	
	TOTAL OTHER DIRECT COSTS					**$**	**150.00**	
	TASK TOTAL							**$ 3,821.20**
	TOTAL LABOR COST					**$**	**6,229.60**	
	TOTAL OTHER DIRECT COSTS					**$**	**9,041.15**	
	PROJECT TOTAL							**$ 15,270.75**

March 29, 2005 Letter from Mr. David Walchsauser of the MDNR to Mr. Mark Simpson of Simpson Construction Materials

STATE OF MISSOURI
Matt Blunt, Governor • Doyle Childers, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.mo.gov

MAR 29 2005

Mr. Mark Simpson
Simpson Construction Materials
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: Simpson Construction Materials/Westlake Quarry Site, Bridgeton, St. Louis County, MO
ST0013618, R0003874

Dear Mr. Simpson:

The Missouri Department of Natural Resources' Hazardous Waste Program, Tanks Section, has reviewed the work plan to conduct a Missouri Risk-Based Corrective Action (MRBCA) assessment dated February 1, 2005, submitted by Schreiber and Yonley Associates (SYA). The department received the report on February 4, 2005.

The proposal is denied because it is incomplete and fails to provide basic information required to complete a review of the plan. The plan indicates that SYA plans to install soil borings, groundwater monitoring wells, and gather surficial soil samples; however, the plan did not include a site map showing buildings, roads, or locations of proposed soil borings, groundwater monitoring wells, and locations of proposed surficial soil samples. Additionally, the plan proposes two quarters of groundwater monitoring.

The MRBCA guidance requires that the contamination plume is stable or shrinking before a MRBCA assessment is considered. Four consecutive quarterly groundwater sampling events is the minimum number allowed by the MRBCA guidance to determine plume stability. Within 60 days of receipt of this letter, please resubmit a complete work plan.

Please direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

Thank you for your efforts to protect Missouri's environment. If you have any questions, please contact me at the Hazardous Waste Program, P.O. Box 176, Jefferson City, Missouri 65102-0176, or at (314) 416-2969.

Sincerely,

HAZARDOUS WASTE PROGRAM

David Walchshauser, Environmental Specialist III
Remediation Unit

DW: ls

c: Mr. David Pate, Petroleum Storage Tank Insurance Fund
Mr. Edward Shepard Jr., Schreiber and Yonley Associates
St. Louis Regional Office

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