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SEMI-ANNUAL PROGRESS REPORT NUMBER 13

(Operating Period July 1, 2001 through December 31, 2001)

Prepared For:
Non-City RD/RA Settlors
Wayne Reclamation and Recycling, Inc. Wayne Waste Oil Site
Columbia City, Indiana

Prepared By:

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Novi, Michigan 48375

April 2002

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TABLE OF CONTENTS

Section **Page**

1.0 INTRODUCTION 1

1.1 BACKGROUND 1

2.0 MONITORING AND OPTIMIZATION TESTING 4

2.1 MONITORING 4
2.2 OPTIMIZATION TESTING 5
2.3 DATA VALIDATION SUMMARY 7

3.0 SOIL VAPOR EXTRACTION SYSTEM 9

3.1 SYSTEM DESCRIPTION 9
3.2 MONITORING AND OPTIMIZATION TESTING RESULTS 10
3.3 PROGRESS TOWARDS REMEDIAL OBJECTIVES 11

4.0 AIR SPARGING SYSTEM 13

4.1 SYSTEM DESCRIPTION 13
4.2 OPTIMIZATION TESTING RESULTS 14
4.3 PROGRESS TOWARDS REMEDIAL OBJECTIVES 15

5.0 GROUNDWATER EXTRACTION SYSTEM 17

5.1 SYSTEM DESCRIPTION 17
5.2 MONITORING AND OPTIMIZATION TESTING RESULTS 17
5.3 PROGRESS TOWARDS REMEDIAL OBJECTIVES 18

6.0 OFF-GAS TREATMENT SYSTEM 22

6.1 SYSTEM DESCRIPTION 22
6.2 MONITORING AND OPTIMIZATION TESTING RESULTS 22
6.3 PROGRESS TOWARDS REMEDIAL OBJECTIVES 23

7.0 GROUNDWATER PRE-TREATMENT SYSTEM 26

7.1 SYSTEM DESCRIPTION 26
7.2 MONITORING AND OPTIMIZATION TESTING RESULTS 26
7.3 PROGRESS TOWARDS REMEDIAL OBJECTIVES 27

8.0 SYSTEM OPERATION REVIEW 28

8.1 SVE SYSTEM 28
8.1.1 AST AREA 29
8.1.2 SE AREA 29
8.1.3 MONITORING CHANGES 29
8.2 GROUNDWATER SYSTEM 30

TABLE OF CONTENTS
(CONTINUED)

8.2.1 AST AREA 31
8.2.2 RW4 AREA 32
8.2.3 SE AREA 34
8.2.4 RW5 AREA 36
8.2.5 NORTH AREA 29
8.3 SUMMARY OF PROPOSED SYSTEM MODIFICATIONS 37
8.3.1 SVE SYSTEM 37
8.3.2 GROUNDWATER SYSTEM 37

9.0 CONCLUSIONS AND RECOMMENDATIONS 37

LIST OF TABLES

Table 1 Summary of Vacuum Pressures and Flow Rates from the SVE Wells
Table 2 Summary of Vacuums Measured at the SVE Monitoring Points
Table 3 Summary of Branch Line VOC Measurements
Table 4 Summary of Pressure and Flow Measurements at the Air Sparging Wells October 2001
Table 5 Summary of Southeast Area Dissolved Oxygen Measurements
Table 6 Summary of Summa Canister Sampling for SVE Lines
Table 7 Groundwater Treatment System Flow Summary
Table 8 Monitoring Well Construction Details
Table 9 Summary of Groundwater Elevations
Table 10 Monitoring Well Sample Results
Table 11 Recovery Well Construction Details
Table 12 Recovery Well Analytical Results
Table 13 Summary of Treatment System Air Sampling
Table 14 Summary of Air Dispersion Modeling
Table 15 Summary of Groundwater Treatment System VOC Influent and Effluent Sampling
Table 16 Summary of Groundwater Treatment System Effluent Sampling
Table 17 Columbia City Municipal Water Supply Well Results – VOCs and PCBs
Table 18 Columbia City Municipal Water Supply Well Results – Metals and Inorganics
Table 19 VOC Removal Rates-SVE and Air Stripper Systems
Table 20 Recovery Well VOC Mass Balance

TABLE OF CONTENTS
(CONTINUED)

LIST OF FIGURES

Figure 1	Site Plan - Groundwater Extraction
Figure 2	Site Plan - Soil Vapor Extraction
Figure 3	Site Plan- Air Sparging and Pneumatic Control Piping
Figure 4-1	Groundwater Contours – July 2001 Pumping
Figure 4-2	Groundwater Contours – August 2001 Pumping
Figure 4-3	Groundwater Contours – September 2001 Pumping
Figure 4-4	Groundwater Contours – October 2001 Pumping
Figure 4-5	Groundwater Contours – November 2001 Pumping
Figure 4-6	Groundwater Contours – December 2001 Pumping
Figure 5	Summary of Air Treatment System Effluent Data
Figure 6	Summary of Groundwater Treatment System Influent Data
Figure 7	Summary of Site VOC Removal Rates
Figure 8	Cumulative VOCs Removed From Site
Figure 9	Effect of Air Sparge on SVE VOC Concentrations
Figure 10	Cumulative and Sustained Groundwater Recovery

LIST OF APPENDICES

Appendix A	Summary of Air Dispersion Modeling and Cumulative Cancer Risk Calculations
Appendix B	EMI Letter to USEPA dated October 23, 2001

LIST OF ACRONYMS

AST	above ground storage tank
CCV	continuing calibration verification
cfm	cubic feet per minute
DCE	dichloroethene
DQOs	Data Quality Objectives
ECAO	Environmental Criteria Assessment Office
ft	feet
gpd	gallons per day
gpm	gallons per minute
HEAST	Health Assessment Summary Tables
HDPE	high density polyethylene
InSite	InSite, Incorporated
IDEM	Indiana Department of Environmental Management
IRIS	Integrated Risk Information System
ISC-LT	Industrial Source Complex-Long Term
lb	pound
LCS	laboratory control sample
MS/MSD	matrix spike/matrix spike duplicate
MWH	Montgomery Watson Harza
O&M	Operation and Maintenance
OM&M Plan	Operation, Monitoring, and Maintenance Plan
PCE	perchloroethene
PCBs	polychlorinated biphenyls
PID	photoionization detector
POTW	Publicly Owned Treatment Works
ppb	parts per billion
PRGs	Preliminary Remediation Goals
psi	pounds per square inch
QAPjP	Quality Assurance Project Plan
QC	Quality Control
RD/RA	Remedial Design/Remedial Action
scfm	standard cubic feet per minute
SE	southeast
SVE	soil vapor extraction
U.S. EPA	United States Environmental Protection Agency
TCE	trichloroethene
ug/L	micrograms per liter
v/v	volume per volume basis
VOCs	volatile organic compounds
Weston	Roy F. Weston
WRR	Wayne Reclamation and Recycling

1.0 INTRODUCTION

This document is submitted on behalf of the Non-City Remedial Design/Remedial Action (RD/RA) Settlors. It is intended to summarize operations of the remediation system constructed by the Non-City RD/RA Settlors at the Wayne Reclamation & Recycling (WRR) site (a.k.a., the Wayne Waste Oil Site) located in Columbia City, Indiana for the reporting period of July 1, 2001 through December 31, 2001. Included in this document is a description of the system optimization and testing activities that have occurred during the reporting period, as well as the on-going evaluation of the remediation system performance. This document is organized as follows:

- *Section 2* *Monitoring and Optimization Testing*
- *Section 3* *Soil Vapor Extraction System*
- *Section 4* *Air Sparging System*
- *Section 5* *Groundwater Extraction System*
- *Section 6* *Off-Gas Treatment System*
- *Section 7* *Groundwater Pre-Treatment System*
- *Section 8* *Conclusions/Recommendations*

This document is intended to supplement information presented in previous Semi-Annual Progress Reports.

1.1 BACKGROUND

Construction of the remediation system at the WRR site took place from June 1994 through January 1995. The remediation system was constructed to remove volatile organic compounds (VOCs) from site soils and groundwater. The system includes:

- A 2,400 standard cubic feet per minute (scfm) soil vapor extraction (SVE) system and a 100 scfm air sparging system (nominal rates);

- A 150 gallon per minute (gpm) design capacity groundwater extraction system, including a 1,600-foot (ft) long soil-bentonite cut-off wall (i.e., slurry wall);
- A 3,200 scfm off-gas treatment system, which was removed from service effective June 24, 1999; and
- A groundwater treatment system, including a 5,800-ft long force main that delivers treated groundwater to the Columbia City publicly owned treatment works (POTW)/wastewater treatment plant.

A site layout for the three primary components of the remediation system, including the groundwater recovery system, the SVE system, and the air sparging system, are indicated on Figure 1, Figure 2, and Figure 3, respectively.

A Prefinal Inspection of the remediation system was held with the United States Environmental Protection Agency (U.S. EPA) on January 27, 1995. The Final Inspection with the U.S. EPA was conducted on May 18, 1995. The system was operated in startup/shakedown mode from January 1995 through September 1995, pending approval of the *Final - Operations, Maintenance, and Monitoring Plan* (OM&M Plan) (Montgomery Watson, September 1995). U.S. EPA approval of the OM&M Plan was granted on September 27, 1995. In addition, U.S. EPA approval of the *Interim Remedial Action Report* (Montgomery Watson, August 1995) was granted on September 29, 1995.

Roy F. Weston (Weston) of Vernon Hills, Illinois (remediation system general contractor) acted as system operator after the completion of system construction activities that occurred from September 1995 to January 31, 1998. Weston subcontracted the majority of the operation and maintenance (O&M) activities to InSite, Incorporated (InSite) of Fort Wayne, Indiana. Montgomery Watson (system designer) was responsible for collecting air and water samples in accordance with the approved OM&M Plan during Weston's operation of the system. As of February 1, 1998, Montgomery Watson replaced Weston as the system

operator and retained InSite to perform the day-to-day system operation. Montgomery Watson and InSite continue to operate, maintain, monitor, and optimize system performance. Please note that as of June 21, 2001, Montgomery Watson became Montgomery Watson Harza (MWH).

Additional information on the remediation system can be found in the following reports:

- *Final Design Evaluation* (Warzyn, November 19, 1993);
- *Interim Remedial Action Report* (Montgomery Watson, August 1995);
- *Final - Operations, Maintenance, and Monitoring Plan* (Montgomery Watson, September 1995) and Addendum (Montgomery Watson, July 1999).
- *Final - Operations and Maintenance Quality Assurance Project Plan (QAPjP)* (Montgomery Watson, September 1995) and Addendum (Montgomery Watson, July 1999).
- *Technical Memorandum Number One* (Montgomery Watson, February 12, 1996);
- *Technical Memorandum Number Two* (Montgomery Watson, November 1996);
- *Semi-Annual Progress Report Number 3* (Montgomery Watson, August 1997);
- *Semi-Annual Progress Report Number 4* (Montgomery Watson, November 1997);
- *Semi-Annual Progress Report Number 5* (Montgomery Watson, April 1998);
- *Semi-Annual Progress Report Number 6* (Montgomery Watson, September 1998);
- *Semi-Annual Progress Report Number 7* (Montgomery Watson, March 1999);
- *Semi-Annual Progress Report Number 8* (Montgomery Watson, August 1999);
- *Semi-Annual Progress Report Number 9* (Montgomery Watson, March 2000);
- *Semi-Annual Progress Report Number 10* (Montgomery Watson, October 2000);
- *Semi-Annual Progress Report Number 11* (Montgomery Watson, March 2001); and
- *Semi-Annual Progress Report Number 12* (Montgomery Watson Harza, September 2001).

2.0 MONITORING AND OPTIMIZATION TESTING

Initial monitoring and optimization testing of the WRR remediation system commenced in early 1995 during the startup/shakedown mode of system operations. Additional monitoring and system optimization testing has continued throughout the duration of the system operation. This monitoring and testing was conducted primarily to evaluate the performance of the remediation system in removing VOCs from site soils and groundwater, as well as to address the monitoring and testing requirements set forth in the site OM&M Plan. The monitoring, optimization testing, and associated activities conducted are discussed in the following sections.

2.1 MONITORING

The primary monitoring and associated activities conducted throughout remediation system operations are discussed below:

- Historically, air treatment system monitoring included monthly influent and effluent vapor sample collection and analysis. On June 24, 1999 the air treatment system was taken off-line. As of July 1999, only the SVE system effluent (equivalent to the former air treatment system influent) is collected and analyzed on a monthly basis. Monthly samples were collected and analyzed for VOCs during this reporting period. Results of the SVE effluent sampling are used in air dispersion modeling and on-going assessment of cumulative risks for exposure to carcinogens.

- Monthly groundwater treatment system monitoring is conducted at the site, including influent and effluent groundwater sample collection and analysis. Monthly samples were collected during this reporting period for the groundwater treatment system influent and effluent. The samples were analyzed for VOCs. Additionally, samples of the groundwater treatment system effluent are collected on an annual basis and are analyzed for total metals, inorganics, and polychlorinated biphenyls (PCBs). Results of

the groundwater treatment system sampling are used to monitor groundwater treatment system efficiency, and to provide effluent quality information to the Columbia City POTW.

- Recovery well samples are collected and analyzed on a periodic basis, primarily during the fall semi-annual sampling event. Results of the recovery well sampling are used to monitor changes in aquifer groundwater concentrations and to assess VOC mass removal rates from the aquifer.

- Semi-annual groundwater monitoring well sample collection and analysis is conducted for the site's groundwater monitoring network. Samples were collected from MW1D, MW3S, MW4S, MW7S, MW9S, MW10S, MW11S, MW13S, MW13D, MW14S, MW15S, MW16S, MW83AS, MW83AD, MW83DS, MW83DD, and MW83B during this reporting period and analyzed for VOCs and metals. Results of the groundwater monitoring well sampling are used to assess effectiveness of the remediation system operations and evaluate the progress of the site towards cleanup and attainment of remedial goals.

- Annual Columbia City municipal drinking water well sample collection and analysis is performed for Municipal Well Number 7 and Municipal Well Number 8, typically during the fall semi-annual sampling event. Samples were collected during this reporting period from Municipal Well Number 7 and Municipal Well Number 8, and were analyzed for VOCs, PCBs, metals, and inorganics.

2.2 OPTIMIZATION TESTING

The primary optimization activities which have been conducted throughout remediation system operations include:

- Semi-annual SVE well vacuum pressure and flow measurements, as appropriate, to adequately balance SVE system flowrates. Vacuum pressures and flow measurements were collected during this reporting period at the site's 56 SVE wells.

- Semi-annual SVE branch line and header line VOC measurements, as appropriate, to adequately focus treatment on those areas exhibiting the highest indicated VOC vapor concentrations. Field readings for trichloroethene (TCE), dichloroethene (DCE), vinyl chloride, and photoionization detector (PID) readings were recorded during this reporting period for the six branch lines of the SVE system. PID readings were collected for the SVE branch header line in the Southeast (SE) area of the site, and for the two branch lines of the SVE system located in the Above Ground Storage Tank (AST) area of the site.

- Semi-annual SVE monitoring point vacuum pressure measurements, to determine any major changes in SVE radius-of-influence. Vacuum pressure measurements were collected during this reporting period at the site's 23 SVE monitoring points.

- Semi-annual air sparge well air injection pressure and flowrate checks are conducted to determine any major changes in the ability to inject air into the saturated zone in the SE area. Air injection pressures and flowrates were recorded during this reporting period for the site's 40 air sparging wells.

- Semi-annual dissolved oxygen level checks in the monitoring wells and groundwater recovery wells located within the boundary of the slurry wall where air sparging is conducted. Dissolved oxygen measurements were collected at five groundwater monitoring well locations and at six recovery well locations during this reporting period.

- Monthly groundwater elevation measurements, to determine groundwater remediation system capture zones and to assess vertical hydraulic gradients in the SE area. Monthly groundwater elevation readings were collected during this reporting period at the site's groundwater monitoring wells and piezometers.

The results of the above monitoring and system optimization activities are discussed in the following sections of this report.

2.3 DATA VALIDATION SUMMARY

Air samples, water samples, and associated quality control (QC) samples were collected from the Wayne Reclamation site in Columbia City, Indiana, in October and November of 2001. The air samples were analyzed by Pace Analytical, Inc., for VOCs by method TO-14. The water samples were analyzed by Test America Laboratories, Inc., Indianapolis, Indiana, for one or more of the following parameters: VOCs by U.S. EPA method SW-846 8260B; cyanide by U.S. EPA method SW-846 9012A; arsenic by U.S. EPA method SW-846 7060A; thallium by U.S. EPA method SW-846 7841; mercury by U.S. EPA method SW-847 7470A; and various metals by U.S. EPA method SW-846 6010 and SW-846 6020 .

Analytical results were evaluated in accordance with the data quality objectives (DQOs). The analytical data were validated and qualified based on the results of the data evaluation parameters and/or the QC sample results provided by the laboratory. Raw data was not reviewed. The following summarizes the review of the analytical data that did not meet the quality control criteria.

The matrix spike/matrix spike duplicate (MS/MSD) associated with the VOC analysis of sample MW-13S indicated a percent recovery less than the acceptance criteria for TCE. Since this reflects a low bias, the associated sample was flagged "J" as estimated for this compound.

The laboratory control sample (LCS) associated with the VOC analysis of air samples collected from sampling locations System Effluent, AST West, AST East, and SE Area w/Air Sparging indicated percent recoveries greater than the acceptance criteria for cis-1,3-dichloropropene, toluene, and hexachloro-1,3-butadiene. Since this reflects a high bias and the compounds were not detected in the associated samples, flags were not issued for this compound, with the exception of sample AST East, which was flagged "J" as estimated for toluene.

The method blank associated with the VOC analysis of sample MW83D indicated a detection of methylene chloride. Since this compound was not detected in the associated sample, a flag was not issued for this compound.

The trip blank associated with the VOC analysis of samples Municipal Well Number 7 and Municipal Well Number 8 indicated detections of chloroform and methylene chloride. Since these compounds were not detected in the associated samples, flags were not issued for these compounds.

The continuing calibration verification (CCV) associated with the VOC analysis of samples Municipal Well Number 7 and Municipal Well Number 8 indicated a percent difference outside the acceptance criteria, with a high bias for bromoform. Since this reflects a high bias and the compound was not detected in the associated samples, flags were not issued for this compound.

Based on the results of this data validation, all data are considered valid and complete as qualified.

3.0 SOIL VAPOR EXTRACTION SYSTEM

3.1 SYSTEM DESCRIPTION

The SVE system was constructed to remove VOCs from the vadose (unsaturated) zone. The system consists of 41 SVE wells in the SE area and 15 SVE wells in the AST area (Figure 2). VOCs are removed from the vadose zone via vacuum blowers housed in the on-site treatment building. Extracted vapors are routed from the SVE wells to the on-site treatment system through underground high density polyethylene (HDPE) piping. Each SVE well is equipped with a shut-off valve and an air velocity measurement port/vapor sample tap.

In the SE area of the site, the SVE wells are grouped together into one of six branch lines. Approximately six to eight SVE wells are attached to each branch line. As shown on Figure 2, the six branch lines are designated as Branches A, B, C, D, E, and F. The six branch lines connect to one main trunk line that conveys extracted vapors to the treatment building. Operation of individual SVE wells is controlled manually by a shut-off valve located at each well. Operation of groups of SVE wells is currently controlled manually by a valve at the head of each branch line.

In the AST area, each SVE well is connected via underground piping to one of two branch lines that convey extracted vapors to the treatment building. As shown on Figure 2, these branch lines are designated as Branch G and Branch H. Automatic control valves located in the treatment building control operation of Branch G and Branch H.

In both the SE area and the AST area, cycling of the SVE branch lines began on May 1, 1998. The purpose of this cycling is to improve system operations by avoiding the formation of long-term preferred vapor flowpaths, thereby maximizing VOC removal.

During current cycling procedures, effective as of September 17, 2001, two of the six branch lines are operated simultaneously in the SE Area. The set of two branch lines operating is rotated approximately once per week. In the AST area, operation of Branch G and Branch H is rotated approximately once per week.

Pressure probes are located throughout the SE and AST areas. These pressure probes provide monitoring points where vacuums exhibited in the vadose zone can be measured to evaluate the SVE system radius-of-influence. Several of the pressure probe locations are nested (i.e., both a shallow and a deep probe exist at the nested locations). In addition, monitoring wells screened at least partially in the vadose zone can also function as SVE vacuum monitoring points.

3.2 MONITORING AND OPTIMIZATION TESTING RESULTS

Results of the SVE system monitoring and optimization testing, which was conducted during this reporting period, indicate:

- During the period of July 2001 through December 2001, the SVE system was operational for approximately 98.7% of the time (i.e., % of total hours available). Downtime events were primarily related to standard regularly scheduled operation and maintenance activities, instrumentation and control repairs, and occasional power outages.

- Vacuum pressures recorded from the SE area SVE wells in October 2001 ranged from 4 to approximately 35 inches of water column. Vacuum pressures recorded at the SVE wells in the AST area ranged from 7 to approximately 34 inches of water column. Vacuum pressure measurements are summarized in Table 1.

- The flow rates recorded in October 2001 at the SVE wells ranged from approximately 25 to 150 cubic feet per minute (cfm) from the SE area wells, and

approximately 10 to 20 cfm from the AST area wells. The total flow rate from SVE wells in the SE area was approximately 1,600 cfm. The total flow rate from SVE wells in the AST area was approximately 225 cfm. Flow rate measurements collected during October 2001 are summarized in Table 1.

- Vacuum pressures measured at the SE area monitoring points (other than SVE wells) during October 2001 ranged from 0 to approximately 1.30 inches of water column. Vacuum measurements collected in the SE area continue to indicate the SVE system is either meeting or exceeding design expectations. Vacuum pressures measured at monitoring points (other than SVE wells) in the AST area ranged from 0 to approximately 0.50 inches of water column. Vacuum measurements in the monitoring points collected during October 2001 are summarized in Table 2.

- During this reporting period, the greatest SVE VOC concentrations were noted from Branch F in the SE area. Vapor concentrations have changed over time as more VOC mass is removed from the site soils and groundwater. Future treatment system operations will continue to focus on optimizing this removal. Relative to the AST area, the SE area continues to contribute the majority of the VOCs to the treatment system. For the SE area, PID and colorimetric tube measurements collected during October 2001 are summarized in Table 3. Laboratory analytical/Summa canister data collected in October and November 2001 is summarized on Table 6.

3.3 PROGRESS TOWARDS REMEDIAL OBJECTIVES

Based on analytical results of SVE system effluent air samples collected during the reporting period, it is estimated that approximately 11,061 pounds (lbs.) of VOCs have been removed via the SVE system from site vadose zone soils. Initial mass removal rates observed at the commencement of SVE system operations were approximately 83 lbs. of total VOCs per day. As of December 2001, removal rates for the SVE system were

approximately 1.5 lbs. total VOCs per day or approximately 1.8% of initial removal rates. This equates to a 98.2% reduction in VOC contributions from the SVE system. This decrease in VOC concentrations can be noted on Figure 5, which represents a summary of air treatment system influent and effluent data, respectively.

The primary objective of the SVE system operation is to remove VOCs from site soils in order to attain vadose zone soil Preliminary Remediation Goals (PRGs), or alternative cleanup levels, as indicated in the OM&M Plan. For example, soil PRGs for the SE area are 37.1 ug/kg for vinyl chloride, 186.3 ug/kg for 1,2-DCE, 67.1 ug/kg for tetrachloroethene (PCE), and 19.7 ug/kg for TCE. Confirmatory soil sampling will not commence until SVE influent concentrations reach an asymptotic value.

4.0 AIR SPARGING SYSTEM

4.1 SYSTEM DESCRIPTION

The air sparging system was constructed to facilitate removal of VOCs from site soils and groundwater. The air sparging system is intended to work in combination with the SVE and groundwater systems in the removal of VOCs from the site subsurface. The system consists of 40 sparging clusters located in the SE area of the site as indicated on Figure 3. A sparging cluster is located adjacent to each SVE well. Compressed air is delivered from the sparging compressor in the treatment building to the sparging wells through HDPE piping located underground.

Each air sparging cluster consists of two air sparging wells (i.e., a shallow well and a deep well). The shallow/deep cluster was installed to provide treatment of soils above and below the thin clay layer, which is located at approximately 20 to 25 ft below ground surface. The shallow air sparging well is installed such that its screen is set at the top of the thin clay layer. The deeper air sparging well is set with its screen at the base of the upper aquifer. Each well is instrumented with an air flow rotameter, ball valve, and pressure gauge. Effective September 17, 2001, air sparging in the deeper wells was temporarily discontinued. Currently, two air sparging branch lines are operated simultaneously, corresponding to the two operating SVE branch lines. The lines are rotated approximately once per week, consistent with the rotation of the SVE lines. During operation, the air sparging system runs on a 4 hour on/off cycle (i.e., 4 hours ON followed by 4 hours OFF).

The sparge wells are manifolded and controlled in a manner similar to the SVE system. Compressed air is supplied from the sparging compressor in the treatment building to the SE area through a two-inch diameter HDPE line. As shown on Figure 3, branch lines A, B, C, D, E, and F leave the trunk line to feed the air sparging wells. Operation of the branch lines is controlled by a control valve at the head of each branch line.

4.2 OPTIMIZATION TESTING RESULTS

Results of the air sparging system optimization testing, which was conducted in October and November 2001, indicate:

- During the period of July 2001 through December 2001, the air sparging system was operational for approximately 98.7% of the total hours available. Downtime events during this time period were primarily related to standard regularly scheduled operation and maintenance activities and occasional power outages.

- The airflow rate to the shallow sparging wells was approximately 2 cfm each. Corresponding injection pressures for the shallow wells ranged between 3 pounds per square inch (psi) and 15 psi. Air flow and injection pressure measurements collected in October 2001 are summarized in Table 4.

- Dissolved oxygen level measurements collected during the reporting period are summarized in Table 5. The indicated values are consistent with the previous sampling event conducted in April 2001. Although dissolved oxygen levels are expected to increase as contaminant levels are reduced in the aquifer, the dissolved oxygen data does not directly correlate with groundwater concentrations. Generally, monitoring points impacted with VOCs will have lower dissolved oxygen levels than non-impacted monitoring points.

- As a means of measuring the contribution of VOC removal by the air sparging system, vapor samples have historically been collected from the SE area's SVE main trunk line with the air sparging system "ON" and "OFF." During the last reporting period, vapor samples were collected via Summa Canisters, with the air sparging system "ON" (September 29, 2001) and "OFF" (October 31, 2001). The results for these and other historical samples are summarized in Table 6.

- In order to potentially improve VOC removal, sparging in the deeper air sparging wells was temporarily discontinued effective September 17, 2001. It is believed that the deeper area may be experiencing anaerobic degradation of VOC impact; therefore, discontinuing the deep air sparging may increase VOC degradation. Results collected during the reporting period do not indicate a significant change, with respect to the SVE vapor concentrations, with the deep air sparging wells turned off. Operation of the system will continue with deep wells turned off, to enable additional data to be gathered.

4.3 PROGRESS TOWARDS REMEDIAL OBJECTIVES

The primary remedial objective of the air sparging system is for the removal of dissolved-phase VOCs from the saturated zone in the SE area of the site, located within the confines of the barrier wall. VOC removal is measured using a PID, colorimetric tubes, and Summa Canisters. Results of the field measurements for air quality are presented in Table 3. Analytical results for the air samples collected via Summa Canisters are presented in Table 6. Testing results collected to date suggest that the air sparging system is supporting the remedial objective. In general, monitoring wells in the SE area have shown significant reductions in VOC concentrations since commencement of remediation system operations.

A historical representation of the concentration of total VOCs, as recorded during Summa Canister sampling, is provided in Figure 9. The graph depicts the effect of the air sparge system on VOC removal. Samples are collected with the air sparge system operating, and then a short time later with the air sparge system suspended. Review of the sample results indicates that the air sparge system's impact on VOC removal has varied throughout system operations.

Under current operating procedures, only the shallow air sparging wells are operated. During operation, the air sparging system functions under a pulsed mode, which consists of

operating two of the six branch lines at a time (two lines on, four lines off). The two branch lines are rotated into service approximately once every week. Additionally, during operation of the two selected branch lines, the air injection is cycled approximately every four hours (i.e., air is injected for four hours and then turned off for four hours, then the cycle is repeated).

Continued reductions in dissolved phase VOC concentrations have been noted at the monitoring wells located in the SE area since initial operation of the treatment system (see Table 10). Fluctuations in dissolved phase VOCs have been noted in all monitoring wells and recovery wells located in the SE area. These fluctuations are likely due to the non-homogeneous nature of the saturated zone in the SE area and the differing rates of treatment likely occurring across the area.

Development of the groundwater PRGs are detailed in the *Final Operation and Maintenance Quality Assurance Project Plan* (Montgomery Watson, September 1995). The most conservative PRGs for the commonly detected constituents of concern are 0.0283 ug/L for vinyl chloride, 1.43 ug/L for PCE, 2.54 ug/L for TCE, 70 ug/L for cis-1,2-DCE, and 100 ug/L for trans-1,2-DCE.

5.0 GROUNDWATER EXTRACTION SYSTEM

5.1 SYSTEM DESCRIPTION

The groundwater extraction system was constructed to capture and control groundwater impacted with VOCs. The groundwater extraction system consists of 10 groundwater recovery wells installed in three areas of the site as follows: three recovery wells in the AST area (RW1-RW3), one recovery well in the monitoring well MW7S area (RW4), and six recovery wells in the SE area (RW5-RW10), see Figure 1. The extraction system also employs the use of a soil bentonite cut-off wall (i.e., slurry wall), constructed to reduce the pumping rate necessary to produce an upward vertical gradient component to the groundwater flow in the SE area. Extracted groundwater is pumped to the on-site treatment building through underground HDPE piping.

5.2 MONITORING AND OPTIMIZATION TESTING RESULTS

Results of the groundwater extraction system monitoring and optimization testing, which was conducted during the reporting period, indicate:

- During the period of July 2001 through December 2001, the groundwater extraction system was operational for approximately 96.5% of the time (i.e., % of total hours available). Primary downtime events were related to on-going routine cleaning of individual recovery pumps and underground collection piping, occasional power outages, and requests from the Columbia City WWTP to temporarily cease discharging treated groundwater.

- The maximum sustained groundwater recovery rate, for periods of at least 24 hours, during the reporting period was approximately 89.8 gpm in October 2001 (i.e., 129,312 gallons per day (gpd)). During the reporting period, a total of 12,628,321 gallons of groundwater were recovered and treated. The largest total monthly flow was reported at 3,162,916, for the month of

November 2001. The highest average daily recovery rate during the reporting period was 105,431 gpd, which was reported during the month of November 2001. This average was calculated by dividing the total monthly flow by the total number of operational days for the month. Continued cleaning of recovery well pump assemblies and groundwater collection piping has enabled system groundwater recovery rates to maintain an inward and vertically upward gradient in the SE area. A summary of system flowrates is included in Table 7. Included as Figure 10 is a comparison of cumulative versus the average daily groundwater recovery rates. As of December 2001, a cumulative total of 144,319,521 gallons of groundwater had been recovered, treated, and discharged to the Columbia City POTW.

- Capture of site groundwater (as measured by drawdown in site monitoring wells) is being achieved across the site. Water level elevation data collected during the reporting period is used to evaluate the groundwater table drawdown. This data is included in Table 8 (monitoring well construction details) and Table 9 (groundwater elevation information). Groundwater contour maps that show representations of the water elevations observed in the SE area during each month of the reporting period have been prepared as Figure 4-1 through Figure 4-6.

- Sample results from the annual sampling of the Columbia City municipal drinking water wells located to the north of the WRR site can be found in Table 17 and Table 18. Historical data indicates that no detectable concentrations of constituents attributable to the WRR site have been detected in the municipal wells.

5.3 PROGRESS TOWARDS REMEDIAL OBJECTIVES

The primary remedial objectives of the groundwater extraction system are to remove dissolved phase contamination from the saturated zone and maintain hydraulic control

within the upper aquifer on site, thereby preventing the potential off-site migration of dissolved phase constituents to the Blue River or Columbia City municipal well field. Mass removal rates from the groundwater extraction system have ranged from approximately 0.5 lbs. to 1.8 lbs. of VOCs removed per day during the reporting period.

Groundwater elevation data indicates that the slurry wall/groundwater extraction system is effectively maintaining an inward gradient in the SE area. Monthly water elevations collected during the reporting period indicate a consistent inward gradient in the SE area. For example, the September 2001 elevations within the confines of the slurry wall are approximately 2.4 feet lower than water elevations immediately outside the slurry wall (monitoring wells MW11S and MW13S on Table 9 and Figure 4-3).

Pre-pumping water level elevations in MW83AS and MW83AD, located within the confines of the slurry wall, suggest a downward vertical gradient. Upon startup of remediation system pumping in 1995, water level data indicate a shift in this position with an upward vertical gradient noted between MW83AS and MW83AD. Data collected during the reporting period indicate that an upward gradient was maintained in the SE area throughout the reporting period. Water elevations collected from MW83AD are all greater than water elevations in MW83AS, which indicates an upward gradient in this vicinity. Operation and maintenance activities, including on-going recovery pump and groundwater collection pipe cleaning, have helped increase groundwater system recovery rates to maintain an upward vertical gradient in the SE area. Based on the historical observations of groundwater extraction system performance, maintenance of the groundwater extraction system will be conducted frequently (i.e., approximately once per quarter) in order to maintain hydraulic control.

The monitoring wells currently included in the semi-annual or annual sampling program, per the requirements of the OM&M QAPjP, are MW1D, MW3S, MW4S, MW7S, MW9S, MW10S, MW11S, MW14S, MW15S, MW16S, MW83AS, MW83AD, and MW83B.

During the reporting period, additional monitoring wells were also sampled, including MW13S, MW13D, MW18S, MW83DS, and MW83DD. A summary of monitoring well VOC and metals analytical data collected to date is included in Table 10. Copies of laboratory analytical reports are available upon request.

The most recent groundwater sampling event, conducted in October 2001, indicates that total VOCs have continued in a decreasing concentration trend. The total VOCs have decreased from 142,802 ug/L (total for all wells sampled) in the August 1988 sampling event to 13,021 ug/L in the October 2001 sampling event. This represents a decrease of approximately 91% since system start-up. Data trends are discussed in Sections 7 and 8.

The 10 site recovery wells were also sampled during the reporting period. A summary of historic recovery well VOC analytical data is included in Table 12. The most highly impacted recovery wells are located within the confines of the slurry wall (RW8, RW9, and RW10). Data trends are discussed in Section 8.

During November 2001 and December 2001, a flow assessment was completed on each of the 10 recovery wells. The current recovery well system is not equipped to measure flows from each individual recovery well, therefore, a temporary flowmeter was installed in each well to allow for assessment of individual recovery well flow rates. A summary of these flow rates are as follows:

Recovery Well Flow Rates

Recovery Well No.	Steady-State Flow Rate (gpm)
RW1	1.7
RW2	1.1
RW3	10.2
RW4	11.2
RW5	5.7
RW6	10.4
RW7	9.5
RW8	9.3
RW9	6.4
RW10	6.8
Total System Flow Rate:	**72.3**

On-going routine operation and maintenance activities are focused on recovery well pump cleaning/repair and/or replacement, and recovery pipe cleaning as necessary to optimize groundwater remediation system performance and meet remedial objectives. Flow increases have been noted in all recovery wells after cleaning of recovery well pump assemblies and discharge lines. Additional improvements to the groundwater return line cleaning process were implemented during the reporting period, which resulted in the significant flow increases noted during November 2001 relative to previous months. Included as Table 11 is a recovery well construction detail summary, which provides more detail of the specific recovery wells.

6.0 OFF-GAS TREATMENT SYSTEM

6.1 SYSTEM DESCRIPTION

The off-gas treatment system was constructed and operated to remove VOCs from the off-gases of the air stripping tower and the SVE system prior to discharge to the atmosphere. On June 24, 1999, air treatment was discontinued; however, monthly air sampling continues to be conducted on the effluent air stream as a means of monitoring potential risk levels associated with the untreated air stream. Upon entering the treatment building, the combined air stream of the air stripping tower and the SVE system is drawn through an air filter and moisture separator by two 100-horsepower, multistage, centrifugal blowers connected in parallel. After exiting the blowers, the untreated air stream passes through a heat exchanger prior to discharge to the atmosphere.

6.2 MONITORING AND OPTIMIZATION TESTING RESULTS

Monitoring and optimization testing conducted to date, including the monthly SVE system effluent sampling (which includes air stripping system off-gases), indicate:

- Monthly effluent vapor concentrations have decreased by more than one order of magnitude from the beginning of system operations in early 1995 to December 2001. Total VOCs in the air stream have dropped from approximately 83,300 parts per billion (ppb) volume/volume basis (v/v) in March 1995 to 1,910 ppb (v/v) in December 2001. During the same time period, vinyl chloride concentrations have decreased from approximately 1,900 ppb (v/v) to 210 ppb (v/v), TCE concentrations have decreased from 28,000 ppb (v/v) to less than 130 ppb (v/v), and cis-1,2-DCE concentrations have decreased from approximately 40,000 ppb (v/v) to 1,700 ppb (v/v). The historic monthly air treatment system influent and effluent sampling results are summarized on Table 13 and on Figure 5. Table 13 and Table 14 also include the monthly effluent-only sample results collected since the air treatment system was discontinued on June 24, 1999.

- VOC concentrations have historically been modeled to assess air quality at the site boundary to compare associated hypothetical risks with and without treatment from the formerly used PADRE air treatment system. Results for both the influent and effluent values indicate hypothetical risk levels to be generally below the cumulative risk action level of $1x10^{-6}$ (representing a risk of one in one million exposed) since the commencement of system operations. Included in Table 13 and Table 14 are summaries of these air risk calculations. As noted, effluent air sampling conducted since discontinuation of air treatment on June 24, 1999 indicates the $1x10^{-6}$ action level has not been exceeded.

6.3 PROGRESS TOWARDS REMEDIAL OBJECTIVES

The primary objective of the continued on-going SVE system effluent monitoring is to ensure that the cumulative life-time cancer risk at the site boundary remains less than the cumulative risk action level of $1x10^{-6}$. In order to meet this objective, air dispersion modeling was performed to determine the maximum concentrations at receptor locations outside the boundary of the WRR site. The Industrial Source Complex - Long-Term (ISC-LT) model was used for the purpose of modeling the dispersion of the influent and the effluent from the soil remediation system, based on the conservative assumption that the system was operating for 24 hours a day, 365 days a year.

The maximum concentrations determined by the air modeling study were multiplied by unit risk factors to estimate the excess carcinogenic risk posed by the hypothetical emissions through the inhalation route. The unit risk factors used in this study were developed from toxicity values included in U.S. EPA's Integrated Risk Information System (IRIS), U.S. EPA's "Health Assessment Summary Tables" (HEAST, Annual FY-1995), and information provided by the U.S.EPA Environmental Criteria Assessment Office (ECAO). The unit risk factors conservatively assume a chronic exposure to the chemicals for 24 hours a day, 365 days a year, for a 70-year lifetime. A summary of air dispersion modeling and

cumulative cancer risk estimates is provided in Appendix A. (In this report, references to cancer risk and cancer risk estimates refer to the estimated potential risks as indicated by the use of ISC-LT air dispersion modeling and are not meant to represent or suggest actual risks.)

Air dispersion modeling conducted on the air treatment system effluent data indicates that no exceedences of the $1x10^{-6}$ action level occurred during this reporting period. In the past, slight exceedences of the $1x10^{-6}$ action level were modeled for in the March 1995, November 1995, July 1996, and September 1997 data for effluent samples. Exceedances were also noted in the March 1995, November 1995, May 1996, June 1996, July 1996, May 1997, April 1998, and February 1999 data for influent samples.

The air dispersion modeling conducted on the influent samples hypothetically assumed no treatment would be conducted on the air stream. The slight exceedence noted in the effluent concentrations for the months modeled has been intermittent and may be an anomaly. In any event, the slight exceedances are considered to represent a hypothetical risk as the calculations, for example, assume a continuous 70-year exposure to the concentrations measured in a given month.

Though active air treatment was discontinued on June 24, 1999, monthly effluent air sampling and risk assessment will continue to be conducted. Air treatment will be reactivated should the results from two consecutive monthly air samples indicate cumulative risks in excess of $1x10^{-6}$.

Overall remediation system mass removal calculations indicate that, since inception of treatment system operations, approximately 12,373 lbs. of total VOCs have been removed by the SVE and groundwater treatment systems. Of this, approximately 89.4% (or 11,061 lbs.) is attributed to operation of the SVE and air sparge systems, and approximately 10.6% (or 1,312 lbs.) is attributed to the groundwater extraction system. Additionally,

initial contaminant mass removal rates from the entire remediation system were approximately 88 lbs. of total VOCs per day during the startup phase of system operations. This removal rate has decreased to approximately 3.1 lbs. of total VOCs per day, as of December 2001. Figure 7 represents a summary of overall site VOC removal rates. Figure 8 represents a summary of total VOCs removed from the site.

7.0 GROUNDWATER PRE-TREATMENT SYSTEM

7.1 SYSTEM DESCRIPTION

The groundwater pre-treatment system is designed to remove VOCs from extracted groundwater, prior to the effluent being discharged to the Columbia City POTW. Groundwater extracted from the site's ten groundwater recovery wells (RW1 through RW10) is initially pumped to an influent storage tank for solids settling and equalization. The untreated water is transferred from the influent storage tank through a bag filter to the top of an air stripping tower via electric transfer pumps. Water flows by gravity downward through the tower packing, while air flows upward through the tower, stripping the VOCs from the groundwater. The treated water drains from the tower into an effluent sump. Treated groundwater from the effluent sump is pumped via a dedicated forcemain to the Columbia City POTW.

7.2 MONITORING AND OPTIMIZATION TESTING RESULTS

During the period of July 2001 through December 2001, the groundwater pretreatment system was operational for 96.5% of the time (i.e., % of total hours of available). The primary downtime occurrences were related to standard operation and maintenance activities and occasional power outages.

Monthly treatment system influent and effluent analytical results for groundwater entering and exiting the air stripping tower are summarized in Table 15 and Table 16. In addition, Figure 6 includes a summary of historical influent VOC data. The air stripping tower has consistently removed VOCs prior to discharge to the Columbia City POTW. Total VOC concentrations in the influent of the air stripping tower have fluctuated from 370 ug/L to 3,274 ug/L since commencement of treatment system operations. Influent groundwater VOC concentrations can vary over time, based on a variety of factors including recovery well cycling, rainfall events, and site water levels. The influent groundwater VOC concentrations during this reporting period began at 3,221 ug/L (July 2001) and ended at

2,523 ug/L (December 2001). The average total VOC concentration for the influent during the reporting period was 2,182 ug/L. Average groundwater contaminant mass removal rates since the commencement of remediation system operations have ranged from approximately 0.9 lbs./day to 13.2 lb/day of total VOCs. The most recent system data, collected from December 2001, indicates that the groundwater contaminant mass removal rate is approximately 1.60 lbs. total VOCs per day, based on an average flow rate of 76,371 gpd and a total VOC concentration in the plant influent of 2,523 ug/L.

7.3 PROGRESS TOWARDS REMEDIAL OBJECTIVES

Results of the groundwater treatment system monthly effluent sampling conducted in accordance with the discharge agreement (i.e., the agreement in place prior to February 1, 1998) with the Columbia City POTW are included in Table 15 and 16. Analytical results generally indicate very low levels of both organic and inorganic compounds to be present in the treated groundwater discharged to the Columbia City POTW. As of February 1, 1998, monthly groundwater treatment system sampling consists of influent and effluent sampling for VOCs only per the new agreement with the Columbia City POTW. Additional non-VOC parameters are sampled for during the annual sampling event conducted in October of each year. These results can be found in Table 16.

The treatment system sampling modifications were approved by the U.S. EPA and the Indiana Department of Environmental Management (IDEM) (Engineering Management, Inc., December 2, 1997).

8.0 SYSTEM OPERATION OVERVIEW

The groundwater and SVE treatment systems at the Wayne Reclamation and Recycling Site have been in operation for approximately seven years. The monitoring data for the Site show that the treatment systems have removed a significant mass of VOCs from the vadose zone soil and groundwater. The SVE system has removed 11,060 pounds of VOCs since 1995 and is currently removing up to 1.5 pounds of VOCs per day. The groundwater extraction system has removed approximately 144 million gallons of groundwater and 1,313 pounds of VOCs since 1995 and is currently removing up to1.5 pounds of VOCs per day. The operation has been so successful that a review of system operating data with an eye towards focusing, enhancing and/or eliminating operation of system components is appropriate.

This section presents a review of the SVE and groundwater monitoring data for the Site. The review considers recent and historical data and is broken down into SVE and groundwater subsections. A review of the data indicate that three VOCs are the most prevalent compounds at the Site: trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2 DCE) and vinyl chloride (VC). The review focuses on these three compounds. Monitoring well data referenced in this review is detailed on Table 10 and referenced recovery well data is detailed on Table 12. The review presents several recommendations to optimize system operation.

8.1 SVE SYSTEM

The SVE system has removed 11,060 pounds of VOCs since 1995. However, the great reduction in the mass of VOCs in the vadose zone has caused the removal rate to decrease from 83 pounds per day in 1995 to approximately 1.5 pounds per day in 2001. The contribution of individual areas of the Site to the SVE removal rate and recommended adjustments to the SVE system are discussed below.

8.1.1 AST Area

Table 19 summarizes the removal rates from Branch Lines G and H over the last four years. As shown on Table 19, VOC concentrations in Branch Line H have decreased over this time period, to the point where this branch line is not measurably contributing to VOC removal. As such, it is recommended that operation of Branch Line H be suspended.

As shown on Table 19, VOC concentrations in Branch Line G decreased in 2001 after increasing in 2000 and the current contribution of this branch line to overall VOC removal is limited. However, a review of vadose zone soil conditions surrounding monitoring well MW9S (see Appendix B) shows that elevated VOCs are present in this area. Because Branch Line G terminates close to the MW9S area it is recommended that Branch Line G be extended to the MW9S area. It is recommended that Branch Line G be operated continuously (i.e., not cycled) for at least six months following extension to the MW9S area. The operating cycle of Branch Line G (i.e., continuous vs. cycled) will be evaluated in each future progress report.

A letter detailing the extension of Branch Line G to the MW9S area will be submitted to U.S. EPA within 45 days of U.S. EPA approval of the SVE modifications recommended herein.

8.1.2 SE Area

Table 19 shows that the SVE system is still removing significant, albeit lower, amounts of TCE and cis-1,2 DCE from the SE Area. As such, it is recommend that the system continue to be operated in a cycle mode.

8.1.3 Monitoring Changes

Current monitoring of the SVE and air sparge systems collects some information that is no longer used to maintain or adjust system operation. As such, it is recommended that the following monitoring activities be eliminated:

- Measurement of pressure and flow rate at individual SVE wells. This will be replaced with periodic checks to make sure that the SVE wells have unimpeded airflow and measurement of overall airflow rate when summa canister samples are collected.

- Measurement of pressure at various SVE monitoring points. This information is not used to maintain or operate the system.

- Semi-annual PID and colorimetric tube measurements in SVE Branch Lines. This information is not used to maintain or operate the system. Semi-annual summa canister monitoring is used for system assessment.

- Measurement of pressure and flow rate at individual air sparge wells. This will be replaced by periodic checks to make sure that the air sparge wells have unimpeded airflow.

- Measurement of dissolved oxygen levels in various monitoring wells. This information is not used to maintain or operate the system.

8.2 GROUNDWATER SYSTEM

The groundwater extraction system has removed approximately 144 million gallons of groundwater and 1,313 pounds of VOCs since 1995 and is currently removing up to 1.5 pounds of VOCs per day. The extraction system VOC removal rate has increased since 1997 due to an increase in system pumping rate. For example, in 1997 (January – September) the VOC removal rate averaged approximately 0.9 pounds per day, while in the 4th quarter 2001 the VOC removal rate averaged 1.7 pounds per day. While the VOC removal rate has increased, the VOC concentrations in most of the monitoring wells are stable or decreasing. This shows that the groundwater extraction system is meeting the

expectations identified in the ROD. Specific adjustments to recovery well flow rates and the groundwater-monitoring program are discussed below.

8.2.1 AST Area

Several monitoring wells (MW9S, MW14S, MW15S, MW16S, MW18S) provide groundwater quality data for the AST area. With the exception of groundwater in the vicinity of monitoring well MW9S, groundwater data in the AST Area generally show decreasing and/or low levels of VOCs. For example, data for monitoring well MW14S show that no VOCs are present above MCLs and that this has been the case for the last several years. Data from monitoring well MW15S show that, with the exception of TCE, VOCs have been below MCLs for the past several years. The TCE concentration in MW15S increased by an order of magnitude in the most recent sample after approaching the MCL in the 1999 and 2000 samples. The TCE concentration in monitoring well MW15S will be confirmed when the well is re-sampled in October 2002. The most recent samples from monitoring wells MW16S and MW18S show that all VOCs are below MCLs. These data show the groundwater recovery system in this portion of the AST area is working and meeting remedial objectives.

Two recovery wells remove groundwater from the western portion of the AST Area. Samples collected in 2001 from recovery wells RW1 and RW2 show that cis-1,2 DCE is above the MCL in RW1 and that VC is above the MCL in both recovery wells. However, VC data show a decreasing concentration trend in both RW1 and RW2. All other VOCs were non detect or present below MCLs. These data show the groundwater recovery system at RW1 and RW2 is working and meeting remedial objectives.

In November 2001, flow rates of 1.7 gpm and 1.1 gpm were measured at RW1 and RW2, respectively. Operating experience shows that the pumps at RW1 and RW2 cycle on and off due to draw down within the recovery wells. As such, the extraction rates from these wells cannot be increased. In fact, the low extraction rates for these recovery wells suggest

that continued operation is of little benefit. As such, it is recommended that operation of RW1 and RW2 be suspended.

Groundwater samples collected from MW9S have shown consistently higher concentrations of VOCs than other monitoring wells in the AST area, with cis-1,2 DCE and TCE concentrations in the low ppm range. Recovery well RW3, within approximately 25 feet of MW9S, shows lower concentrations of cis-1,2 DCE (349 ug/l) and TCE (99 ug/l). The groundwater gradient shows that groundwater flows from MW9S to RW3. The lower concentrations at RW3 indicate that groundwater from areas other than MW9S, with lower VOC concentrations, is being drawn into RW3. As such, it can be inferred that the higher VOC concentrations identified in MW9S are localized. The vadose zone soil data collected during the RI support this conclusion. As discussed in an October 23, 2001 letter from EMI to U.S. EPA (copy included as Appendix B), vadose soil data show that elevated VOC concentrations are limited to an area within an approximate 30-foot radius of MW9S.

In November 2001, a flow rate of 10.2 gpm was measured in recovery well RW3. Operating experience at RW3 shows that the extraction rate can be increased if a larger pump is installed in the well. Therefore, it is recommended that a new pump with a greater flow capacity be installed in RW3. The extraction rate will then be increased, with a target rate of 15 to 18 gpm.

8.2.2 RW4 Area

Two monitoring wells (MW4S and MW7S) are located in the general vicinity of recovery well RW4. Data from MW4S show that, over the last few years, only VC was detected above the MCL and that the VC concentration is declining. In fact, no other VOCs were detected at this monitoring well location. Data from monitoring well MW7S, immediately adjacent to recovery well RW4, show that over the last few years only cis-1,2 DCE has been detected above the MCL. The data show that the cis-1,2 DCE concentration in MW7S has been significantly reduced since startup of recovery well RW4 in 1995. These

monitoring well data indicate that the groundwater recovery system in this area is working and meeting remedial objectives.

A sample collected from RW4 in October 2001 showed a significant increase in the concentration of cis-1,2 DCE in this recovery well. The data also identified TCE and VC, VOCs that had not previously been found in this recovery well. The recent RW4 data are suspect and sampling of RW4 should be repeated. Two lines of evidence support the notion that the recent RW4 data is suspect. First, the data from RW4 are not consistent with the more frequently collected data from nearby monitoring well MW7S. Second, as shown on Table 20, a mass balance indicates that the data from several recovery wells are suspect.

During October and November 2001 flow rates were measured in individual recovery wells and the total treatment system influent line. Samples from each of the recovery wells and the treatment system influent line were also collected for VOC analysis on November 2, 2001 and November 18, 2001, respectively. These data are shown on Table 20. As shown on Table 20, the data from the individual recovery wells can be used to predict the treatment system influent concentrations and the predicted concentrations should reasonably match the measured influent concentrations (based on conservation of mass). However, as shown on Table 20 the data do not match very well. At the right of Table 20 the predicted influent concentrations and the actual concentrations are shown along the % error of the predicted concentrations. As shown, based on the recovery well data collected on November 2, 2001, the predicted concentrations are all much larger than the actual system influent concentrations. As shown on Table 20 (see last column) the predicted concentrations are also much larger than the 95% Upper Confidence Limit of the influent concentrations measured over the past 19 months. However, as shown on Table 20 when the data for recovery wells RW4, RW5 and RW8 are replaced with the next most recent samples (collected on 4/21/98) from those recovery wells, the predicted concentration are much more in line with the actual influent concentrations and the 95% UCL concentrations. As such, the data analysis presented on Table 20 indicates that the data collected from

recovery wells RW4, RW5, and RW8 in November 2001 is suspected and that those recovery wells should be re-sampled.

In November 2001, a flow rate of 11.2 gpm was measured in recovery well RW4. Operating experience at RW4 shows that the extraction rate can be increased if a larger pump is placed in the well. If re-sampling of RW4 confirms that elevated levels of VOCs are indeed present in this well, then a new pump with a greater flow capacity will be installed in RW4. The extraction rate will then be increased, with a target extraction rate of 15 to 18 gpm. If re-sampling of RW4 shows that VOC concentrations are not elevated, then RW4 will continue to be operated at the current extraction rate.

8.2.3 SE Area

Several monitoring wells (MW1D, MW3S, MW10S, MW11S, MW13S, MW13D, MW83AS, MW83AD, MW83DS, MW83DD) provide groundwater quality data for the SE Area. Monitoring well MW1D, located north of the slurry wall area, has never had any VOCs detected. One of the wells monitored by Columbia City, GM-2, is also located north of the slurry wall area and has never had VOC detections.

Data for monitoring wells within the slurry wall show a generally decreasing concentration trend. However, it was expected that groundwater concentrations in this area would remain relatively high for some time, as evidenced by the fact that a slurry wall was installed. Data from monitoring well MW3S show that cis-1,2 DCE and VC are present above the MCLs; however, the concentrations of both compounds are decreasing. TCE was detected at the MCL in the most recent sample after having been non detect for several years. Data for monitoring well MW10S identify only cis-1,2 DCE above the MCL; however, the concentration is decreasing. Data for monitoring well MW11S identify cis-1,2 DCE and VC above MCLs and at increasing levels in the most recent sample. Data for monitoring well MW83AS show that cis-1,2 DCE and VC are present above MCLs at stable or slightly decreasing concentrations. Data for monitoring well MW83AD show that cis-1,2 DCE and VC are present at relatively low and decreasing concentrations. These monitoring well data

indicate that the groundwater recovery system in this area is working and meeting remedial objectives.

Four monitoring wells are also located south of the slurry wall adjacent to the Blue River. These wells had not previously been sampled as part of O&M activities. The November 2001 samples collected from monitoring wells MW13D and MW83DD did not identify any VOCs. The November 2001 samples from MW13S and MW83DS detected cis-1,2 DCE and VC above the MCLs. Because these were not sampled previously, no comment regarding concentration trends can be made. It is recommended that MW13S and MW83DS be added to the O&M monitoring program.

All five recovery wells within the slurry wall area were sampled during November 2001. Data from RW6 show that cis-1,2 DCE and VC are above MCLs, although at relatively low levels. Data from RW7 show that TCE, cis-1,2 DCE and VC are present above MCLs, although at relatively low levels. Data from RW9 and RW10 show that TCE, cis-1,2 DCE and VC are present above MCLs at relatively high levels, in the case of cis-1,2 DCE at ppm levels. Data from RW8 show that TCE, cis-1,2 DCE and VC are present above MCLs; however as indicated on Table 20, the data for RW8 is suspect. As indicated below, the extraction rate at RW8 cannot be increased, therefore re-sampling of RW8 is not necessary.

In November 2001, flow rates were measured in recovery wells RW6 through RW10. The flows rates ranged from 6.4 to 10.4 gpm. Hydraulic monitoring data show that these pumping rates are maintaining an upward and inward gradient within the slurry wall. Operating experience shows that the pumps at RW6 through RW10 cycle on and off due to draw down within the recovery wells. As such, the extraction rates from these wells cannot be increased.

The data for the SE area show that the groundwater extraction system is operating within design expectations and physical constraints. As such, no modifications to the system are recommended at this time.

8.2.4 RW5 Area

Two wells monitored by Columbia City, GM-3 and GM-4, are located in the general vicinity of RW5. Monitoring well GM-4 is located near to and west of RW5. Monitoring well GM-3 is located approximately 100 feet northeast of RW5, between the City landfill and the Blue River. Coordinates for wells GM-3 and GM-4 were not available, so these are not shown on a location map. Please refer to Columbia City's monitoring reports for well locations.

Data for monitoring well GM-3 show cis-1,2 DCE and VC at concentrations above MCLs. Data for monitoring well GM-4 show TCE, cis-1,2 DCE and VC at concentrations above MCLs, with VC approaching the MCL. Concentrations in these wells are stable to increasing.

A sample collected from RW5 in November 2001 showed a significant increase in the concentration of cis-1,2 DCE in this recovery well. The recent RW5 data are suspect and sampling of RW5 should be repeated. Two lines of evidence support the notion that the recent RW5 data is suspect. First, the data from RW5 are not consistent with the more frequently collected data from nearby monitoring well GM-4. Second, as shown on Table 20, a mass balance indicates that the data from several recovery wells are suspect.

In November 2001, a flow rate of 5.7 gpm was measured at recovery well RW5. Operating experience at RW5 shows that the extraction rate can be increased if a larger pump is placed in the well and a separate pipeline to the treatment plant is installed (RW5 currently discharges to a pipeline that also receives flow from the SE Area recovery wells). If re-sampling of RW5 confirms that elevated levels of VOCs are indeed present in this well, then a new pump with a greater flow capacity will be installed in RW5 and a separate pipeline will be installed. The extraction rate will then be increased, with a target extraction rate of 10 to 15 gpm. If re-sampling of RW5 shows that VOC concentrations are not elevated, then RW5 will continue to be operated at the current extraction rate.

8.2.5 North Area

Two monitoring wells (MW83B and Columbia City well GM-1) are located north of the Columbia City landfill. VOCs have never been detected in either of these wells.

8.3 SUMMARY OF PROPOSED SYSTEM MODIFICATIONS

8.3.1 SVE System

- Extend Branch Line G to the MW9S area.
- Suspend operation of Branch Line H.
- Eliminate the following monitoring activities:
  - Measurement of pressure and flow rate at individual SVE wells;
  - Measurement of pressure at various SVE monitoring points;
  - Semi-annual PID and colorimetric tube measurements in SVE branch lines;
  - Measurement of pressure and flow rate at individual air sparge wells; and,
  - Measurement of dissolved oxygen levels in various monitoring wells.

8.3.2 Groundwater System

- Suspend operation of RW1 and RW2.
- Increase the extraction rate at RW3.
- Re-sample RW4 and RW5 in April 2002.
- Possible increase in extraction rates at RW4 and RW5.
- Add MW13S and MW83DS to the O&M monitoring program, with samples to be collected in October of each year. In addition, these wells will be sampled in April 2002.

9.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of operations to date, the remediation system is effectively removing VOCs from site soils and groundwater. To date, approximately 12,373 lbs. of total VOCs

have been removed via the soil and groundwater remediation systems. Contaminant mass removal rates have decreased to approximately 3.1 lbs. total VOCs per day, versus a startup removal rate of approximately 88 lbs. of total VOCs per day. The following recommendations, unless otherwise indicated by the U.S. EPA, will be implemented to improve treatment system performance:

- Continue with the on-going standard operation and maintenance of the remediation system components to ensure maximum performance, consistent with remediation system objectives.

- Continue to conduct monthly groundwater treatment system influent and effluent sampling for VOCs per the discharge agreement with the Columbia City POTW.

- Continue with the on-going recovery well cleaning, pump repair and/or replacement, and groundwater recovery pipe cleaning, as needed to optimize groundwater recovery efficiency and maintain effective hydraulic control. Continue to assess the need to increase recovery pump sizes in select recovery wells.

- Continue cycling the SE Area SVE system branch lines in order to maximize VOC removal and prevent the development of preferential vapor flowpaths. Continue system operation schedule, such that two of the SE area's six SVE system branch lines are operated simultaneously (two lines on, four lines off), with cycling of operation occurring approximately every week.

- Continue to sample the SVE effluent vapor stream to evaluate the potential cumulative excess cancer risks associated with the untreated vapor stream.

- Evaluate increasing the air sparging system's air flow rate while continuing to operate the system in a pulsed mode for optimum removal efficiency. Continue air sparging system operation cycling procedures such that two of the SE area's six air sparging system branch lines are operated at a time (two lines on, four lines off), in conjunction with the corresponding SVE lines. Cycle the operation approximately every week. Continue operation of the shallow air sparging wells only.

The cumulative excess cancer risks of the influent vapor stream will continue to be evaluated at the site boundary using the ISC-LT impacts model. Should the SVE effluent vapor stream continue to exhibit a cumulative excess cancer risk less than the $1x10^{-6}$ action level, the off-gas treatment system will remain off-line. Should two consecutive monthly SVE effluent vapor samples indicate a cumulative excess cancer risk of greater than $1x10^{-6}$, the air treatment system will be restarted.

The following recommendations for the SVE System will be implemented upon USEPA approval:

- Extend Branch Line G to the MW9S area.
- Suspend operation of Branch Line H.
- Eliminate the following monitoring activities:
  - Measurement of pressure and flow rate at individual SVE wells;
  - Measurement of pressure at various SVE monitoring points;
  - Semi-annual PID and colorimetric tube measurements in SVE branch lines;
  - Measurement of pressure and flow rate at individual air sparge wells; and,
  - Measurement of dissolved oxygen levels in various monitoring wells.

The following recommendations for the Groundwater System will be implemented upon USEPA approval:

- Suspend operation of RW1 and RW2.
- Increase the extraction rate at RW3.
- Re-sample RW4 and RW5 in April 2002.
- Possible increase in extraction rates at RW4 and RW5.
- Add MW13S and MW83DS to the O&M monitoring program, with samples to be collected in October of each year. In addition, these wells will be sampled in April 2002.

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TABLES

Table 1
Summary of Vacuum Pressures and Flow Rates from the SVE Wells
Wayne Reclamation and Recycling
Columbia City, Indiana

SVE Well	Branch	Jan-96 Vacuum (in. H2O)	Jan-96 Flow (cfm)	Feb-96 Vacuum (in. H2O)	Feb-96 Flow (cfm)	Nov-96 Vacuum (in. H2O)	Nov-96 Flow (cfm)	Dec-96 Vacuum (in. H2O)	Dec-96 Flow (cfm)	Jan-97 Vacuum (in. H2O)	Jan-97 Flow (cfm)	Jul-97 Vacuum (in. H2O)	Jul-97 Flow (cfm)	Nov-97 Vacuum (in. H2O)	Nov-97 Flow (cfm)	Apr-98 Vacuum (in. H2O)	Apr-98 Flow (cfm)	Oct-98 Vacuum (in. H2O)	Oct-98 Flow (cfm)
SOUTHEAST AREA																			
SVE 1	A	12	32	17	50	4	20-30	3	20-30	5.1	0	12	30-35	5	45-55	10	45-55	17	145-155
SVE 2	A	10	56	14	50	5	20-30	4	20-30	3.5	0	7	30-35	4	45-55	8	45-55	14	145-155
SVE 3	A	9	48	14	50	6	20-30	5	20-30	2.3	0	6	30-35	5	45-55	7	45-55	16	145-155
SVE 4	A	3	52	15	50	7	20-30	11	20-30	2.9	0	13	30-35	7	45-55	9	45-55	20	145-155
SVE 5	A	11	---	15	50	8	20-30	7	20-30	5.8	0	10	30-35	10	45-55	9	45-55	12	145-155
SVE 6	A	12	30	15	50	9	20-30	3	20-30	0.9	0	12	30-35	1	45-55	1	45-55	16	145-155
SVE 7	F	5	50	11	50	7	20-30	6	20-30	16	20-30	10	25-35	6	45-55	11	20-30	17	65-75
SVE 8	F	10	---	15	50	8	20-30	7	20-30	20	20-30	13	25-35	5	45-55	13	20-30	21	65-75
SVE 9	F	8	52	16	50	9	20-30	8	20-30	20.5	20-30	11	25-35	9	45-55	12	20-30	18	65-75
SVE 10	F	8	56	14	50	10	20-30	9	20-30	21	20-30	10	25-35	9	45-55	12	20-30	19	65-75
SVE 11	F	8	60	13	50	11	20-30	10	20-30	21	20-30	6	25-35	8	45-55	11	20-30	19	65-75
SVE 12	F	9	53	13	50	12	20-30	11	20-30	23	20-30	10	25-35	10	45-55	12	20-30	20	65-75
SVE 13	B	0	---	7	50	4	20-30	2	20-30	8.8	20-30	6	25-35	2	45-55	4	50-60	6	75-85
SVE 14	B	5	---	8	50	6	20-30	3	20-30	14.1	20-30	8	25-35	4	45-55	8	50-60	9	75-85
SVE 15	B	4	50	8	50	1	20-30	1	20-30	1.5	20-30	8	25-35	5	45-55	8	50-60	10	75-85
SVE 16	B	8	60	10	50	8	20-30	5	20-30	16.5	20-30	9	25-35	4	45-55	8	50-60	9	75-85
SVE 17	B	10	---	12	50	10	20-30	6	20-30	19.5	20-30	10	25-35	9	45-55	11	50-60	6	75-85
SVE 18	B	10	---	12	50	8	20-30	7	20-30	20	20-30	10	25-35	4	45-55	11	50-60	6	75-85
SVE 19	B	10	---	12	50	9	20-30	8	20-30	20.2	20-30	12	25-35	7	45-55	12	50-60	8	75-85
SVE 20	E	0	---	8	50	1	20-30	2	20-30	15.5	20-30	9	40-45	4	15-25	7	25-35	9	25-35
SVE 21	E	7	---	10	50	3	20-30	7	20-30	17	20-30	7	40-45	5	15-25	10	25-35	6	25-35
SVE 22	E	0	---	10	50	2	20-30	3	20-30	0	20-30	0	40-45	0	15-25	10	25-35	6	25-35
SVE 23	E	6	55	3	50	4	20-30	6	20-30	18	20-30	10	40-45	8	15-25	*	25-35	6	25-35
SVE 24	E	5	---	10	50	2	20-30	6	20-30	17.5	20-30	10	40-45	5	15-25	10	25-35	6	25-35
SVE 25	E	3	50	6	50	1	20-30	7	20-30	10.5	20-30	4	40-45	4	15-25	5	25-35	4	25-35
SVE 26	E	6	---	9	50	1	20-30	7	20-30	15	20-30	6	40-45	5	15-25	8	25-35	6	25-35
SVE 27	C	6	54	9	50	3	20-30	5	20-30	14.5	20-30	7	40-45	4	25-35	8	20-30	7	40-50
SVE 28	C	8	50	10	50	4	20-30	5	20-30	16	20-30	8	40-45	5	25-35	8	20-30	6	40-50
SVE 29	C	4	51	6	50	5	20-30	6	20-30	8.9	20-30	4	40-45	4	25-35	6	20-30	4	40-50
SVE 30	C	7	55	9	50	6	20-30	7	20-30	15.9	20-30	8	40-45	6	25-35	*	20-30	4	40-50
SVE 31	C	8	---	9	50	7	20-30	8	20-30	17	20-30	9	40-45	5	25-35	10	20-30	10	40-50
SVE 32	C	8	55	12	50	8	20-30	8	20-30	22.5	20-30	9	40-45	9	25-35	12	20-30	12	40-50
SVE 33	C	10	---	12	50	7	20-30	8	20-30	19.9	20-30	7	40-45	6	25-35	11	20-30	11	40-50
SVE 34	D	8	50	10	50	3	20-30	4	20-30	20	20-30	7	20-30	8	15-25	7	10-20	12	20-30
SVE 35	D	10	45	12	50	3	20-30	4	20-30	21	20-30	10	20-30	9	15-25	12	10-20	13	20-30
SVE 36	D	11	50	12	50	3	20-30	5	20-30	22.5	20-30	11	20-30	6	15-25	12	10-20	13	20-30
SVE 37	D	12	---	13	50	4	20-30	5	20-30	17.5	20-30	13	20-30	9	15-25	13	10-20	17	20-30
SVE 38	D	10	---	12	50	5	20-30	8	20-30	22	20-30	11	20-30	10	15-25	12	10-20	10	20-30
SVE 39	D	9	50	11	50	6	20-30	6	20-30	22	20-30	10	20-30	5	15-25	7	10-20	10	20-30
SVE 40S	D	12	55	13	50	7	20-30	7	20-30	23	20-30	12	20-30	6	15-25	13	10-20	15	20-30
SVE 40D	D	12	40	13	50	7	20-30	7	20-30	22	20-30	7	20-30	5	15-25	11	10-20	13	20-30

Table 1
Summary of Vacuum and Flow Pressures from the SVE Wells
Wayne Reclamation and Recycling
Columbia City, Indiana

SVE Well	Branch	Apr-99 Vacuum (in. H2O)	Apr-99 Flow (cfm)	Oct-99 Vacuum (in. H2O)	Oct-99 Flow (cfm)	Apr-00 Vacuum (in. H2O)	Apr-00 Flow (cfm)	Oct-00 Vacuum (in. H2O)	Oct-00 Flow (cfm)	Apr-01 Vacuum (in. H2O)	Apr-01 Flow (cfm)	Oct-01 Vacuum (in. H2O)	Oct-01 Flow (cfm)
SOUTHEAST AREA													
SVE 1	A	15	115-125	14	105-115	24	125-135	14	130-140	15	75-80	27	150-160
SVE 2	A	13	115-125	11	105-115	20	125-135	15	130-140	13	75-80	22	150-160
SVE 3	A	14	115-125	13	105-115	22	125-135	9	130-140	14	75-80	26	150-160
SVE 4	A	16	115-125	17	105-115	26	125-135	12	130-140	17	75-80	29	150-160
SVE 5	A	12	115-125	11	105-115	12	125-135	6.2	130-140	12	75-80	19	150-160
SVE 6	A	14	115-125	12	105-115	24	125-135	15	130-140	15	75-80	27	150-160
SVE 7	F	12	40-50	10	45-55	27	45-55	12	60-65	14	30-35	27	90-100
SVE 8	F	15	40-50	15	45-55	31	45-55	14	60-65	17	30-35	32	90-100
SVE 9	F	16	40-50	14	45-55	31	45-55	13	60-65	16	30-35	32	90-100
SVE 10	F	15	40-50	14	45-55	30	45-55	14	60-65	16	30-35	34	90-100
SVE 11	F	14	40-50	11	45-55	20	45-55	8	60-65	14	30-35	30	90-100
SVE 12	F	15	40-50	16	45-55	32	45-55	5	60-65	16	30-35	35	90-100
SVE 13	B	7	75-85	5	75-85	9	95-105	5	85-90	7	50-55	7	80-90
SVE 14	B	14	75-85	8	75-85	9	95-105	9	85-90	8	50-55	10	80-90
SVE 15	B	15	75-85	7	75-85	10	95-105	8.6	85-90	10	50-55	11	80-90
SVE 16	B	14	75-85	9	75-85	10	95-105	9.4	85-90	10	50-55	12	80-90
SVE 17	B	12	75-85	14	75-85	10	95-105	7	85-90	10	50-55	14	80-90
SVE 18	B	18	75-85	13	75-85	17	95-105	12	85-90	12	50-55	16	80-90
SVE 19	B	22	75-85	15	75-85	20	95-105	16	85-90	14	50-55	18	80-90
SVE 20	E	20	60-70	12	60-70	13	65-75	13	75-85	8	30-35	10	50-60
SVE 21	E	19	60-70	12	60-70	13	65-75	12	75-85	10	30-35	12	50-60
SVE 22	E	22	60-70	14	60-70	14	65-75	13	75-85	10	30-35	12	50-60
SVE 23	E	21	60-70	15	60-70	14	65-75	13	75-85	10	30-35	12	50-60
SVE 24	E	22	60-70	14	60-70	14	65-75	14	75-85	10	30-35	13	50-60
SVE 25	E	8	60-70	5	60-70	6	65-75	4.6	75-85	5	30-35	4	50-60
SVE 26	E	12	60-70	12	60-70	8	65-75	12	75-85	8	30-35	10	50-60
SVE 27	C	15	55-65	10	55-65	12	75-85	11	55-65	9	30-35	10	30-35
SVE 28	C	18	55-65	12	55-65	13	75-85	13	55-65	10	30-35	10	30-35
SVE 29	C	12	55-65	8	55-65	9	75-85	8	55-65	7	30-35	9	30-35
SVE 30	C	21	55-65	12	55-65	12	75-85	11	55-65	7	30-35	7	30-35
SVE 31	C	24	55-65	14	55-65	16	75-85	16	55-65	10	30-35	9	30-35
SVE 32	C	28	55-65	22	55-65	16	75-85	18	55-65	15	30-35	12	30-35
SVE 33	C	17	55-65	18	55-65	10	75-85	19	55-65	12	30-35	10	30-35
SVE 34	D	19	30-40	20	20-30	30	50-60	17	20-25	14	10-20	10	25-35
SVE 35	D	20	30-40	20	20-30	26	50-60	19	20-25	16	10-20	14	25-35
SVE 36	D	20	30-40	21	20-30	27	50-60	19	20-25	15	10-20	14	25-35
SVE 37	D	23	30-40	22	20-30	38	50-60	19	20-25	20	10-20	16	25-35
SVE 38	D	30	30-40	18	20-30	32	50-60	18	20-25	13	10-20	12	25-35
SVE 39	D	20	30-40	16	20-30	24	50-60	13	20-25	15	10-20	12	25-35
SVE 40S	D	22	30-40	22	20-30	43	50-60	19	20-25	15	10-20	14	25-35
SVE 40D	D	20	30-40	22	20-30	44	50-60	20	20-25	15	10-20	14	25-35

Table 1
Summary of Vaccum Pressures from SVE Wells
Wayne Reclamation and Recycling
Columbia City, Indiana

SVE Well	Branch	Jan-96 Vacuum (in. H2O)	Jan-96 Flow (cfm)	Feb-96 Vacuum (in. H2O)	Feb-96 Flow (cfm)	Nov-96 Vacuum (in. H2O)	Nov-96 Flow (cfm)	Dec-96 Vacuum (in. H2O)	Dec-96 Flow (cfm)	Jan-97 Vacuum (in. H2O)	Jan-97 Flow (cfm)	Jul-97 Vacuum (in. H2O)	Jul-97 Flow (cfm)	Nov-97 Vacuum (in. H2O)	Nov-97 Flow (cfm)	Apr-98 Vacuum (in. H2O)	Apr-98 Flow (cfm)	Oct-98 Vacuum (in. H2O)	Oct-98 Flow (cfm)
AST AREA																			
SVE 41	G	2	---	---	20-30	4	20-30	---	20-30	3.5	20-30	3	15-25	4	10-20	4	10-20	4	15-25
SVE 42	G	6	30	---	20-30	5	20-30	---	20-30	6.5	20-30	4	15-25	8	10-20	8	10-20	9	15-25
SVE 43	G	8	40	---	20-30	8	20-30	---	20-30	11	20-30	10	15-25	7	10-20	6	10-20	12	15-25
SVE 44	H	8	---	---	20-30	7	20-30	---	20-30	7.9	20-30	11	15-25	10	10-20	9	10-20	9	15-25
SVE 45	H	7	---	---	20-30	7	20-30	---	20-30	4	20-30	3	15-25	3	10-20	2	10-20	2	15-25
SVE 46	H	8	30	---	20-30	6	20-30	6	20-30	8	20-30	11	15-25	12	10-20	8	10-20	8	15-25
SVE 47	H	4	35	---	20-30	5	20-30	---	20-30	5.9	20-30	8	15-25	9	10-20	6	10-20	8	15-25
SVE 48	H	0	30	---	20-30	2	20-30	---	20-30	3.9	20-30	9	15-25	7	10-20	4	10-20	6	15-25
SVE 49	H	8	---	---	20-30	6	20-30	---	20-30	7	20-30	11	15-25	10	10-20	2	10-20	9	15-25
SVE 50	G	2	---	---	20-30	2	20-30	---	20-30	3.5	20-30	5	15-25	6	10-20	3	10-20	4	15-25
SVE 51	H	0	0	---	20-30	2	20-30	---	20-30	0	20-30	0	15-25	0	10-20	0	10-20	5	15-25
SVE 52	H	0	0	---	20-30	2	20-30	---	20-30	0	20-30	0	15-25	0	10-20	0	10-20	7	15-25
SVE 53	G	5	33	---	20-30	4	20-30	---	20-30	4.5	20-30	6	15-25	5	10-20	5	10-20	8	15-25
SVE 54	G	2	30	---	20-30	2	20-30	---	20-30	0	20-30	0	15-25	0	10-20	3	10-20	4	15-25
SVE 55	G	4	40	---	20-30	3	20-30	---	20-30	4.5	20-30	7	15-25	5	10-20	4	10-20	6	15-25

SVE Well	Branch	Apr-99 Vacuum (in. H2O)	Apr-99 Flow (cfm)	Oct-99 Vacuum (in. H2O)	Oct-99 Flow (cfm)	Apr-00 Vacuum (in. H2O)	Apr-00 Flow (cfm)	Oct-00 Vacuum (in. H2O)	Oct-00 Flow (cfm)	Apr-01 Vacuum (in. H2O)	Apr-01 Flow (cfm)	Oct-01 Vacuum (in. H2O)	Oct-01 Flow (cfm)
AST AREA													
SVE 41	G	6	10-20	3	20-30	3	20-30	2	20-30	13	10-20	13	10-20
SVE 42	G	10	10-20	8	20-30	3	20-30	4.4	20-30	>10	10-20	8	10-20
SVE 43	G	14	10-20	16	20-30	8	20-30	8	20-30	>10	10-20	12	10-20
SVE 44	H	11	10-20	13	20-30	4	20-30	8.6	20-30	---	---	21	10-20
SVE 45	H	2	10-20	14	20-30	5	20-30	8.6	20-30	---	---	28	10-20
SVE 46	H	11	10-20	13	20-30	2	20-30	8.6	20-30	---	---	21	10-20
SVE 47	H	7	10-20	11	20-30	8	20-30	6	20-30	---	---	20	10-20
SVE 48	H	5	10-20	8	20-30	11	20-30	6	20-30	---	---	22	10-20
SVE 49	H	12	10-20	12	20-30	13	20-30	8.4	20-30	---	---	20	10-20
SVE 50	G	4	10-20	4	20-30	12	20-30	2	20-30	11	10-20	10	10-20
SVE 51	H	12	10-20	10	20-30	9	20-30	9	20-30	---	---	34	10-20
SVE 52	H	10	10-20	11	20-30	6	20-30	8	20-30	---	---	32	10-20
SVE 53	G	8	10-20	8	20-30	8	20-30	4.2	20-30	>10	10-20	7	10-20
SVE 54	G	4	10-20	5	20-30	10	20-30	2.8	20-30	11	10-20	9	10-20
SVE 55	G	8	10-20	7	20-30	11	20-30	3.4	20-30	17	10-20	16	10-20

Notes:

1. Vacuum measurements are reported in inches of water.
2. Flow measurement reported in cubic feet per minute. All flow measurements are approximate.
3. --- equals no value recorded.
4. Flow measurements for SVE 41-55 taken in February 1996 are estimated based off branch line measurements.
5. Vacuum measurements for Nov. 96, SVE 1-12 and 27-40D, are estimated based on branch line measurements, the rest are based on direct readings.
6. Vacuum measurements for Dec. 96 are estimated based on branch line measurements except for SVE 4, 6, 15, 21, 22, 23, 27, 38, and 46, which are based on direct readings.
7. January 97 values taken with SVE branch A closed, AST area flow at approximately 100 cfm, and SE flow at approximately 1100 cfm.
8. July 97 values taken with branch line A throttled back to approximately 200 scfm with the rest of the branch line wide open. Total flowrate approximately 1400 scfm.
9. November 97 values taken with all SE branch lines wide open. Total flowrate approximately 1460 scfm from SE area. AST area flow approximately 200 scfm.
10. April 98 values taken with all SE branch lines wide open. Total flowrate approximately 1340 scfm from SE area. AST area flow approximately 200 scfm.
11. * indicates a broken vacuum gauge.
12. October 1998 flow readings collected with three lines operative and the remaining three off. Initial readings were collected from lines A, D, and F. Then, lines A, D, and F were turned off and lines B, E, and Approximate total flow from SE and AST areas is 1295 cfm and 305 cfm, respectively.
13. April 1999 flow readings collected with three lines operative and the remaining three off. Initial readings were collected from lines A, D, and F. Then, lines A, D, and F were turned off and lines B, E, and C Approximate total flow from SE and AST areas is 2730 cfm and 210 cfm, respectively.
14. October 1999 flow readings collected with three lines operative and the remaining three off. Initial readings were collected from lines A, B, and F. Then, lines A, B, and F were turned off and lines D, E, and Approximate total flow from SE and AST areas is 2590 cfm and 400 cfm (December 1999), respectively.
15. April 2000 flow readings collected with three lines operative and the remaining three off. Initial readings were collected from lines B, E, and C, then from lines A, D, and F. Approximate total flow from SE cfm and 400 cfm, respectively during the time measurements were collected Note, SVE flows constantly change due to cycling of the air stripper.
16. October 2000 flow readings collected with three lines operative and the remaining three off. Initial readings were collected from lines E, C, and D (1200cfm total), then from lines A, F, and B (1800cfm total
17. April 2001 flow readings collected with all six lines (A-F) operative (1,600cfm total), and the groundwater extraction system turned off. Approximate total flow from AST area is 224cfm.
18. April 2001 readings for Branch H were not collected due to accumulated water in the extraction lines.
19. October 2001 readings collected with 2 SE Area Branch lines operating at any one time. Branches are paired (A+F), (B+E), and (C+D), respectively.
All deep air sparging werlls turned off on Septemeber 17, 2001.

Table 2
Summary of Vacuums Measured at the SVE Monitoring Points
Wayne Reclamation and Recycling
Columbia City, Indiana

Monitoring Point	Location	Vacuum - 1/9/1996	Vacuum - 2/15/1996	Vacuum - 2/16/1996	Vacuum - 2/18/1996	Vacuum - 12/10/1996	Vacuum - 7/24/1997	Vacuum - 11/18/1997	Vacuum - 4/21/1998	Vacuum - 10/14/1998	Vacuum - 4/13/1999	Vacuum - 12/9/1999	Vacuum - 4/18/2000	Vacuum - 10/2/2000	Vacuum - 4/19/2001	Vacuum - 10/1/2001
PP1 S/D	SE	0.80/0.50	4.30/2.80	2.40/2.60	3.90/3.30	0.95/0.65	0.40/0.20	0.65/0.00	1.10/0.00	0.40/0.20	1.75/0.80	0.60/0.25	1.30/0.55	0.70/0.15	1.20/0.30	1.10/0.10
PP2 S/D	SE	0.15/0.30	1.80/2.40	1.60/2.20	---	0.10/0.30	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00	0.20/0.45	0.05/0.10	0.16/0.51	0.10/0.15	0.00/0.10	0.00/0.00
PP3 S/D	SE	0.00/0.40	0.70/3.40	0.50/2.60	---	0.01/0.45	0.00/0.15	0.01/0.01	0.05/0.15	0.20	0.35/0.85	0.00/0.25	0.14/0.45	0.10/0.40	0.10/0.30	0.00/0.00
PP6 S/D	AST	---	---	---	---	---	0.30/0.00	0.35/0.00	0.00/0.00	0.00/0.30	0.00/0.45	0.00/0.00	0.00/0.10	0.10/0.35	0.00/0.00	0.00/0.00
PP8 S/D	SE	2.20/2.90	7.30/7.80	8.60/9.20	---	1.30/1.90	0.50/1.20	0.25/0.75	0.45/0.65	0.40/0.60	0.50/1.80	0.25/0.50	0.00/0.00	0.25/0.90	0.10/0.80	0.40/1.00
PP9 S/D	SE	2.50/2.60	8.00/8.00	8.70/9.00	---	1.70/1.75	0.35/0.60	0.40/0.60	0.75/0.85	0.40/0.60	1.20/1.55	0.20/0.75	0.17/0.22	0.35/0.90	0.20/0.80	0.50/1.30
PP10 S/D	SE	1.50/1.50	5.30/5.50	5.80/6.00	---	0.85/1.00	0.25/0.60	0.20/0.20	0.70/0.85	0.15/0.25	0.85/1.15	0.10/0.25	0.91/0.52	0.10/0.35	0.10/0.40	0.10/0.30
PP11 S/D	SE	0.00/1.50	0.25/4.80	2.80/5.40	---	1.05/0.00	0.00/0.35	0.00/0.65	0.00/0.20	0.00/0.60	0.00/1.15	0.00/0.25	0.03/0.60	0.00/0.50	0.00/0.40	0.00/0.30
PP12 S/D	SE	0.80/1.30	5.00/5.00	5.00/5.20	---	1.20/1.70	0.75/1.00	0.25/0.35	1.00/0.00	0.15/0.60	1.00/1.25	0.15/0.25	0.71/0.90	0.30/0.50	0.70/1.20	0.50/0.80
PP13 S/D	SE	1.60/1.60	4.00/4.60	3.60/4.00	---	1.65/1.80	0.60/0.70	0.40/0.45	1.40/1.45	0.30/0.45	1.30/1.55	0.25/0.35	0.86/1.03	0.40/0.45	0.80/1.00	0.90/0.90
PP14 S/D	SE	0.20/0.20	3.10/3.20	2.90/2.90	2.50/2.70	0.15/0.15	0.00/0.00	0.00/0.00	0.15/0.00	0.10/0.15	0.55/0.70	0.05/0.15	0.42/0.66	0.15/0.20	0.05/0.10	0.20/0.20
PP15 S/D	SE	0.80/0.00	4.90/0.00	4.80/0.00	4.30/0.00	0.30/0.00	0.25/0.00	0.15/0.00	0.15/0.00	0.05/0.00	0.30/0.00	0.05/0.00	0.15/0.00	0.15/0.00	0.10/0.00	0.50/0.00
PP16 S/D	SE	0.00/0.00	2.80/0.00	2.50/0.00	1.80/0.00	0.01/0.00	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00	0.05/0.00	0.00/0.00	0.09/0.02	0.00/0.00	0.00/0.00	0.00/0.00
PP17 S/D	SE	0.60/0.80	3.70/0.40	3.20/0.10	2.60/0.60	0.55/0.00	0.50/0.00	0.40/0.45	0.35/0.00	0.10/0.10	0.40/0.00	0.15/0.15	0.26/0.04	0.00/0.00	0.00/0.00	0.00/0.00
PP18 S/D	SE	1.50/2.20	4.00/5.50	3.70/4.90	2.90/4.50	1.55/1.90	0.00/0.65	0.70/0.85	1.20/1.30	0.60/0.95	1.70/1.95	0.55/1.0	1.16/1.42	0.30/0.40	0.40/0.45	0.50/0.10
PP19 S/D	SE	1.10/0.00	4.10/0.00	4.20/0.00	3.40/0.00	0.85/0.00	0.45/0.00	0.50/0.00	0.35/0.00	0.20/0.00	0.20/0.00	0.50/0.00	0.09/0.00	0.10/0.30	0.00/0.00	0.50/0.40
PP20 S/D	AST	---	---	---	---	---	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00
PP21 S/D	AST	---	---	---	---	---	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.25	0.00/0.01	0.00/0.00	0.00/0.00	0.00/0.50
PP22 S/D	AST	---	---	---	---	---	0.15/0.00	0.05/0.00	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.125	0.20/0.30	0.00/0.15	0.00/0.30	0.00/0.30
MW2S	SE	1.00	5.50	6.30	---	0.85	0.40	0.15	0.35	0.10	0.60	0.15	0.25	0.15	0.10/0.00	0.10
MW3S	SE	---	5.50	---	4.40	0.01	1.40	1.50	1.50	0.45	2.40	0.50	0.95	0.00	0.60/0.00	0.60
MW10S	SE	0.50	4.30	4.00	---	0.75	0.25	0.15	0.50	0.40	0.70	0.05	0.89	0.00	0.40/0.00	0.30
MW11S	SE	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00/0.00	0.00

Notes:

1. Vacuums reported in inches of water.
2. --- indicates no data available.
3. December 1996 measurements taken with all SVE lines open. SE area flow approximately 1200 cfm.
   AST area flow approx. 400 cfm.
4. July 1997 values taken with SE area flow at approximately 1,100 scfm and AST area at approximately 300 scfm
5. November 1997 values taken with all SE branch lines wide open. SE flowrate approximately 1,460 scfm. AST flowrate approximately 200 scfm.
6. April 1999 measurements were taken with Branch lines A, F, and B open and operating and again with Branch lines C, D, and E open and operating.
   The highest value collected was reported.
7. December 1999 measurements were taken with Branch lines A, F, and B open and operating and again with Branch lines C, D, and E open and operating.
   The highest value collected was reported.
8. April 2000 measurements were taken with Branch lines A, D, and F open and operating and again with Branch lines B, C, and E open and operating.
   The highest value collected was reported.
9. October 2000 measurements were taken once on October 2, 2000 with branch lines E, C, and D open and operating, and again on October 6, 2000
   with branch lines A, F, and B open and operating. The highest value collected was reported.
10. April 2001 measurements were collected with all six Branch lines open and operating. SE flowrate approximately 1,600 scfm. AST flowrate approximately 224 scfm.

Table 3
Summary of Branch Line VOC Measurements
Wayne Reclamation and Recycling
Columbia City, Indiana

		Feb-96			Nov-96				Dec-96				Sep-97				Nov-97			
		PID (ppm)	TCE (ppm)	DCE (ppm)	PID (ppm)	TCE (ppm)	DCE (ppm)	VC (ppm)	PID (ppm)	TCE (ppm)	DCE (ppm)	VC (ppm)	PID (ppm)	TCE (ppm)	DCE (ppm)	VC (ppm)	PID (ppm)	TCE (ppm)	DCE (ppm)	VC (ppm)
SOUTHEAST AREA																				
	SVE Wells																			
Branch A	1 - 6	27	2	6	0	---	---	---	0	0	0	0	0.6	2.2	<5	2.7	8.6	2	6	6
Branch F	7 - 12	22	1.9	2.4	17	4	8	---	15	4	12	9	0.8	<1	<5	0.8	19	7	12	14
Branch B	13 - 19	10	1	4	2	---	---	---	8	3	8	6	0.4	<1	<5	0.8	10	5	1	5
Branch E	20 - 26	4	4	6	10	2	5	---	8	4	10	4	0.4	0.8	<5	0.8	6.9	2	1	3
Branch C	27 - 33	13	3	8	1	---	---	---	11	4	8	7	0.4	1	<5	0.4	10	5	10	10
Branch D	34 - 40D	15	3	8	16	3	7	---	10	4	10	10	7.3	6.5	12	5.5	11	5	8	8
Branch A-F	1 - 40D	31	5	7	19	12	15	10	15	13	15	10	6.9	---	---	---	8	---	---	---
AST AREA																				
Branch G (east)	41-43,50,53-55	17	2	6	0.3	<1	<5	<0.2	---	---	---	---	3.9	---	---	---	<1	---	---	---
Branch H (west)	44-49,51-52	0	---	---	2.1	<1	<5	2	---	---	---	---	1.1	---	---	---	<1	---	---	---

Notes:

1. PID = Photoionization Detector. TCE = Trichloroethylene. DCE = Dichloroethylene. VC = Vinyl Chloride.
2. TCE, DCE, and VC measurements reported in parts per million (ppm) via colormetric tubes.
3. --- indicates no reading was recorded via colormetric tubes (see laboratory summa canister sampling results).
4. Effective April 1998, DCE colorimetric tubes were unavailable.
5. PID readings for Branch A-F in April 1999 were collected with only Branches A, B, and F operating and then with only Branches C, D, and E operating. The two values collected were then averaged.
6. April and October 2000 PID readings for the SE Area were completed while air sparging was off.

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3/19/2002

Table 3
Summary of Branch Line VOC Measurements
Wayne Reclamation and Recycling
Columbia City, Indiana

		Apr-98			Oct-98			Apr-99			Oct-99			Apr-00			Oct-00		
		PID (ppm)	TCE (ppm)	VC (ppm)	PID (ppm)	TCE (ppm)	VC (ppm)	PID (ppm)	TCE (ppm)	VC (ppm)	PID (ppm)	TCE (ppm)	VC (ppm)	PID (ppm)	TCE (ppm)	VC (ppm)	PID (ppm)	TCE (ppm)	VC (ppm)
SOUTHEAST AREA																			
	SVE Wells																		
Branch A	1 - 6	1.9	<2	2.7	12	2	8	2.8	<1	2.5	3.9	3	3.5	2	<1	1.2	4.3	4	3.5
Branch F	7 - 12	2.5	2	3.8	14	12	15	6.4	1.8	4.4	9.4	7	5.2	7.6	1.3	3.6	5.6	6	4.2
Branch B	13 - 19	0.7	<2	1.2	8.4	4	7	3.2	<1	1.7	3.1	3	1.8	3.4	0.6	1	3	4	1.9
Branch E	20 - 26	1.7	<2	1.4	9.6	5	8	0.7	1.2	1.9	5.2	5	3.2	1	0.8	0.7	2.6	4	1.5
Branch C	27 - 33	2.3	<2	1.2	11	4	9	2.8	<1	2.2	6.2	4	3.9	2.6	1	0.7	3.6	5	4
Branch D	34 - 40D	10.3	5	8.8	9.8	5	7	0.5	<1	1.5	3.8	4	3.0	0.4	0.8	0.7	2.8	4	3.4
Branch A-F	1 - 40D	1.6	---	---	12.1	---	---	2.25	---	---	---	---	---	---	---	---	---	---	---
AST AREA																			
Branch G (east)	41-43,50,53-55	0.4	---	---	8.2	---	---	1.5	---	---	---	---	---	2.2	1.2	1	---	---	---
Branch H (west)	44-49,51-52	0.3	---	---	2.3	---	---	1.5	---	---	---	---	---	0.4	<0.5	0.3	---	---	---

Notes:
1. PID = Photoionization Detector. TCE = Trichloroethylene. DCE = Dichloroethylene. VC = Vinyl Chloride.
2. TCE, DCE, and VC measurements reported in parts per million (ppm) via colormetric tubes.
3. --- indicates no reading was recorded via colormetric tubes (see laboratory summa canister sampling results).
4. Effective April 1998, DCE colorimetric tubes were unavailable.
5. PID readings for Branch A-F in April 1999 were collected with only Branches A, B, and F operating and then with only Branches C, D, and E operating. The two values collected were then averaged.
6. April and October 2000 PID readings for the SE Area were completed while air sparging was off.

Table 3
Summary of Branch Line VOC Measurements
Wayne Reclamation and Recycling
Columbia City, Indiana

		Apr-01			Nov-01		
		PID (ppm)	TCE (ppm)	VC (ppm)	PID (ppm)	TCE (ppm)	VC (ppm)
SOUTHEAST AREA							
	SVE Wells						
Branch A	1 - 6	<1	0.5	0.7	1.2	<0.2	1.2
Branch F	7 - 12	<1	1.0	0.8	3	<0.2	1.2
Branch B	13 - 19	<1	1.0	0.6	0.5	0.8	1.1
Branch E	20 - 26	<1	1.0	1.0	0.5	0.8	1.4
Branch C	27 - 33	<1	1.0	1.1	1.5	1	1.5
Branch D	34 - 40D	<1	0.6	0.6	1.6	0.8	2.1
Branch A-F	1 - 40D	---	---	---	---	---	---
AST AREA							
Branch G (east)	41-43,50,53-55	---	---	---	---	---	---
Branch H (west)	44-49,51-52	---	---	---	---	---	---

Notes:

1. PID = Photoionization Detector. TCE = Trichloroethylene. DCE = Dichloroethylene. VC = Vinyl Chloride.
2. TCE, DCE, and VC measurements reported in parts per million (ppm) via colormetric tubes.
3. --- indicates no reading was recorded via colormetric tubes (see laboratory summa canister sampling results).
4. Effective April 1998, DCE colorimetric tubes were unavailable.
5. PID readings for Branch A-F in April 1999 were collected with only Branches A, B, and F operating and then with only Branches C, D, and E operating. The two values collected were then averaged.
6. April and October 2000 PID readings for the SE Area were completed while air sparging was off.

Table 4
Summary of Pressure Flow Measurements at the Air Sparging Wells October 2001
Wayne Reclamation and Recycling
Columbia City, Indiana

		SHALLOW WELL	
		Pressure (psi)	Flow (cfm)
Branch			
A	AS1	7.0	2.0
A	AS2	8.0	2.0
A	AS3	4.0	2.0
A	AS4	4.0	2.0
A	AS5	5.0	2.0
A	AS6	6.0	2.0
F	AS7	5.0	2.0
F	AS8	5.0	2.0
F	AS9	5.0	2.0
F	AS10	5.0	2.0
F	AS11	5.0	2.0
F	AS12	5.0	2.0
B	AS13	7.0	2.0
B	AS14	3.0	2.0
B	AS15	4.0	2.0
B	AS16	4.0	2.0
B	AS17	3.0	2.0
B	AS18	5.0	2.0
B	AS19	5.0	2.0
E	AS20	>15	0.0
E	AS21	4.0	2.0
E	AS22	7.0	2.0
E	AS23	5.0	2.0
E	AS24	6.0	2.0
E	AS25	5.0	2.0
E	AS26	6.0	2.0
C	AS27	7.0	2.0
C	AS28	8.0	2.0
C	AS29	5.0	2.0
C	AS30	6.0	2.0
C	AS31	6.0	2.0
C	AS32	5.0	2.0
C	AS33	5.0	2.0
D	AS34	6.0	2.0
D	AS35	8.0	2.0
D	AS36	6.0	2.0
D	AS37	5.0	2.0
D	AS38	11.0	2.0
D	AS39	6.0	2.0
D	AS40	8.0	2.0

Notes:

1. Pressures reported in pounds per square inch (psi).
2. Air flowrates reported in cubic feet per minute (cfm).
3. Air flowrates manually adjusted at well head as indicated with resulting injection pressures recorded.
4. Pressure and flow values were recorded on 04/27/01 for branches A, B, and F
5. Pressure and flow values were recorded on 04/28/01 for branches C, D, and E.
6. Deep wells were turned off as of September 17, 2001.

Table 5
Summary of Southeast Area Dissolved Oxygen Measurements
Wayne Reclamation and Recycling
Columbia City, Indiana

Monitoring Point	Jan-96 D.O. (mg/L)	Feb-96 D.O. (mg/L)	Dec-96 D.O. (mg/L)	Jun-97 D.O. (mg/L)	Sep-97 D.O. (mg/L)	Nov-97 D.O. (mg/L)	May-98 D.O. (mg/L)	Oct-98 D.O. (mg/L)	Apr-99 D.O. (mg/L)	Jun-99 D.O. (mg/L)	Oct-99 D.O. (mg/L)
MW2S	1.30	3.40	1.65	1.30	1.36	1.70	0.90	5.50	10.00	10.00	12.00
MW3S	---	6.00	3.64	1.60	0.60	2.00	0.90	3.00	8.00	8.00	1.00
MW10S	0.80	2.60	1.40	0.80	0.60	3.10	1.70	3.50	12.00	12.00	12.00
MW11S	2.80	9.80	1.69	1.55	9.18	10.60	6.60	6.00	3.00	3.00	<1
MW83AS	0.80	3.80	1.35	2.22	1.07	3.20	0.60	4.50	2.00	2.00	<1
RW5	---	---	1.27	1.22	1.55	1.10	2.00	1.00	2.00	---	<1
RW6	---	---	1.27	0.64	1.12	1.20	2.00	6.00	3.00	---	2.00
RW7	---	---	4.06	0.76	3.12	1.10	4.00	8.00	8.00	---	2.00
RW8	---	---	2.27	1.52	2.47	4.00	1.00	6.00	5.00	---	1.00
RW9	---	---	1.33	1.25	6.96	1.50	8.00	5.00	8.00	---	1.00
RW10	---	---	1.07	0.73	2.77	7.60	4.00	1.00	3.00	---	2.00

Monitoring Point	Apr-00 D.O. (mg/L)	Oct-00 D.O. (mg/L)	Apr-01 D.O. (mg/L)	Oct-01 D.O. (mg/L)
MW2S	8.00	0.87	8.00	4.00
MW3S	8.00	1.91	1.00	<1
MW10S	10.00	2.15	2.00	1.00
MW11S	2.00	7.41	<1	2.00
MW83AS	2.00	1.01	<1	<1
RW5	1.00	1.96	1.00	1.00
RW6	4.00	0.96	3.00	2.00
RW7	9.00	5.14	3.00	2.00
RW8	4.00	1.85	<1	2.00
RW9	7.00	3.35	4.00	3.00
RW10	2.00	1.01	1.00	1.00

NOTES:
1. Dissolved oxygen levels reported in milligrams per liter (mg/L).
2. --- indicates no reading was recorded.
3. All monitoring points listed above are located inside the slurry wall where sparging occurs, except RW5.

Table 6
Summary of Summa Canister Sampling for SVE Lines
Wayne Reclamation and Recycling
Columbia City, Indiana

Contaminant	SE Area Branches A-F (AS-ON) 9-Jan-96	SE Area Branches A-F (AS-ON) 15-Feb-96	SE Area Branches A-F (AS-ON) 16-Feb-96	SE Area Branches A-F (AS-ON) 18-Feb-96	SE Area Branches A-F (AS-ON) 25-Nov-96	SE Area Branches A-F (AS-OFF) 27-Nov-96	SE Area Branches A-F (AS-ON) 3-Sep-97	SE Area Branches A-F (AS-OFF) 5-Sep-97
Tetrachloroethene	670	470	470	470	450	370	370	370
Trichloroethene	9100	8600	7200	7100	4000	3000	2,800	2,800
cis 1,2-Dichloroethene	9600	6800	6600	6400	5300	3700	2,900	3,000
trans 1,2-Dichloroethene	850	460	540	480	490	340	370	380
Vinyl Chloride	<84	<72	240	230	61	<34	130	200
1,1,1-Trichloroethane	1300	810	770	700	520	340	280	290
1,1-Dichloroethane	230	230	300	180	120	81	88	82
Xylenes (total)	<84	<72	<72	<72	<36	<34	<17	<34
4-Ethyltoluene	<84	<72	<72	<72	<36	<34	<17	<34
1,3,5-Trimethylbenzene	<84	<72	<72	<72	<36	<34	<17	<34
1,2,4-Trimethylbenzene	<84	<72	<72	<72	<36	<34	<17	<34
SVE Well Groups	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D

Notes:
1. All results reported in parts per billion (volume/volume basis).
2. AST = aboveground storage tank area.
3. SE = southeast area.
4. AS = air sparging (on or off).
5. Branch G = east branch
6. Branch H = west branch
7. NA = parameter not analyzed.

Table 6
Summary of Summa Canister Sampling for SVE Lines
Wayne Reclamation and Recycling
Columbia City, Indiana

Contaminant	SE Area Branches A-F (AS-ON) 18-Nov-97	SE Area Branches A-F (AS-OFF) 21-Nov-97	SE Area Branches A-F (AS-ON) 21-Apr-98	SE Area Branches A-F (AS-OFF) 28-Apr-98	SE Area Branches A-F (AS-ON) 14-Oct-98	SE Area Branches A-F (AS-OFF) 16-Oct-98	SE Area Branches A-F (AS-ON) 26-Apr-99	SE Area Branches A-F (AS-OFF) 13-Apr-99	SE Area Branches A-F (AS-ON) 14-Dec-99	SE Area Branches A-F (AS-OFF) 21-Dec-99
Tetrachloroethene	240	220	56	100	450	270	53	5	54	58
Trichloroethene	3,800	3,500	330	540	2,500	2,900	250	94	650	540
cis 1,2-Dichloroethene	4,400	4,300	830	1,000	3,300	3,500	410	210	1,500	1,300
trans 1,2-Dichloroethene	460	460	71	74	280	360	40	22	180	160
Vinyl Chloride	89	56	85	<12	<25	<25	12	15	180	29
1,1,1-Trichloroethane	270	290	47	51	280	190	90	6	100	87
1,1-Dichloroethane	98	92	20	19	70	73	14	5	47	38
Xylenes (total)	<36	<30	23	14	<25	<25	29	5	<9.7	<7.8
4-Ethyltoluene	<36	<30	<12	<12	<25	<25	7	<2	<9.7	<7.8
1,3,5-Trimethylbenzene	<36	<30	<12	<12	<25	<25	<2	<2	<9.7	<7.8
1,2,4-Trimethylbenzene	<36	<30	13	<12	<25	<25	14	2	<9.7	<7.8
SVE Well Groups	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D

Notes:
1. All results reported in parts per billion (volume/volume basis).
2. AST = aboveground storage tank area.
3. SE = southeast area.
4. AS = air sparging (on or off).
5. Branch G = east branch
6. Branch H = west branch
7. NA = parameter not analyzed.

Table 6
Summary of Summa Canister Sampling for SVE Lines
Wayne Reclamation and Recycling
Columbia City, Indiana

Contaminant	SE Area Branches A-F (AS-ON) 18-Apr-00	SE Area Branches A-F (AS-OFF) 29-Apr-00	SE Area Branches A-F (AS-ON) 6-Oct-00	SE Area Branches A-F (AS-OFF) 10-Oct-00	SE Area Branches A-F (AS-ON) 27-Apr-01	SE Area Branches A-F (AS-OFF) 23-Apr-01	SE Area Branches A-F (AS-ON) 29-Sep-01	SE Area Branches A-F (AS-OFF) 31-Oct-01
Tetrachloroethene	52	79	52	95	20	<140	<140	<130
Trichloroethene	400	710	920	750	150	140	280	410
cis 1,2-Dichloroethene	580	1,400	2,200	1,300	270	150	680	1,500
trans 1,2-Dichloroethene	59	130	160	130	NA	NA	NA	NA
Vinyl Chloride	12	<13	130	<8.2	60	<140	<140	<260
1,1,1-Trichloroethane	56	74	93	75	29	<140	<140	<130
1,1-Dichloroethane	17	29	49	32	<6.9	<140	<140	<130
Xylenes (total)	<6.7	<13	<18	<8.2	<5.7	<140	<280	<260
4-Ethyltoluene	<6.7	<13	<18	<8.2	NA	NA	NA	NA
1,3,5-Trimethylbenzene	<6.7	<13	<18	<8.2	<6.9	<140	<140	<130
1,2,4-Trimethylbenzene	<6.7	<13	<18	<8.2	<6.9	<140	<140	<130
SVE Well Groups	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D

Notes:
1. All results reported in parts per billion (volume/volume basis).
2. AST = aboveground storage tank area.
3. SE = southeast area.
4. AS = air sparging (on or off).
5. Branch G = east branch
6. Branch H = west branch
7. NA = parameter not analyzed.

Table 6
Summary of Summa Canister Sampling for SVE Lines
Wayne Reclamation and Recycling
Columbia City, Indiana

Contaminant	AST Area Branches G&H 11-Jan-96	AST Area Branch G 25-Nov-96	AST Area Branch G 3-Sep-97	AST Area Branch G 18-Nov-97	AST Area Branch G 21-Apr-98	AST Area Branch G 16-Oct-98	AST Area Branch G 21-Apr-99	AST Area Branch G 22-Nov-99	AST Area Branch G 18-Apr-00	AST Area Branch G 2-Oct-00	AST Area Branch G 23-Apr-01	AST Area Branch G 2-Nov-01
Tetrachloroethene	1600	<22	460	67	21	6	2.8	<2.0	58	75	15	71
Trichloroethene	1700	140	1500	420	57	48	8.1	9	590	710	57	150
cis 1,2-Dichloroethene	1800	660	820	310	110	50	21	24	330	300	21	130
trans 1,2-Dichloroethene	120	63	59	24	4.8	2.2	<2.0	<2.0	28	27	NA	<0.57
Vinyl Chloride	130	<22	<8.4	22	7	<2.0	2.3	3.6	<7.3	<6.1	<0.74	2.5
1,1,1-Trichloroethane	790	2700	180	65	3.4	2	<2.0	<2.0	55	61	9.9	33
1,1-Dichloroethane	39	270	11	6	<2	<2.0	<2.0	<2.0	9.1	10	1.3	4.6
Xylenes (total)	55	<22	25	46	57	<2.0	18	2.1	<7.3	31	3.49	41
4-Ethyltoluene	190	<22	10	3	16	<2.0	4	2.1	<7.3	<6.1	NA	NA
1,3,5-Trimethylbenzene	120	<22	20	4	6.3	<2.0	2.2	<2.0	<7.3	<6.1	<0.71	<0.69
1,2,4-Trimethylbenzene	230	<22	12	4	22	<2.0	7.5	2.8	<7.3	<6.1	<0.71	<0.69
SVE Well Groups	41 - 55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55

Notes:
1. All results reported in parts per billion (volume/volume basis).
2. AST = aboveground storage tank area.
3. SE = southeast area.
4. AS = air sparging (on or off)
5. Branch G = east branch
6. Branch H = west branch
7. NA = parameter not analyzed.

Table 6
Summary of Summa Canister Sampling for SVE Lines
Wayne Reclamation and Recycling
Columbia City, Indiana

Contaminant	AST Area Branch H 25-Nov-96	AST Area Branch H 3-Sep-97	AST Area Branch H 18-Nov-97	AST Area Branch H 21-Apr-98	AST Area Branch H 16-Oct-98	AST Area Branch H 21-Apr-99	AST Area Branch H 22-Nov-99	AST Area Branch H 18-Apr-00	AST Area Branch H 02-Oct-00	AST Area Branch H 23-Apr-01	AST Area Branch H 03-Nov-01
Tetrachloroethene	650	<22	<12	30	85	3	4.2	5.4	16	8.0	<0.14
Trichloroethene	1800	140	100	100	300	21	23	50	78	48	<0.14
cis 1,2-Dichloroethene	1700	460	510	200	250	47	89	150	190	70	<0.14
trans 1,2-Dichloroethene	120	57	60	12	15	3	11	14	16	NA	NA
Vinyl Chloride	29	<22	<12	<4.2	<4.4	2	<3.2	<3.1	<2.0	<0.74	<0.14
1,1,1-Trichloroethane	390	1,300	1,300	210	95	45	170	410	440	140	0.21
1,1-Dichloroethane	<8.9	160	160	28	14	5	27	34	40	13	<0.14
Xylenes (total)	16	<22	32	60	<4.4	15	18	<3.1	<2.0	1.1	<0.28
4-Ethyltoluene	83	<22	<12	15	<4.4	4	3.9	<3.1	<2.0	NA	NA
1,3,5-Trimethylbenzene	87	<22	<12	6	<4.4	<2.0	<3.2	<3.1	<2.0	<0.71	<0.14
1,2,4-Trimethylbenzene	130	<22	<12	20	<4.4	7	<32	<31	<2.0	1.7	<0.14
SVE Well Groups	44-49,51-52	44-49,51-52	44-49,51-52	44-49,51-52	44-49,51-52	44-49,51-52	44-49,51-52	44-49,51-52	44-49,51-52	44-49,51-52	44-49,51-52

Notes:
1. All results reported in parts per billion (volume/volume basis).
2. AST = aboveground storage tank area.
3. SE = southeast area.
4. AS = air sparging (on or off).
5. Branch G = east branch
6. Branch H = west branch
7. NA = parameter not analyzed.

Table 7
Groundwater Treatment System Flow Summary
Wayne Reclamation and Recycling
Columbia City, Indiana

JANUARY 2001		FEBRUARY 2001		MARCH 2001		APRIL 2001		MAY 2001		JUNE 2001	
DATE	FLOW (gpd)	DATE	FLOW (gpd)	DATE	FLOW (gpd)	DATE	FLOW (gpd)	DATE	FLOW (gpd)	DATE	FLOW (gpd)
1	55,000	1	101,000	1	99,000	1	85,000	1	73,000	1	65,000
2	55,000	2	101,000	2	71,000	2	85,000	2	73,000	2	65,000
3	55,000	3	101,000	3	99,000	3	85,000	3	73,000	3	65,000
4	55,000	4	101,000	4	99,000	4	77,000	4	73,000	4	65,000
5	55,000	5	101,000	5	99,000	5	78,000	5	73,000	5	65,000
6	55,000	6	101,000	6	99,000	6	78,000	6	73,000	6	65,000
7	55,000	7	101,000	7	99,000	7	78,000	7	57,000	7	51,000
8	55,000	8	101,000	8	99,000	8	78,000	8	76,000	8	82,000
9	55,000	9	90,000	9	99,000	9	78,000	9	76,000	9	82,000
10	53,000	10	101,000	10	99,000	10	78,000	10	76,000	10	82,000
11	55,000	11	109,000	11	102,000	11	78,000	11	76,000	11	82,000
12	55,000	12	109,000	12	102,000	12	60,000	12	76,000	12	82,000
13	55,000	13	109,000	13	102,000	13	78,000	13	76,000	13	82,000
14	55,000	14	109,000	14	102,000	14	78,000	14	76,000	14	62,000
15	55,000	15	109,000	15	102,000	15	78,000	15	76,000	15	62,000
16	55,000	16	109,000	16	96,000	16	78,000	16	76,000	16	62,000
17	55,000	17	109,000	17	96,000	17	78,000	17	76,000	17	62,000
18	55,000	18	109,000	18	96,000	18	74,000	18	48,000	18	62,000
19	50,000	19	109,000	19	96,000	19	79,000	19	30,000	19	62,000
20	80,000	20	109,000	20	96,000	20	89,000	20	68,000	20	62,000
21	80,000	21	109,000	21	82,000	21	94,000	21	68,000	21	62,000
22	80,000	22	101,000	22	44,000	22	94,000	22	68,000	22	60,000
23	80,000	23	101,000	23	86,000	23	94,000	23	68,000	23	60,000
24	80,000	24	101,000	24	96,000	24	76,000	24	68,000	24	60,000
25	80,000	25	101,000	25	96,000	25	89,000	25	68,000	25	60,000
26	80,000	26	101,000	26	96,000	26	89,000	26	68,000	26	60,000
27	60,000	27	101,000	27	96,000	27	89,000	27	68,000	27	60,000
28	57,000	28	101,000	28	96,000	28	89,000	28	68,000	28	60,000
29	22,000			29	96,000	29	89,000	29	68,000	29	60,000
30	80,000			30	96,000	30	89,000	30	68,000	30	60,000
31	76,000			31	96,000			31	68,000		
Total Monthly Flow (gallons)	1,893,000		2,905,000		2,932,000		2,462,000		2,149,000		1,969,000
Average Daily Flow (gallons)	61,065		103,750		94,581		82,067		69,323		65,633
Total Plant Run-time (minutes)	42,777		40,320		43,698		43,200		43,219		43,200
Average Flow during actual plant run time (gpm)	44.3		72.0		67.1		57.0		49.7		45.6

Notes:

1. gpd = gallons per day.
2. gpm = gallons per minute.

Table 7
Groundwater Treatment System Flow Summary
Wayne Reclamation and Recycling
Columbia City, Indiana

JULY 2001		AUGUST 2001		SEPTEMBER 2001		OCTOBER 2001		NOVEMBER 2001		DECEMBER 2001	
DATE	FLOW (gpd)	DATE	FLOW (gpd)	DATE	FLOW (gpd)	DATE	FLOW (gpd)	DATE	FLOW (gpd)	DATE	FLOW (gpd)
1	51,840	1	72,828	1	54,720	1	37,296	1	109,440	1	97,056
2	51,840	2	73,440	2	54,720	2	37,296	2	109,440	2	97,056
3	51,840	3	73,440	3	54,720	3	37,296	3	94,240	3	97,056
4	51,840	4	50,400	4	54,720	4	37,296	4	109,440	4	97,056
5	51,840	5	50,400	5	46,080	5	37,296	5	104,353	5	84,384
6	51,840	6	50,400	6	46,080	6	37,296	6	100,739	6	119,376
7	51,840	7	50,400	7	46,080	7	37,296	7	110,736	7	95,335
8	51,840	8	48,960	8	46,080	8	37,296	8	110,736	8	59,522
9	51,840	9	48,960	9	46,080	9	37,296	9	110,736	9	31,170
10	51,840	10	48,960	10	37,792	10	37,296	10	110,736	10	32,331
11	63,360	11	47,520	11	46,080	11	37,296	11	110,736	11	66,871
12	63,360	12	47,520	12	47,520	12	37,296	12	110,736	12	108,432
13	63,360	13	47,520	13	47,520	13	69,408	13	110,736	13	108,432
14	63,360	14	47,520	14	47,520	14	69,408	14	110,736	14	66,555
15	63,360	15	47,520	15	46,860	15	69,408	15	110,736	15	70,992
16	63,360	16	47,520	16	47,520	16	69,408	16	110,736	16	70,992
17	64,061	17	46,080	17	47,520	17	69,408	17	110,736	17	70,992
18	67,680	18	37,888	18	47,520	18	69,408	18	104,976	18	70,992
19	67,680	19	53,280	19	47,520	19	69,408	19	104,976	19	70,992
20	67,680	20	53,280	20	47,520	20	69,408	20	104,976	20	70,992
21	53,768	21	53,280	21	47,520	21	68,544	21	104,976	21	70,992
22	83,520	22	53,280	22	47,520	22	100,800	22	104,976	22	70,992
23	83,520	23	44,215	23	47,520	23	110,736	23	104,976	23	70,992
24	83,520	24	40,320	24	47,520	24	123,840	24	104,976	24	70,992
25	83,520	25	40,320	25	0	25	123,840	25	97,056	25	70,992
26	83,520	26	40,320	26	0	26	137,520	26	97,056	26	70,992
27	83,520	27	40,320	27	0	27	129,312	27	97,056	27	70,992
28	83,520	28	40,320	28	0	28	129,312	28	97,056	28	70,992
29	83,520	29	40,320	29	23,760	29	129,312	29	97,056	29	70,992
30	83,520	30	40,320	30	47,520	30	129,312	30	97,056	30	70,992
31	73,440	31	40,320			31	129,312			31	70,992
Total Monthly Flow (gallons)	2,044,549		1,517,171		1,221,532		2,314,656		3,162,916		2,367,497
Average Daily Flow (gallons)	65,953		48,941		40,718		74,666		105,431		76,371
Total Plant Run-time (minutes)	44,640		44,640		37,440		44,640		43,200		41,196
Average Flow during actual plant run time (gpm)	45.8		34.0		32.6		51.9		73.2		57.5

Notes:

1. gpd = gallons per day.
2. gpm = gallons per minute.

Table 8
Summary of Monitoring Well Construction Details
Wayne Reclamation and Recycling
Columbia City, Indiana

Well Number	TOIC Elevations 2001	Surface Elevation (AMSL)	Total Depth (bgs)	Well Diameter (inches)	Calculated Well Volume (typical gallons)	Three Well Volumes (typical gallons)	Screen Length (feet)	Bottom Screen Elevation (AMSL) (approx.)	Top Screen Elevation (AMSL) (approx.)	Slot Size (inches)	General Location	Well Installer	Installation Date
MW-1D	826.08	823.81	150.00	2.00	22.8	68.3	10.00	673.81	683.81	0.010	Southeast area	Montgomery Watson	June-96
MW-2S	825.34	822.90	23.00	2.00	1.7	5.1	10.00	799.90	809.90	0.010	Southeast area	Warzyn	February-88
MW-3S	824.06	820.82	20.00	2.00	1.4	4.3	10.00	800.82	810.82	0.010	Southeast area	Warzyn	February-88
MW-4S	843.06	840.04	37.00	2.00	1.4	4.3	10.00	803.04	813.04	0.010	RW-4 area	Warzyn	February-88
MW-5S	833.02	830.19	25.00	2.00	1.3	3.9	10.00	805.19	815.19	0.010	Cemetery	Warzyn	February-88
MW-7S	836.12	833.70	31.00	2.00	1.5	4.4	10.00	802.70	812.70	0.010	RW-4 area	Warzyn	February-88
MW-8S	835.52	832.11	30.00	2.00	1.7	5.1	10.00	802.11	812.11	0.010	AST area	Warzyn	February-88
MW-8D	834.11	831.57	150.00	2.00	21.5	64.6	10.00	681.57	691.57	0.010	AST area	Warzyn	August-88
MW-9S	825.44	822.43	20.00	2.00	1.6	4.7	10.00	802.43	812.43	0.010	AST area	Warzyn	February-88
MW-10S	823.15	821.66	16.00	2.00	0.7	2.1	10.00	805.66	815.66	0.010	Southeast area	Warzyn	February-88
MW-11S	825.08	823.26	34.00	2.00	3.5	10.4	10.00	789.26	799.26	0.010	Southeast area	Warzyn	February-88
MW-13S	826.81	823.58	25.00	2.00	2.2	6.6	10.00	798.58	808.58	0.010	Southeast area	Warzyn	July-88
MW-13D	826.08	823.86	145.00	2.00	21.8	65.3	10.00	678.86	688.86	0.010	Southeast area	Warzyn	July-88
MW-14S	821.30	819.11	18.90	2.00	1.9	5.7	10.00	800.21	810.21	0.010	AST area	Warzyn	July-88
MW-15S	827.64	825.00	25.00	2.00	2.0	6.1	10.00	800.00	810.00	0.010	AST area	Warzyn	July-90
MW-16S	827.41	825.23	25.00	2.00	2.0	6.1	10.00	800.23	810.23	0.010	AST area	Warzyn	July-90
MW-17S	826.56	824.66	40.00	2.00	4.6	13.8	10.00	784.66	794.66	0.007	AST area	Warzyn	August-92
MW-18S	824.16	821.54	32.50	2.00	3.7	11.1	10.00	789.04	799.04	0.007	AST area	Warzyn	July-92
MW-19S	832.68	830.20	25.00	2.00	1.2	3.7	10.00	805.20	815.20	0.010	AST area	Warzyn	July-92
P-1	834.28	832.29	28.00	2.00	1.3	3.9	10.00	804.29	814.29	0.010	RW-4 area	Warzyn	July-88
P-2	825.49	822.90	18.00	2.00	1.2	3.5	10.00	804.90	814.90	0.010	Southeast area	Warzyn	July-88
P-3	823.48	820.82	20.00	2.00	1.9	5.6	10.00	800.82	810.82	0.010	Southeast area	Warzyn	July-88
P-4	822.67	820.01	15.00	2.00	1.2	3.5	10.00	805.01	815.01	0.010	AST area	Warzyn	July-88
MW-83AS	826.13	824.39	27.12	2.00	2.1	6.2	3.00	797.27	807.27	-	Southeast area	Peerless- Midwest	May-83
MW-83AD	826.15	824.36	48.12	2.00	5.7	17.1	3.00	776.24	786.24	-	Southeast area	Peerless- Midwest	May-83
MW-83B	840.55	838.30	60.00	2.00	5.5	16.5	9.70	778.30	788.30	0.010	Southeast area	Montgomery Watson	June-96
MW-83DS	825.21	823.75	37.16	2.00	4.1	12.2	3.00	786.59	796.59	-	Southeast area	Peerless- Midwest	May-83
MW-83DD	825.30	823.82	54.16	2.00	6.9	20.7	3.00	769.66	779.66	-	Southeast area	Peerless-Midwest	May-83
GM-1 (note 7)	841.08	838.98	34.84	2.00	1.1	3.3	-	804.14	-	-	Landfill	G&M	-
GM-2	833.30	830.51	38.86	2.00	3.2	9.6	-	791.65	-	-	Landfill	G&M	-
GM-3	822.87	820.65	27.75	2.00	3.0	9.0	-	792.90	-	-	Landfill	G&M	-
GM-4	827.40	824.11	27.95	2.00	2.4	7.3	-	796.16	-	-	Landfill	G&M	-

Notes.
1. TOIC - Top of Inner Well Casing.
2. Depth to Groundwater Measured in feet below TOIC
3. "----" = No data available
4. P - piezometer.
5. Prior to 2001, TOIC elevations based on Ayres-Lewis-Norris-May, Inc. survey on 10/10/97
6. TOIC and surface elevations based on Benchmark Surveying, Inc. survey on 7/2/01 and 10/25/01
7. Groundwater elevations estimated for GM-1 through GM-4 for April 01 reading

Table 9
Summary of Groundwater Elevations
Wayne Reclamation and Recycling
Columbia City, Indiana

Well Number	TOIC Elevations July 2001	Jul-01 Elevations Sys. On	Aug-01 Elevations Sys. On	Sep-01 Elevations Sys. On	Oct-01 Elevations Sys. On	Nov-01 Elevations Sys. On	Dec-01 Elevations Sys. On
MW-1D	826.08	---	---	---	808.63	---	---
MW-2S	825.34	809.19	808.33	808.48	810.18	809.42	809.06
MW-3S	824.06	808.63	807.95	808.15	809.64	809.18	808.65
MW-4S	843.06	---	---	---	811.74	---	---
MW-5S	833.02	---	---	---	812.62	---	---
MW-7S	836.12	---	---	---	811.37	---	---
MW-8S	835.52	---	---	---	812.71	---	---
MW-8D	834.11	---	---	---	812.39	---	---
MW-9S	825.44	---	---	---	812.15	---	---
MW-10S	823.15	809.02	808.12	808.38	810.05	809.42	808.93
MW-11S	825.08	809.06	808.95	808.53	809.85	809.60	809.11
MW-13S	826.81	810.99	811.56	810.96	812.60	812.15	811.73
MW-13D	826.08	---	---	---	809.50	---	---
MW-14S	821.30	---	---	---	813.62	---	---
MW-15S	827.64	---	---	---	812.45	---	---
MW-16S	827.41	---	---	---	812.47	---	---
MW-17S	826.56	---	---	---	812.62	---	---
MW-18S	824.16	---	---	---	813.91	---	---
MW-19S	832.68	---	---	---	---	---	---
P-1	834.28	---	---	---	812.25	---	---
P-2	825.49	---	---	---	812.32	---	---
P-3	823.48	---	---	---	812.36	---	---
P-4	822.67	---	---	---	812.33	---	---
MW-83AS	826.13	809.13	808.25	808.41	810.09	809.16	809.02
MW-83AD	826.15	809.83	809.07	809.10	811.08	810.27	809.89
MW-83B	840.55	---	---	---	814.91	---	---
MW-83DS	825.21	810.46	810.30	810.06	811.41	811.19	810.89
MW-83DD	825.30	---	---	---	811.98	---	---
GM-1	841.08	---	---	---	---	---	---
GM-2	833.30	---	---	---	---	---	---
GM-3	822.87	---	---	---	---	---	---
GM-4	827.40	---	---	---	---	---	---

Notes:
1. TOIC - Top of Inner Well Casing.
2. Depth to Groundwater Measured in feet below TOIC.
3. "----" = No data available.
4. P - piezometer.
5. Prior to 2001, TOIC elevations based on Ayres-Lewis-Norris-May, Inc. survey on 10/10/97.
6. TOIC and surface elevations based on Benchmark Surveying, Inc. survey on 7/2/01 and 10/25/01.

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter	Monitoring Well Number MW1D (SE Area)							
Date Sampled	8/1988	6/7/1996	11/6/1996	6/12/1997	10/14/1998	10/13/1999	10/2/2000	10/31/2001
VOCs								
Acetone	ND	ND	NA	NA	NA	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	ND	NA	NA	NA	ND	ND	ND
2-Butanone	ND	ND	NA	NA	NA	NA	NA	NA
Carbon Disulfide	ND	ND	NA	NA	NA	ND	ND	ND
Chloroethane	ND	ND	NA	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
Total 1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	ND	ND	NA	NA	NA	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	ND	NA	NA	NA	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ND	ND	NA	NA	NA	ND	ND	ND
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Metals								
Arsenic	0.0059	0.005	ND	ND	ND	ND	ND	ND
Barium	0.132	0.13	0.13	0.12	0.16	0.68	0.14	0.18
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total	ND	ND	ND	ND	0.013	ND	ND	ND
Cyanide, Total	0.009	ND	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	0.051	ND	ND	ND	ND
Zinc	0.013	0.06	ND	0.025	0.031	0.13	ND	0.068

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. VOCs = Volatile Organic Compounds

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter	Monitoring Well Number MW3S (SE area)									
Date Sampled	3/1988	8/1988	11/29/1995	8/27/1996	11/6/1996	6/13/1997	10/14/1998	10/13/1999	10/2/2000	10/31/2001
VOCs										
Acetone	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND
2-Butanone	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	ND	2.3	NA	NA	NA	NA	NA	ND	ND	ND
Chloroethane	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	23	ND	ND	1.5	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	16	ND	ND	1.9	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	NA	NA	NA	3,500	2,600	1,200	1,100	1,400	840	733
trans-1,2-Dichloroethene	NA	NA	NA	110	92	45	54	33	38	42.6
Total 1,2-Dichloroethene	24,000	6,900	2,200	3,610	2,692	1,245	1,154	1,433	878	776
1,2-Dichloropropane	ND	8.4	ND	ND	3.7	ND	ND	ND	ND	2.1
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	1.1	ND	ND	ND	ND	ND	ND	ND	5.0
1,2,4-Trimethylbenzene	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND
Vinyl Chloride	1,300	430	380	400	260	90	120	310	67	3.3
Benzene	ND	1.1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	3.4	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	**25,300**	**7,385**	**2,580**	**4,010**	**2,959**	**1,335**	**1,274**	**1,743**	**945**	**786**
Metals										
Arsenic	0.015	0.0234	0.005	ND	ND	ND	ND	0.011	ND	ND
Barium	0.306	0.32	0.08	0.04	ND	ND	0.048	0.28	0.032	0.041
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide, Total	0.015	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	0.0151	ND	ND	ND	ND	ND	ND	0.013	ND
Zinc	ND	0.0126	ND	ND	ND	ND	ND	0.27	ND	ND

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. VOCs = Volatile Organic Compounds

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter	Monitoring Well Number MW4S (RW4 Area)													
Date Sampled	8/1988	7/23/1992	11/28/1995	8/27/1996	6/12/1997	11/18/1997	4/21/1998	10/15/1998	4/12/1999	10/13/1999	5/4/2000	10/2/2000	4/19/2001	10/31/2001
VOCs														
Acetone	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	NA	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis- 1,2- Dichloroethene	ND	ND	ND	4.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans- 1,2- Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total 1,2-Dichloroethene	ND	ND	ND	4.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	0.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	NA	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ND	NA	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	2	1	ND	ND	ND	ND	12	15	17	29	33	23	13	7.4
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	**3**	**1**	**ND**	**17**	**ND**	**ND**	**12**	**15**	**17**	**29**	**33**	**23**	**13**	**7**
Metals														
Arsenic	NA	ND	0.006	ND	ND	ND	ND	ND	ND	0.0082	ND	0.0081	ND	ND
Barium	NA	0.159	0.13	0.11	0.67	0.28	0.48	0.3	0.49	0.58	0.79	1.1	1.1	0.26
Cadmium	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide, Total	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	NA	ND	ND	0.0032	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.011	ND
Zinc	NA	0.035	0.02	ND	0.036	ND	ND	0.023	0.025	ND	ND	ND	0.022	ND

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. VOCs = Volatile Organic Compounds

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter	Monitoring Well Number MW7S (RW4 Area)									
Date Sampled	3/1988	8/1988	11/29/1995	8/27/1996	11/6/1996	6/12/1997	10/15/98	10/13/1999	10/2/2000	10/30/2001
VOCs										
Acetone	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	23	7.4	10	7.4	5.1	ND	ND	ND	2.9
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis- 1,2- Dichloroethene	NA	NA	1,100	980	780	640	87	96	120	187
trans- 1,2- Dichloroethene	NA	NA	59	74	55	48	23	10	12	21.2
Total 1,2-Dichloroethene	2,600	1,900	1,159	1,054	855	688	110	106	132	208.2
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	3.2	92	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	ND	1.3	ND	ND	ND	ND	ND	6.1	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	**2,600**	**1,924**	**1,170**	**1,156**	**862**	**693**	**110**	**112**	**132**	**211**
Metals										
Arsenic	0.005	0.003	ND	ND	ND	ND	ND	ND	ND	ND
Barium	0.286	0.191	0.17	0.12	0.16	0.16	0.2	0.77	0.22	0.17
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide, Total	ND	0.016	0.095	ND	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	0.0099	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	0.06	ND	ND	ND	ND	0.006	ND
Zinc	ND	0.0263	ND	0.02	ND	ND	ND	0.22	ND	ND

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. VOCs = Volatile Organic Compounds

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter	Monitoring Well Number MW9S (AST Area)														
Date Sampled	3/1988	8/1988	7/24/1992	11/7/1995	8/27/1996	6/12/1997	11/18/1997	4/21/1998	10/15/1998	4/12/1999	10/20/1999	5/4/2000	10/2/2000	4/19/2001	10/30/2001
VOCs															
Acetone	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	ND	ND	4.2	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	ND	0.59	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	8.3	ND	18	ND	13	ND	16	17	12	5.5	59	13	ND	1.5
1,1-Dichloroethene	ND	92	ND	56	ND	15	76	17	51	13	18	67	63	ND	5.1
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis- 1,2- Dichloroethene	NA	NA	NA	30,000	24,000	18,000	NA	10,000	19,000	8,800	NA	43,000	37,000	5,400	3,360
trans- 1,2 - Dichloroethene	NA	NA	NA	140	ND	200	NA	190	170	95	NA	350	210	ND	74.9
Total 1,2-Dichloroethene	33,000	32000	23,000	30,140	24,000	18,200	42,390	10,190	19,170	8,895	8,003	43,350	37,210	5,400	3,434
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	13	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	ND	2.2	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	9.9	ND	ND	ND	ND	ND	13	21	13	ND	5.6	6.8	ND	1.3
1,1,2-Trichloroethane	ND	ND	ND	2.8	ND	ND	ND	8	12	ND	ND	6.4	ND	ND	ND
Dibromomethane	ND	ND	NA	1.8	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	27	ND	36	ND	78	220	280	250	720	67	37	97	ND	28
Trichloroethene	18,000	18,000	9,700	17,000	28,000	24,000	67,000	25,000	12,000	16,000	5,800	5,800	21,000	16,000	4,590
1,2,4-Trimethylbenzene	ND	ND	NA	4.3	ND	ND	NA	ND	ND	6.2	ND	ND	ND	ND	ND
Vinyl Chloride	ND	480	340	1,100	680	200	380	59	ND	72	140	260	140	ND	3.2
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	21	ND	ND	ND	ND	ND	8.5	9.7	22	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.3	ND	ND	ND	ND	ND
Total VOCs	**51,000**	**50,641**	**33,040**	**48,363**	**52,680**	**42,506**	**110,066**	**35,592**	**31,531**	**25,774**	**14,034**	**49,585**	**58,530**	**21,400**	**8,063**
Metals															
Arsenic	0.008	0.0106	0.011	0.01	0.006	ND	ND	ND	ND	ND	0.026	ND	0.0051	ND	ND
Barium	0.181	0.139	0.144	0.11	0.04	ND	ND	0.035	0.079	0.04	0.059	0.08	0.055	0.027	0.053
Cadmium	ND	ND	271	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0052	ND	ND	ND	ND
Cyanide, Total	0.03	0.014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	0.0031	ND	ND	0.042	ND	ND	0.0026	ND	ND	ND	ND
Nickel	ND	0.0106	ND	ND	ND	ND	ND	ND	ND	ND	0.027	ND	0.032	0.0073	0.01
Zinc	ND	0.0212	0.015	ND	ND	0.023	0.03	ND	ND	ND	0.062	ND	ND	ND	ND

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. VOCs = Volatile Organic Compounds

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter	Monitoring Well Number MW10S (SE Area)													
Date Sampled	3/1988	8/1988	7/23/1992	11/8/1995	8/27/1996	11/18/1997	4/21/1998	10/15/1998	4/12/1999	10/13/1999	5/4/2000	10/2/2000	4/19/2001	10/31/2001
VOCs														
Acetone	ND	ND	ND	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	4.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	ND	NA	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND
2-Butanone	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	ND	ND	ND	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	2.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	630	140	91	ND	ND	ND	ND	28	6.3	7.9	ND	5.7	ND	ND
1,1-Dichloroethene	ND	20	ND	ND	ND	ND	ND	ND	ND	6.8	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis- 1,2- Dichloroethene	NA	NA	NA	37,000	15,000	NA	5,300	3,300	7,900	6 8	3,600	3,400	1,900	118
trans- 1,2- Dichoroethene	NA	NA	NA	440	350	NA	100	170	200	12,000	170	100	130	6.2
Total 1,2-Dichloroethene	56,000	26,000	8,700	37,440	15,350	8,140	5,400	3,470	8,100	12,006.00	3,770	3,500	2,030	124
1,2-Dichloropropane	ND	ND	ND	6.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	ND	ND	ND	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	ND	NA	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	2	ND	5	70	ND	ND	11	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ND	ND	NA	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND
Vinyl Chloride	5,500	2,800	3,100	2,700	650	370	130	1,000	320	700	ND	120	ND	ND
Benzene	ND	7	ND	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	4	ND	5.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	3,500	9,000	270	50	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	28	96	21.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	**62,130**	**32,501**	**20,987**	**40,456**	**16,120**	**8,510**	**5,530**	**4,509**	**8,426**	**12,721**	**3,770**	**3,626**	**2,030**	**124**
Metals														
Arsenic	0.009	ND	ND	0.006	0.002	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	0.239	0.0537	0.137	0.04	0.04	0.062	ND	0.032	0.023	0.36	0.068	0.033	0.047	0 064
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total	0.017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide, Total	0.006	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0094	ND
Lead	ND	ND	ND	ND	0.0028	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	0.021	ND	ND	0.021	ND	ND	ND	ND	ND	0.009	0.0052	0.012
Zinc	ND	0.0089	ND	ND	ND	ND	ND	ND	ND	0.34	ND	ND	ND	ND

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. VOCs = Volatile Organic Compounds

Table 10
Monitoring Well Sample Results
Wayne Reclamtion and Recycling
Columbia City, Indiana

Parameter	Monitoring Well Number MW11S (SE Area)										
Date Sampled	3/1988	8/1988	7/24/1992	11/8/1995	8/27/1996	11/6/1996	6/13/1997	10/15/1998	10/13/1999	10/2/2000	10/31/2001
VOCs											
Acetone	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	ND	NA	ND	ND	NA	NA	NA	ND	ND	ND
2-Butanone	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	19	5.3	8.3	6.6	ND	5.4	5.7	8.6
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis- 1,2- Dichloroethene	NA	NA	ND	280	150	200	170	160	440	460	669
trans- 1,2- Dichoroethene	NA	NA	ND	15	6.5	10	10	ND	ND	12	15.7
Total 1,2-Dichloroethene	44	19	ND	295	156.5	210	180	160	440	472	684.7
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	ND	NA	ND	ND	NA	NA	NA	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	4.1	17	3.8	4.3	8	ND	6.2	10.5
1,2,4-Trimethylbenzene	ND	ND	NA	ND	ND	NA	NA	NA	ND	ND	ND
Vinyl Chloride	4	3	20	18	12	14	18	64	190	160	112
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	1.5	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	**48**	**22**	**20**	**336**	**192**	**236**	**209**	**232**	**635**	**644**	**816**
Metals											
Arsenic	ND	ND	ND	0.001	ND	ND	ND	ND	ND	ND	ND
Barium	0.418	0.285	0.17	0.11	0.05	ND	ND	0.042	0.082	0.059	0.085
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide, Total	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	0.0028	ND	ND	0.015	ND	ND	ND
Nickel	ND	ND	ND	ND	0.03	ND	ND	ND	ND	0.006	ND
Zinc	0.026	0.0145	0.122	ND	ND	ND	0.021	ND	0.025	ND	ND

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. VOCs = Volatile Organic Compounds

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia, Indiana

Parameter	Monitoring Well Number MW13S (SE Area)	
Date Sampled	8/1988	11/1/2001 (6)
VOCs		
Acetone	ND	ND
Bromomethane	ND	ND
n-Butylbenzene	ND	ND
2-Butanone	ND	NA
Carbon Disulfide	ND	ND
Chloroethane	ND	ND
1,1-Dichloroethane	ND	ND
1,1-Dichloroethene	ND	ND
1,2-Dichloroethane	ND	ND
cis- 1,2- Dichloroethene	NA	350
trans- 1,2- Dichoroethene	NA	11.7
Total 1,2-Dichloroethene	28	361.7
1,2-Dichloropropane	ND	17.0
Chloroform	ND	ND
4-methyl-2-Pentanone	ND	ND
1,1,1-Trichloroethane	ND	ND
1,1,2-Trichloroethane	ND	ND
Dibromomethane	ND	ND
Tetrachloroethene	ND	ND
Trichloroethene	ND	152
1,2,4-Trimethylbenzene	ND	ND
Vinyl Chloride	ND	9.4
Benzene	ND	ND
Ethylbenzene	ND	ND
Toluene	ND	ND
Xylenes (total)	ND	ND
Total VOCs	**28**	**540**
Metals		
Arsenic	0.0036	ND
Barium	0.0705	0.19
Cadmium	ND	ND
Chromium, Total	ND	ND
Cyanide, Total	0.048	NA
Lead	ND	ND
Nickel	0.0167	ND
Zinc	0.0542	ND

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. Note, data suspect due to well integrity.
7. VOCs = Volatile Organic Compounds

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter Date Sampled	**Monitoring Well Number MW13D (SE Area)** 1/28/2002
VOCs	
Acetone	ND
Bromomethane	ND
n-Butylbenzene	ND
2-Butanone	ND
Carbon Disulfide	ND
Chloroethane	ND
1,1-Dichloroethane	ND
1,1-Dichloroethene	ND
1,2-Dichloroethane	ND
cis-1,2-Dichloroethene	ND
trans-1,2-Dichloroethene	ND
Total 1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
Chloroform	ND
4-methyl-2-Pentanone	ND
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Dibromomethane	ND
Tetrachloroethene	ND
Trichloroethene	ND
1,2,4-Trimethylbenzene	ND
Vinyl Chloride	ND
Benzene	ND
Ethylbenzene	ND
Toluene	ND
Xylenes (total)	ND
Total VOCs	**ND**
Metals	
Arsenic	<0.005
Barium	0.10
Cadmium	<0.03
Chromium, Total	<0.04
Cyanide, Total	NA
Lead	<0.08
Nickel	<0.02
Zinc	<0.05

Notes:
1. In samples where total 1,2-dichloroethene has been listed, *cis-1,2-dichloroethene is included in that total*
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = *Not analyzed*
6. Note, data suspect due to well integrity.
7. VOCs = Volatile Organic Compounds

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter	Monitoring Well Number MW14S (AST Area)													
Date Sampled	8/1988	7/23/1992	11/7/1995	8/27/1996	6/11/1997	11/18/1997	4/21/1998	10/15/1998	4/12/1999	10/14/1999	5/4/2000	10/2/2000	4/19/2001	10/30/2001
VOCs														
Acetone	ND	ND	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	NA	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND
2-Butanone	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	ND	ND	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	5.4	22	6.6	6.6	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	270	86	320	260	150	160	74	63	19	21	12	13	5.7	7.4
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	1.1	1.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis- 1,2- Dichloroethene	NA	NA	45	20	3.9	NA	ND	ND	ND	ND	ND	ND	ND	ND
trans- 1,2- Dichloroethene	NA	NA	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
Total 1,2-Dichloroethene	650	71	45	20	3.9	2.3	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	ND	ND	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	5	10	9.1	4.9	2.6	ND	ND	5.2	ND	ND	ND	14	15.1
1,1,2-Trichloroethane	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	NA	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	5.5	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ND	NA	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND
Vinyl Chloride	140	47	15	5.4	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	**1,066**	**209**	**402**	**329**	**167**	**172**	**74**	**63**	**24**	**21**	**12**	**13**	**20**	**23**
Metals														
Arsenic	0.0054	0.0077	0.014	0.004	ND	ND	ND	ND	ND	0.0079	ND	0.021	ND	ND
Barium	0.0891	0.062	0.05	0.05	0.066	0.069	0.066	0.084	0.056	0.1	0.095	0.11	0.07	0.065
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide, Total	0.035	0.006	ND	ND	ND	ND	0.0078	ND	0.017	ND	ND	0.009	ND	0.014
Lead	ND	ND	ND	0.0065	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	0.02	0.027	0.026	0.022	ND	ND	ND	ND	0.009	0.016	0.01
Zinc	0.0035	0.021	ND	ND	0.026	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. VOCs = Volatile Organic Compounds

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter	**Monitoring Well Number**					
	MW15S (AST)					
Date Sampled	8/6/1992	11/29/1995	6/12/1997	10/14/1999	10/2/2000	10/30/2001
VOCs						
Acetone	ND	NA	NA	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND
n-Butylbenzene	NA	ND	ND	ND	ND	ND
2-Butanone	ND	NA	NA	NA	NA	NA
Carbon Disulfide	ND	NA	NA	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	6	5.8	4.9	ND	ND	1.5
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND
cis- 1,2- Dichloroethene	10	13	41	NA	ND	32.9
trans- 1,2- Dichloroethene	ND	ND	2.5	NA	ND	2.3
Total 1,2-Dichloroethene	10	13	43.5	ND	ND	35.2
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	ND	NA	NA	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND
Dibromomethane	NA	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	65	5.8	11	145
1,2,4-Trimethylbenzene	NA	ND	ND	ND	ND	ND
Vinyl Chloride	ND	28	2.3	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND
Toluene	ND	1.1	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND
Total VOCs	**16**	**48**	**116**	**6**	**11**	**182**
Metals						
Arsenic	0.0196	ND	ND	0.0059	ND	ND
Barium	0.219	0.14	0.053	0.086	0.097	0.09
Cadmium	0.015	ND	ND	ND	ND	ND
Chromium, Total	ND	0.011	ND	ND	ND	ND
Cyanide, Total	ND	ND	ND	ND	ND	ND
Lead	ND	ND	0.0038	ND	ND	ND
Nickel	ND	ND	ND	ND	0.007	ND
Zinc	0.047	ND	0.055	ND	ND	ND

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. VOCs = Volatile Organic Compounds

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter	**Monitoring Well Number MW16S (AST Area)**							
Date Sampled	8/6/1992	11/7/1995	11/6/1996	6/11/1997	10/15/1998	10/14/1999	10/2/2000	11/1/2001
VOCs								
Acetone	ND	NA	NA	NA	NA	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	NA	ND	NA	NA	NA	ND	ND	ND
2-Butanone	ND	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	ND	NA	NA	NA	NA	ND	ND	ND
Chloroethane	ND	ND	NA	ND	ND	ND	ND	ND
1,1-Dichloroethane	55	85	26	58	37	38	ND	6.1
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	1.4	ND	ND	ND	ND	ND	ND
cis- 1,2- Dichloroethene	NA	190	50	75	NA	93	93	18.5
trans- 1,2- Dichloroethene	NA	ND	1.3	5.3	NA	NA	ND	ND
Total 1,2-Dichloroethene	41	190	51.3	80.3	130	93	93	18.5
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	ND	NA	NA	NA	NA	ND	ND	ND
1,1,1-Trichloroethane	8	2.7	1	2.9	ND	6.9	ND	1.4
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	NA	ND	NA	NA	NA	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	6.9	ND	ND	47	ND	ND	1.0
1,2,4-Trimethylbenzene	NA	ND	NA	NA	NA	ND	ND	ND
Vinyl Chloride	100	41	19	16	37	15	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	**204**	**327**	**97**	**157**	**251**	**153**	**93**	**27**
Metals								
Arsenic	0.0025	0.003	ND	ND	ND	ND	0.021	ND
Barium	0.05	0.06	0.065	ND	0.054	0.059	0.11	0.034
Cadmium	ND	ND	ND	0.00024	ND	ND	ND	ND
Chromium, Total	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide, Total	ND	ND	ND	0.011	ND	ND	0.009	ND
Lead	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	ND	ND	ND	0.009	ND
Zinc	0.038	ND	ND	0.028	ND	ND	ND	ND

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. VOCs = Volatile Organic Compounds

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter Date Sampled	**Monitoring Well Number MW18S (AST Area)** 8/1/1992	**Monitoring Well Number MW18S (AST Area)** 11/1/2001
VOCs		
Acetone	ND	ND
Bromomethane	ND	ND
n-Butylbenzene	ND	ND
2-Butanone	NA	NA
Carbon Disulfide	ND	ND
Chloroethane	ND	ND
1,1-Dichloroethane	ND	ND
1,1-Dichloroethene	ND	ND
1,2-Dichloroethane	ND	ND
cis- 1,2- Dichloroethene	ND	ND
trans- 1,2- Dichloroethene	ND	ND
Total 1,2-Dichloroethene	ND	ND
1,2-Dichloropropane	ND	ND
Chloroform	ND	ND
4-methyl-2-Pentanone	ND	ND
1,1,1-Trichloroethane	ND	ND
1,1,2-Trichloroethane	ND	ND
Dibromomethane	ND	ND
Tetrachloroethene	ND	ND
Trichloroethene	ND	ND
1,2,4-Trimethylbenzene	ND	ND
Vinyl Chloride	ND	1.6
Benzene	ND	ND
Ethylbenzene	ND	ND
Toluene	ND	ND
Xylenes (total)	ND	ND
Total VOCs	**ND**	**2**
Metals		
Arsenic	ND	ND
Barium	0.177	0.084
Cadmium	ND	ND
Chromium, Total	ND	ND
Cyanide, Total	NA	NA
Lead	ND	ND
Nickel	ND	ND
Zinc	5.56	0.2

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. VOCs = Volatile Organic Compounds
7. 8/92 data from Technical Memorandum (Warzyn, Novemeber 1992)

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter	Monitoring Well Number MW83AS (SE Area)														
Date Sampled	3/1988[7]	8/1988[7]	7/23/1992	11/8/1995	8/27/1996	6/13/1997	11/18/1997	4/21/1998	10/15/98	4/12/1999	10/13/1999	5/4/2000	10/2/2000	4/19/2001	10/31/2001
VOCs															
Acetone	ND	ND	ND	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	NA
2-Butanone	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Carbon Disulfide	ND	ND	ND	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	5.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	48	72	51	56	ND	42	39	43	38	26	ND	31
1,1-Dichloroethene	ND	ND	ND	ND	ND	4.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis- 1,2- Dichloroethene	ND	ND	NA	15,000	15,000	11,000	NA	5,200	1,300	4,000	3,400	2,200	1,500	750	1,730
trans- 1,2,- Dichloroethene	ND	ND	NA	68	110	56	NA	ND	32	21	17	14	5.9	ND	21
Total 1,2-Dichloroethene	ND	ND	12,000	15,068	15,110	11,056	8,700	5,200	1,332	4,021	3,417	2,214	1,506	750	1,751
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	ND	ND	ND	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	ND	NA	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ND	ND	NA	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND
Vinyl Chloride	110	140	1,200	1,700	1,600	1,400	1,400	900	610	990	830	550	380	220	399
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	0.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	**110**	**141**	**13,200**	**16,816**	**16,782**	**12,516**	**10,156**	**6,100**	**1,984**	**5,050**	**4,290**	**2,802**	**1,912**	**970**	**2,181**
Metals															
Arsenic	ND	ND	ND	0.003	ND	0.0022	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	0.186	0.117	0.111	0.18	0.09	ND	ND	0.048	0.055	0.088	0.09	0.094	0.068	0.063	0.17
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide, Total	ND	0.022	0.006	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	0.011	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002	ND	ND
Zinc	ND	0.0054	ND	ND	ND	0.041	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
1 In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2 VOCs are reported in micrograms per liter (ug/L)
3 Metals are reported in milligrams per liter (mg/L)
4 ND = Not detected above the method detection limit
5 NA = Not analyzed
6 VOCs = Volatile Organic Compounds
7 Possible mislabeling of samle occurred in 1988

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter	Monitoring Well Number MW83AD (SE Area)									
Date Sampled	3/1988	8/1988	7/31/1992	11/8/1995	11/6/1996	6/13/1997	10/15/1998	10/13/1999	10/2/2000	10/31/2001
VOCs										
Acetone	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND
2-Butanone	ND	ND	ND	NA	NA	NA	NA	NA	NA	ND
Carbon Disulfide	ND	ND	ND	NA	NA	NA	NA	ND	ND	ND
Chloroethane	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	0.6	ND	1.5	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis- 1, 2- Dichloroethene	ND	NA	NA	140	88	60	38	33	8.9	9.3
trans- 1, 2- Dichlorothene	ND	NA	NA	ND	ND	ND	ND	ND	NA	ND
Total 1,2-Dichloroethene	ND	7.2	10	140	88	60	38	33	8.9	9.3
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	ND	ND	ND	NA	NA	NA	NA	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	13	ND	ND
Dibromomethane	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND
Vinyl Chloride	4	38	3	110	73	54	8.8	35	16	3.9
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	0.9	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	**4**	**46**	**14**	**250**	**163**	**114**	**47**	**81**	**25**	**13**
Metals										
Arsenic	NA	NA	ND	0.004	ND	ND	ND	ND	ND	ND
Barium	NA	NA	0.022	0.25	0.24	0.27	0.17	0.19	0.17	0.16
Cadmium	NA	NA	0.005	ND	ND	ND	ND	ND	ND	ND
Chromium, Total	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide, Total	NA	NA	0.07	ND	ND	0.014	ND	ND	ND	ND
Lead	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	NA	NA	ND	ND	ND	ND	ND	ND	0.004	ND
Zinc	NA	NA	ND	0.01	ND	0.02	0.022	0.02	ND	0.069

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. VOCs = Volatile Organic Compounds

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter	Monitoring Well Number MW83B (NE Area)							
Date Sampled	3/1988	7/31/1992	6/7/1996	11/6/1996	6/12/1997	10/15/1998	10/2/2000	10/31/2001
VOCs								
Acetone	270	ND	ND	NA	NA	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	NA	ND	NA	NA	ND	ND	ND
2-Butanone	23	ND	ND	NA	NA	NA	NA	NA
Carbon Disulfide	ND	NA	ND	NA	NA	ND	ND	ND
Chloroethane	ND	ND	ND	NA	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND
cis- 1, 2- Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
trans- 1, 2- Dichlorothene	ND	NA	ND	ND	ND	ND	ND	ND
Total 1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	ND	ND	ND	NA	NA	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	NA	ND	NA	NA	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ND	NA	ND	NA	NA	ND	ND	ND
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	**293**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Metals								
Arsenic	ND	ND	0.003	0.0031	0.0027	ND	0.0054	ND
Barium	ND	ND	0.16	0.22	0.19	0.16	0.26	0.18
Cadmium	ND	0.005	ND	ND	ND	ND	ND	ND
Chromium, Total	ND	ND	ND	ND	ND	ND	ND	ND
Cyanide, Total	ND	0.019	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	0.02	0.021	ND	ND	ND	ND
Zinc	ND	ND	0.1	0.081	0.029	ND	ND	ND

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. VOCs = Volatile Organic Compounds

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter	**Monitoring Well Number**	
	MW83DS (Formerly GW83E SE Area)	
Date Sampled	8/1988	11/1/2001
VOCs		
Acetone	ND	ND
Bromomethane	ND	ND
n-Butylbenzene	ND	ND
2-Butanone	ND	NA
Carbon Disulfide	ND	ND
Chloroethane	ND	ND
1,1-Dichloroethane	ND	1.1
1,1-Dichloroethene	ND	ND
1,2-Dichloroethane	ND	ND
cis-1,2-Dichloroethene	ND	191
trans-1,2-Dichloroethene	ND	1.1
Total 1,2-Dichloroethene	ND	192
1,2-Dichloropropane	ND	ND
Chloroform	ND	ND
4-methyl-2-Pentanone	ND	ND
1,1,1-Trichloroethane	ND	ND
1,1,2-Trichloroethane	ND	ND
Dibromomethane	ND	ND
Tetrachloroethene	ND	ND
Trichloroethene	ND	ND
1,2,4-Trimethylbenzene	ND	ND
Vinyl Chloride	ND	16
Benzene	ND	ND
Ethylbenzene	ND	ND
Toluene	ND	ND
Xylenes (total)	ND	ND
Total VOCs	**ND**	**209**
Metals		
Arsenic	0.003	ND
Barium	0.211	0.077
Cadmium	ND	ND
Chromium, Total	ND	ND
Cyanide, Total	ND	NA
Lead	ND	ND
Nickel	ND	ND
Zinc	ND	0.062

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. VOCs = Volatile Organic Compounds

Table 10
Monitoring Well Sample Results
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter	**Monitoring Well Number**	
	MW83DD (Formerly GW83D SE Area)	
Date Sampled	8/1988	11/6/2001
VOCs		
Acetone	ND	ND
Bromomethane	ND	ND
n-Butylbenzene	ND	ND
2-Butanone	ND	NA
Carbon Disulfide	ND	ND
Chloroethane	ND	ND
1,1-Dichloroethane	ND	ND
1,1-Dichloroethene	ND	ND
1,2-Dichloroethane	ND	ND
cis-1,2-Dichloroethene	ND	ND
trans-1,2-Dichloroethene	ND	ND
Total 1,2-Dichloroethene	ND	ND
1,2-Dichloropropane	ND	ND
Chloroform	ND	ND
4-methyl-2-Pentanone	ND	ND
1,1,1-Trichloroethane	ND	ND
1,1,2-Trichloroethane	ND	ND
Dibromomethane	ND	ND
Tetrachloroethene	ND	ND
Trichloroethene	ND	ND
1,2,4-Trimethylbenzene	ND	ND
Vinyl Chloride	ND	ND
Benzene	ND	ND
Ethylbenzene	ND	ND
Toluene	ND	ND
Xylenes (total)	ND	ND
Total VOCs	**ND**	**ND**
Metals		
Arsenic	0.057	ND
Barium	0.009	0.05
Cadmium	ND	ND
Chromium, Total	ND	ND
Cyanide, Total	0.022	NA
Lead	0.0023	ND
Nickel	ND	ND
Zinc	0.004	ND

Notes:
1. In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total
2. VOCs are reported in micrograms per liter (ug/L)
3. Metals are reported in milligrams per liter (mg/L)
4. ND = Not detected above the method detection limit
5. NA = Not analyzed
6. VOCs = Volatile Organic Compounds

Table 11
Summary of Recovery Well Construction Details
Wayne Reclamation and Recycling
Columbia City, Indiana

Recovery Well Number	TOIC Elevations 2001	Surface Elevations 2001	Total Depth (bgs)	Well Diameter (inches)	Screen Length (feet)	Sump Length (feet)	Bottom Screen Elevation (AMSL) (approx.)	Top Screen Elevation (AMSL) (approx.)	Slot Size (inches)	General Location	Installation Date
RW-1	818.45	819.52	32.00	6	20	5	792.52	812.52	0.02	AST Area	Oct. 94
RW-2	824.29	825.07	40.00	6	20	5	790.07	810.07	0.02	AST Area	Oct. 94
RW-3	822.71	823.36	32.00	6	20	5	796.36	816.36	0.02	AST Area	Oct. 94
RW-4	833.24	833.53	48.30	6	20	5	790.23	810.23	0.02	RW4 Area	Oct. 94
RW-5	823.94	824.20	40.00	6	30	0	784.20	814.20	0.02	SE Area	Oct. 94
RW-6	820.71	821.62	43.50	6	35	0	778.12	813.12	0.02	SE Area	Oct. 94
RW-7	820.21	821.51	36.00	6	30	0	785.51	815.51	0.02	SE Area	Oct. 94
RW-8	821.86	823.03	41.80	6	35	0	781.23	816.23	0.02	SE Area	Oct. 94
RW-9	821.69	821.88	37.00	6	30	0	784.88	814.88	0.02	SE Area	Oct. 94
RW-10	822.55	824.03	40.30	6	35	0	783.73	818.73	0.02	SE Area	Oct. 94

Notes:

1. ---- = *No data available.*
2. Water levels measured in feet below top of inner casing (TOIC).
3. Prior to 2001, TOIC elevations based on Ayres-Lewis-Norris-May, Inc. survey on 10/10/97.
4. TOIC and surface elevations based on Benchmark Surveying, Inc. survey on 7/2/01 and 10/25/01.
5. Construction details from As-Built RD drawings (Warzyn, March 1995)

Table 12
Wayne Reclamation and Recycling
Columbia City, Indiana
Recovery Well Analytical Results
Detected Volatile Organic Compounds

Parameter	RW1					
Date Sampled	8/27/1996	11/6/1996	6/11/1997	11/18/1997	4/21/1998	11/1/2001
Acetone	NA	NA	NA	NA	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	NA	NA	NA	ND	ND
2-Butanone	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NA	NA	NA	NA	ND	ND
Chloroethane	ND	2.4	2.2	3.7	ND	ND
1,1-Dichloroethane	170	180	110	190	140	103
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	240	180	190	230	200	119
trans-1,2-Dichloroethene	ND	1.4	1.4	2.9	ND	1.3
Total 1,2-Dichloroethene	240	181.4	191.4	232.9	200	120.3
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	NA	NA	NA	NA	ND	ND
1,1,1-Trichloroethane	22	23	20	31	19	12.7
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	NA	NA	NA	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	2.4
1,2,4-Trimethylbenzene	NA	NA	NA	NA	ND	ND
Vinyl Chloride	170	ND	100	140	80	54.8
Benzene	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND

Notes:

1. Results are reported in micrograms per liter (ug/L)
2. ND = Not detected above the method detection limit
3. NA = Not analyzed
4. No data was collected during the October 1998 sampling event.

Table 12
Wayne Reclamation and Recycling
Columbia City, Indiana
Recovery Well Analytical Results
Detected Volatile Organic Compounds

Parameter	RW2					
Date Sampled	8/27/1996	11/6/1996	6/11/1997	11/18/1997	4/21/1998	11/1/2001
Acetone	NA	NA	NA	NA	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	NA	NA	NA	ND	ND
2-Butanone	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NA	NA	NA	NA	ND	ND
Chloroethane	ND	2.6	2.2	ND	ND	ND
1,1-Dichloroethane	8.1	160	110	21	52	18.2
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	6.6	150	180	53	78	45
trans-1,2-Dichloroethene	ND	1.6	1.4	ND	ND	1.7
Total 1,2-Dichloroethene	6.6	151.6	181.4	53	78	46.7
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	NA	NA	NA	NA	ND	ND
1,1,1-Trichloroethane	ND	23.0	20.0	ND	6.1	4.4
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	NA	NA	NA	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	1.2
1,2,4-Trimethylbenzene	NA	NA	NA	NA	ND	ND
Vinyl Chloride	7.7	150	97	19	34	5.3
Benzene	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND

Notes:

1. Results are reported in micrograms per liter (ug/L)
2. ND = Not detected above the method detection limit
3. NA = Not analyzed
4. No data was collected during the October 1998 sampling event.

Table 12
Wayne Reclamation and Recycling
Columbia City, Indiana
Recovery Well Analytical Results
Detected Volatile Organic Compounds

Parameter	RW3							
Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/1997	4/21/1998	8/18/1999	10/19/1999	11/1/2001
Acetone	NA	NA	NA	NA	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	NA	NA	NA	ND	ND	ND	ND
2-Butanone	NA	NA	NA	NA	NA	ND	NA	NA
Carbon Disulfide	NA	NA	NA	NA	ND	ND	ND	ND
Chloroethane	ND	NA	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	3.1	2.7	4.9	ND	ND	ND	9.4
1,1-Dichloroethene	ND	ND	ND	1.9	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	390	330	270	690	340	150	200	349
trans-1,2-Dichloroethene	10	5.9	6.9	15	11	ND	5.1	8.6
Total 1,2-Dichloroethene	400	335.9	276.9	705	351	150	205	357.6
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	NA	NA	NA	NA	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	1.7	ND	ND	ND	4.4
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	NA	NA	NA	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	150	130	120	240	330	96	140	99.1
1,2,4-Trimethylbenzene	NA	NA	NA	NA	ND	ND	ND	ND
Vinyl Chloride	43	40	28	50	3.5	11.0	15.0	30.4
Benzene	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

1. Results are reported in micrograms per liter (ug/L)
2. ND = Not detected above the method detection limit
3. NA = Not analyzed
4. No data was collected during the October 1998 sampling event.

Table 12
Wayne Reclamation and Recycling
Columbia City, Indiana
Recovery Well Analytical Results
Detected Volatile Organic Compounds

Parameter	RW4					
Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/1997	4/21/1998	11/2/2001
Acetone	NA	NA	NA	NA	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	NA	NA	NA	ND	ND
2-Butanone	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NA	NA	NA	NA	ND	ND
Chloroethane	ND	NA	ND	ND	ND	ND
1,1-Dichloroethane	ND	2.9	1.5	2.6	ND	13.3
1,1-Dichloroethene	ND	ND	ND	ND	ND	2.3
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	430	450	290	390	180	1,580
trans-1,2-Dichloroethene	27	26	18	24	12	23.2
Total 1,2-Dichloroethene	457	476	308	414	192	1,603.0
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	NA	NA	NA	NA	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	NA	NA	NA	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	258
1,2,4-Trimethylbenzene	NA	NA	NA	NA	ND	ND
Vinyl Chloride	ND	ND	ND	ND	ND	142
Benzene	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND

Notes:

1. Results are reported in micrograms per liter (ug/L)
2. ND = Not detected above the method detection limit
3. NA = Not analyzed
4. No data was collected during the October 1998 sampling event.

Table 12
Wayne Reclamation and Recycling
Columbia City, Indiana
Recovery Well Analytical Results
Detected Volatile Organic Compounds

Parameter	RW5					
Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/1997	4/21/1998	11/2/2001
Acetone	NA	NA	NA	NA	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	NA	NA	NA	ND	ND
2-Butanone	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NA	NA	NA	NA	ND	ND
Chloroethane	ND	NA	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	1.1	4.0	ND	7.1
1,1-Dichloroethene	ND	ND	ND	ND	ND	2.9
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	330	330	910	1,900	4,000	5,310
trans-1,2-Dichloroethene	20	26	53	140	260	211
Total 1,2-Dichloroethene	350	356	963	2,040	4,260	5,521
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	NA	NA	NA	NA	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	4.0
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	NA	NA	NA	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	1.8	ND	15	130	348
1,2,4-Trimethylbenzene	NA	NA	NA	NA	ND	ND
Vinyl Chloride	100	200	520	1,600	1,100	393
Benzene	ND	ND	ND	ND	ND	4.0
Ethylbenzene	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND

Notes:

1. Results are reported in micrograms per liter (ug/L)
2. ND = Not detected above the method detection limit
3. NA = Not analyzed
4. No data was collected during the October 1998 sampling event.

Table 12
Wayne Reclamation and Recycling
Columbia City, Indiana
Recovery Well Analytical Results
Detected Volatile Organic Compounds

Parameter	RW6					
Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/97	4/21/1998	11/2/2001
Acetone	NA	NA	NA	NA	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	NA	NA	NA	ND	ND
2-Butanone	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NA	NA	NA	NA	ND	ND
Chloroethane	ND	NA	7.5	ND	ND	ND
1,1-Dichloroethane	ND	ND	21	ND	ND	ND
1,1-Dichloroethene	ND	ND	3.6	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	4,500	1.0	5.7	43.1
trans-1,2-Dichloroethene	ND	ND	53	ND	ND	ND
Total 1,2-Dichloroethene	ND	ND	4,553	1.0	5.7	43.1
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	NA	NA	NA	NA	ND	ND
1,1,1-Trichloroethane	ND	ND	3.1	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	NA	NA	NA	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	240	ND	ND	ND
1,2,4-Trimethylbenzene	NA	NA	NA	NA	ND	ND
Vinyl Chloride	ND	ND	780	1.1	ND	112
Benzene	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND

Notes:

1. Results are reported in micrograms per liter (ug/L)
2. ND = Not detected above the method detection limit
3. NA = Not analyzed
4. No data was collected during the October 1998 sampling event.

Table 12
Wayne Reclamation and Recycling
Columbia City, Indiana
Recovery Well Analytical Results
Detected Volatile Organic Compounds

Parameter	RW7					
Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/1997	4/21/1998	11/2/2001
Acetone	NA	NA	NA	NA	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	NA	NA	NA	ND	ND
2-Butanone	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NA	NA	NA	NA	ND	ND
Chloroethane	ND	NA	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	1.7
1,1-Dichloroethene	ND	ND	ND	ND	ND	1.1
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	2.4	910	100	520	ND	653
trans-1,2-Dichloroethene	ND	43	2.2	12	ND	7.1
Total 1,2-Dichloroethene	2.4	953	102.2	532.0	ND	660.1
1,2-Dichloropropane	ND	7.4	ND	2.4	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	NA	NA	NA	NA	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	NA	NA	NA	ND	ND
Tetrachloroethene	ND	1.0	ND	ND	ND	ND
Trichloroethene	1.7	290	26	140	43	101
1,2,4-Trimethylbenzene	NA	NA	NA	NA	ND	ND
Vinyl Chloride	ND	ND	ND	7.9	3.3	174
Benzene	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND

Notes:

1. Results are reported in micrograms per liter (ug/L)
2. ND = Not detected above the method detection limit
3. NA = Not analyzed
4. No data was collected during the October 1998 sampling event.

Table 12
Wayne Reclamation and Recycling
Columbia City, Indiana
Recovery Well Analytical Results
Detected Volatile Organic Compounds

Parameter	**RW8**					
Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/1997	4/21/1998	11/2/2001
Acetone	NA	NA	NA	NA	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	NA	NA	NA	ND	ND
2-Butanone	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NA	NA	NA	NA	ND	ND
Chloroethane	ND	NA	3.6	2.1	ND	ND
1,1-Dichloroethane	ND	11	19	29	ND	110
1,1-Dichloroethene	ND	3.1	5.6	5.8	ND	30.6
1,2-Dichloroethane	ND	1400	ND	ND	ND	ND
cis-1,2-Dichloroethene	3,000	1,434	2,800	4,700	5,500	18,500
trans-1,2-Dichloroethene	66	ND	42	44	ND	144
Total 1,2-Dichloroethene	3066	1434	2842	4744	5500	18,644
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	NA	NA	NA	NA	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	NA	NA	NA	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND
Trichloroethene	140	98	160	180	270	5,250
1,2,4-Trimethylbenzene	NA	NA	NA	NA	ND	ND
Vinyl Chloride	650	130	310	160	ND	802
Benzene	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND

Notes:

1. Results are reported in micrograms per liter (ug/L)
2. ND = Not detected above the method detection limit
3. NA = Not analyzed
4. No data was collected during the October 1998 sampling event.

Table 12
Wayne Reclamation and Recycling
Columbia City, Indiana
Recovery Well Analytical Results
Detected Volatile Organic Compounds

Parameter	RW9					
Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/1997	4/21/1998	11/2/2001
Acetone	NA	NA	NA	NA	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	NA	NA	NA	ND	ND
2-Butanone	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NA	NA	NA	NA	ND	ND
Chloroethane	ND	NA	3.3	ND	ND	ND
1,1-Dichloroethane	1.3	3.3	1.2	1.9	ND	3.0
1,1-Dichloroethene	ND	3.1	5.7	4.4	ND	6.3
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	340	2,100	2,700	3,000	5,300	3,880
trans-1,2-Dichloroethene	3	19	32	17	61	32.6
Total 1,2-Dichloroethene	343	2119	2732	3017	5361	3,912
1,2-Dichloropropane	ND	ND	ND	ND	ND	1.8
Chloroform	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	NA	NA	NA	NA	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	NA	NA	NA	ND	ND
Tetrachloroethene	ND	ND	3.1	ND	ND	ND
Trichloroethene	23	230	480	300	510	565
1,2,4-Trimethylbenzene	NA	NA	NA	NA	ND	ND
Vinyl Chloride	5.1	220	410	400	ND	306
Benzene	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND

Notes:

1. Results are reported in micrograms per liter (ug/L)
2. ND = Not detected above the method detection limit
3. NA = Not analyzed
4. No data was collected during the October 1998 sampling event.

Table 12
Wayne Reclamation and Recycling
Columbia City, Indiana
Recovery Well Analytical Results
Detected Volatile Organic Compounds

Parameter	RW10					
Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/1997	4/21/1998	11/2/2001
Acetone	NA	NA	NA	NA	ND	ND
Bromomethane	2	ND	ND	ND	ND	ND
n-Butylbenzene	ND	NA	NA	NA	ND	ND
2-Butanone	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NA	NA	NA	NA	ND	ND
Chloroethane	10	NA	NA	17	ND	17
1,1-Dichloroethane	68	8	55	71	74	82
1,1-Dichloroethene	5	ND	7	8	ND	7
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	6,100	1,100	8,600	48,000	11,000	11,000
trans-1,2-Dichloroethene	89	28	58	77	84	89
Total 1,2-Dichloroethene	6,189	1,128	8,658	48,077	11,084	11,089
1,2-Dichloropropane	ND	ND	ND	1	ND	2
Chloroform	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentanone	NA	NA	NA	NA	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND
Dibromomethane	ND	NA	NA	NA	ND	ND
Tetrachloroethene	1	ND	1	ND	ND	ND
Trichloroethene	420	53	500	440	640	308
1,2,4-Trimethylbenzene	NA	NA	NA	NA	ND	ND
Vinyl Chloride	1,400	290	1,900	1,200	1,400	548
Benzene	ND	ND	ND	ND	ND	7
Ethylbenzene	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND

Notes:

1. Results are reported in micrograms per liter (ug/L)
2. ND = Not detected above the method detection limit
3. NA = Not analyzed
4. No data was collected during the October 1998 sampling event.

Table 13
Summary of Treatment System Air Sampling
Wayne Reclamation and Recycling
Columbia City, Indiana

Contaminant	EFF 30-Jan-01	EFF 26-Feb-01	EFF 21-Mar-01	EFF 23-Apr-01	EFF 21-May-01	EFF 13-Jun-01
Tetrachloroethene	38	<140	34	<140	<150	<150
Trichloroethene	630	260	340	160	<150	430
1,1-Dichloroethene	<9.2	<140	2.1	<140	<150	<150
cis-1,2-Dichloroethene	2,000	1,700	1,300	1,000	630	1,400
trans-1,2-Dichloroethene	49	NA	NA	NA	NA	NA
Vinyl Chloride	270	180	190	160	<150	210
1,1,1-Trichloroethane	53	<140	26	<140	<150	<150
1,1-Dichloroethane	30	<140	18	<140	<150	<150
Toluene	<9.2	<140	4.0	<140	<150	<150
Cumulative Risk	5.93E-07	4.05E-07	4.13E-07	3.58E-07	3.39E-07	4.77E-07

Contaminant	EFF 23-Jul-01	EFF 23-Aug-01	EFF 17-Sep-01	EFF 31-Oct-01	EFF 18-Nov-01	EFF 28-Dec-01
Tetrachloroethene	<140	<140	<140	<140	<100	<130
Trichloroethene	140	280	280	410	460	300
1,1-Dichloroethene	<140	<140	<140	<140	<100	<130
cis-1,2-Dichloroethene	1,100	600	680	1,500	2,200	1,700
trans-1,2-Dichloroethene	NA	NA	NA	<140	<100	NA
Vinyl Chloride	<140	<140	<140	260	210	210
1,1,1-Trichloroethane	<140	<140	<140	<140	<100	<130
1,1-Dichloroethane	<140	<140	<140	<140	<100	<130
Toluene	<140	<140	<140	<140	<100	<130
Cumulative Risk	3.16E-07	3.24E-07	3.24E-07	5.77E-07	4.71E-07	4.67E-07

Notes:
1. All results reported in parts per billion (volume/volume).
2. IN = influent sample. EFF = effluent sample.
3. NA = not analyzed.
4. ND = not detected above the reporting limit.
5. Results indicated for primary detected constituents.
6. Air treatment system discontinued on June 24, 1999
7. Cumulative Risk calculation indicated on Table 14.

Table 14
Summary of Air Dispersion Modeling
Wayne Reclamation and Recycling
Columbia City, Indiana

Scenario No.	Description	Input/Output	Chemicals									Cumulative Cancer Risk
			Tetrachloroethene Carcinogen	*Trichloroethene Carcinogen*	*1,1 Dichloroethene Non - Carcinogen*	*cis 1,2-Dichloroethene Non-Carcinogen*	*rans 1,2-Dichloroethene Non-Carcinogen*	*Vinyl Chloride Carcinogen*	*1,1,1-Trichloroethane Non-Carcinogen*	*,1-Dichloroethan Carcinogen*	*Toluene Non-Carcinogen*	
113	EFF	(ppb)	38	630	9	2000	49	270	53	30	9	
	30-Jan-01	(g/s)	0.0002	0.0035	0.0001	0.0112	0.0003	0.0015	0.0003	0.0002	0.0001	
		Max Conc.	0.001	0.017	0.000	0.053	0.001	0.007	0.001	0.001	0.000	
		ECR	5.90E-09	3.31E-08				5.54E-07		1.29E-11		5.93E-07
114	EFF	(ppb)	140	260	140	1700	1	180	140	140	140	
	26-Feb-01	(g/s)	0.0008	0.0015	0.0008	0.0095	0.0000	0.0010	0.0008	0.0008	0.0008	
		Max.Conc.	0.004	0.007	0.004	0.045	0.000	0.005	0.004	0.004	0.004	
		ECR	2.17E-08	1.37E-08				3.69E-07		6.00E-11		4.05E-07
115	EFF	(ppb)	34	340	2	1300	1	190	26	18	4	
	21-Mar-01	(g/s)	0.0002	0.0019	0.0000	0.0073	0.0000	0.0011	0.0001	0.0001	0.0000	
		Max.Conc.	0.001	0.009	0.000	0.034	0.000	0.005	0.001	0.000	0.000	
		ECR	5.28E-09	1.79E-08				3.90E-07		7.72E-12		4.13E-07
116	EFF	(ppb)	140	160	140	1000	1	160	140	140	140	
	23-Apr-01	(g/s)	0.0008	0.0009	0.0008	0.0056	0.0000	0.0009	0.0008	0.0008	0.0008	
		Max.Conc.	0.004	0.004	0.004	0.026	0.000	0.004	0.004	0.004	0.004	
		ECR	2.17E-08	8.42E-09				3.28E-07		6.00E-11		3.58E-07
117	EFF	(ppb)	150	150	150	630	1	150	150	150	150	
	21-May-01	(g/s)	0.0008	0.0008	0.0008	0.0035	0.0000	0.0008	0.0008	0.0008	0.0008	
		Max.Conc.	0.004	0.004	0.004	0.017	0.000	0.004	0.004	0.004	0.004	
		ECR	2.33E-08	7.89E-09				3.08E-07		6.43E-11		3.39E-07
118	EFF	(ppb)	150	430	150	1400	1	210	150	150	150	
	13-Jun-01	(g/s)	0.0008	0.0024	0.0008	0.0078	0.0000	0.0012	0.0008	0.0008	0.0008	
		Max.Conc.	0.004	0.011	0.004	0.037	0.000	0.006	0.004	0.004	0.004	
		ECR	2.33E-08	2.26E-08				4.31E-07		6.43E-11		4.77E-07
119	EFF	(ppb)	140	140	140	1100	1	140	140	140	140	
	23-Jul-01	(g/s)	0.0008	0.0008	0.0008	0.0062	0.0000	0.0008	0.0008	0.0008	0.0008	
		Max Conc.	0.004	0.004	0.004	0.029	0.000	0.004	0.004	0.004	0.004	
		ECR	2.17E-08	7.36E-09				2.87E-07		6.00E-11		3.16E-07
120	EFF	(ppb)	140	280	140	600	1	140	140	140	140	
	23-Aug-01	(g/s)	0.0008	0.0016	0.0008	0.0034	0.0000	0.0008	0.0008	0.0008	0.0008	
		Max.Conc	0.004	0.007	0.004	0.016	0.000	0.004	0.004	0.004	0.004	
		ECR	2.17E-08	1.47E-08				2.87E-07		6.00E-11		3.24E-07
121	EFF	(ppb)	140	280	140	680	1	140	140	140	140	
	17-Sep-01	(g/s)	0.0008	0.0016	0.0008	0.0038	0.0000	0.0008	0.0008	0.0008	0.0008	
		Max Conc	0.004	0.007	0.004	0.018	0.000	0.004	0.004	0.004	0.004	
		ECR	2.17E-08	1.47E-08				2.87E-07		6.00E-11		3.24E-07
122	EFF	(ppb)	140	410	140	1500	140	260	140	140	140	
	31-Oct-01	(g/s)	0.0008	0.0023	0.0008	0.0084	0.0008	0.0015	0.0008	0.0008	0.0008	
		Max.Conc	0.004	0.011	0.004	0.039	0.004	0.007	0.004	0.004	0.004	
		ECR	2.17E-08	2.16E-08				5.33E-07		6.00E-11		5.77E-07
123	EFF	(ppb)	100	460	100	2200	100	210	100	100	100	
	18-Nov-01	(g/s)	0.0006	0.0026	0.0006	0.0123	0.0006	0.0012	0.0006	0.0006	0.0006	
		Max.Conc.	0.003	0.012	0.003	0.058	0.003	0.006	0.003	0.003	0.003	
		ECR	1.55E-08	2.42E-08				4.31E-07		4.29E-11		4.71E-07
124	EFF	(ppb)	130	300	130	1700	1	210	130	130	130	
	28-Dec-01	(g/s)	0.0007	0.0017	0.0007	0.0095	0.0000	0.0012	0.0007	0.0007	0.0007	
		Max.Conc.	0.003	0.008	0.003	0.045	0.000	0.006	0.003	0.003	0.003	
		ECR	2.02E-08	1.58E-08				4.31E-07		5.57E-11		4.67E-07

Notes

1 g/s=Parts per billion x 1000 / (22500 x 2.20^5 x 3600)

2 Max Conc.- The maximum predicted concentration (ug/m3) from ISCLT2 model run output

3 ECR - Excess Cancer Risk = Max Conc (ug/m3) x Unit Risk Factor

4 Unit Risk Factors:

Vinyl Chloride-	7.80E-05
1,1-Dichloroethane-	1.63E-08
Trichloroethene-	2.00E-06
Tetrachloroethene-	5.90E-06

5 g/s=(ug/l) *0.1346/MW

6 Assume MW = 133

7 g/s = (ug/l) * 1.012 x 10^{-3}

8. EFF - Sample collected from treatment system effluent.

9 IN - Sample collected from treatment system influent.

Table 15
Summary of Groundwater Treatment System VOC Influent and Effluent Sampling
Wayne Reclamation and Recycling
Columbia City, Indiana

Contaminant	IN 30-Jan-01	EFF 30-Jan-01	IN 26-Feb-01	EFF 26-Feb-01	IN 21-Mar-01	EFF 21-Mar-01
1,1-Dichloroethane	16	<5.0	<5.0	<5.0	20	<5.0
1,2-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene	<5.0	<5.0	<5.0	<5.0	20	<5.0
cis-1,2-Dichloroethene	1,900	250	1,500	220	1,700	370
trans-1,2-Dichloroethene	29	<5.0	62	<5.0	22	<5.0
Trichloroethene	380	23	240	21	220	50
Vinyl Chloride	230	<2.0	160	5	180	32
Total VOC Concentration	2,565		1,977		2,149	

Contaminant	IN 23-Apr-01	EFF 23-Apr-01	IN 21-May-01	EFF 21-May-01	IN 13-Jun-01	EFF 13-Jun-01
1,1-Dichloroethane	<50	<20	<50	<5.0	<20	<5.0
1,2-Dichloroethane	<50	<20	<50	<5.0	<20	<5.0
1,1-Dichloroethene	<50	<20	<50	<5.0	<20	<5.0
cis-1,2-Dichloroethene	1,700	470	1,600	110	1,600	100
trans-1,2-Dichloroethene	<50	<20	<50	<5.0	<20	<5.0
Trichloroethene	250	60	200	5	96	<5.0
Vinyl Chloride	180	34	180	<2.0	110	<2.0
Total VOC Concentration	2,330		2,180		1,886	

Contaminant	IN 23-Jul-01	EFF 23-Jul-01	IN 23-Aug-01	EFF 23-Aug-01	IN 29-Sep-01	EFF 29-Sep-01
1,1-Dichloroethane	18	<5	19	<5	14	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	2,700	100	1,800	<5	1,100	73
trans-1,2-Dichloroethene	23	<5	20	<5	22	<5
Trichloroethene	260	<5	210	<5	180	<5
Vinyl Chloride	220	<2	180	<2	13	<2
Total VOC Concentration	3,221		2,229		1,329	

Contaminant	IN 31-Oct-01	EFF 31-Oct-01	IN 18-Nov-01	EFF 18-Nov-01	IN 28-Dec-01	EFF 28-Dec-01
1,1-Dichloroethane	16	<1	13	<1	20	<5
1,2-Dichloroethane	<1.0	<1	<1	<1	<5	<5
1,1-Dichloroethene	2	<1	2	<1	<5	<5
cis-1,2-Dichloroethene	1,530	83	1,470	67	2,000	110
trans-1,2-Dichloroethene	18	<1	14	<1	23	<5
Trichloroethene	246	5	226	4	250	<5
Vinyl Chloride	121	<1	133	<1	230	<2
Total VOC Concentration	1,932		1,858		2,523	

Notes:
1. All results reported in ug/L (parts per billion)
2. IN = influent sample EFF = effluent sample
3. Results indicated for primary detected constituents

Table 16
Summary of Groundwater Treatment System Effluent Sampling
Wayne Reclamation and Recycling
Columbia City, Indiana

Date:	11/18/1997	12/18/1997	1/30/1998	10/13/98	10/13/99	10/6/2000	10/31/2001
Total Metals (mg/L):							
Arsenic	0.015	0.0044	0.005	<0.005	<0.005	<0.028	<0.0050
Beryllium	<0.0050	<0.0050	<0.0050	<0.003	<0.003	<0.003	<0.0010
Cadmium	<0.0050	<0.0050	<0.0050	<0.005	<0.010	<0.005	<0.0010
Chromium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0020
Copper	0.032	<0.020	1.9	<0.010	<0.005	<0.005	<0.0050
Lead	<0.10	<0.10	<0.10	<0.005	<0.005	<0.005	<0.0010
Mercury	<0.00020	<0.00020	<0.00020	<0.0005	<0.0005	<0.0005	<0.0002
Molybdenum	<0.20	<0.20	<0.20	<0.020	<0.020	<0.020	0.0061
Nickel	<0.050	<0.020	<0.020	<0.020	<0.020	<0.005	0.0091
Potassium	12.0	12.0	9.5	11.0	9.0	9.0	8.6
Selenium	<0.0020	<0.0020	<0.0020	<0.005	<0.005	<0.036	<0.0050
Silver	<0.010	<0.010	<0.010	<0.020	<0.001	<0.005	<0.0005
Zinc	0.054	<0.020	<0.020	<0.020	<0.020	<0.020	<0.050
Inorganics/Wet Chemistry (mg/L):							
BOD	<2.0	<2.0	<2.0	<5	6	8	<5
COD	23	18	21	<10	<10	16	72
Total Cyanide	<0.005	<0.005	<0.0050	<0.005	<0.005	<0.020	<0.005
Oil and Grease	<5.0	<5.0	<5.0	<5.0	6	6	<5
pH	8.3	8.27	7.65	NA	7.2	7.2	NA
Total Phenols	<0.01	<0.01	0.17	<0.010	<0.010	<0.005	0.0093
Total Phosphorus	0.93	0.75	0.96	<0.05	0.48	<0.15	<0.15
Surfactants (MBAs)	Negative	Negative	Negative	Positive	Positive	Negative	0.13
Total Solids	1100	820	850	830	790	820	850
Total Suspended Solids	11	14	19	27	<5	5	9
Nitrate/Nitrite Nitrogen	0.32	0.33	0.44	0.036	0.04	0.033	0.23
Ammonia Nitrogen	0.72	0.15	0.28	1.00	0.80	1.10	1.20
Total Kjeldahl Nitrogen	47	1.21	0.98	1.6	1.09	1.5	1.6
PCBs (ug/L):							
Aroclor 1016	<0.2	<0.2	<0.2	<1.0	<0.7	<1.0	<0.21
Aroclor 1221	<0.2	<0.2	<0.2	<1.0	<0.7	<1.0	<0.21
Aroclor 1232	<0.4	<0.4	<0.4	<1.0	<0.7	<1.0	<0.21
Aroclor 1242	<0.2	<0.2	<0.2	<1.0	<0.7	<1.0	<0.21
Aroclor 1248	<0.2	<0.2	<0.2	<1.0	<0.7	<1.0	<0.21
Aroclor 1254	<0.2	<0.2	<0.2	<1.0	<0.7	<1.0	<0.21
Aroclor 1260	<0.2	<0.2	<0.2	<1.0	<0.7	<1.0	<0.21

Notes:
1. NA = Not Analyzed.

Table 17
Columbia City Municipal Water Supply Well Results - VOCs and PCBs
Wayne Reclamation and Recycling
Columbia City, Indiana

Sampling Location Sample Date	Municipal Well No. 7 10/14/1998	Municipal Well No. 8 10/14/1998	Municipal Well No. 7 12/9/1999	Municipal Well No. 8 12/9/1999	Municipal Well No. 7 10/3/2000	Municipal Well No. 8 10/3/2000	Municipal Well No. 7 10/31/2001	Municipal Well No. 8 10/31/2001
VOCs (ug/L):								
Benzene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
Bromodichloromethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
Bromoform	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane	<10	<10	<10	<10	<10	<10	<1.0	<1.0
Carbon disulfide	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
Carbon tetrachloride	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
Chlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
Chlorodibromomethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
Chloroethane	<10	<10	<10	<10	<10	<10	<5.0	<5.0
Chloroform	<5.0	<5.0	<20	<20	<20	<20	<1.0	<1.0
Chloromethane	<10	<10	<10	<10	<10	<10	<5.0	<5.0
1,1-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
1,2-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
1,1-Dichlororethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
cis-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
1,2-Dichloropropane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
cis-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
trans-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
Ethylbenzene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
2-Hexanone	<50	<50	<50	<50	<50	<50	<12.5	<12.5
Methylene chloride	<10	<10	<10	<10	<10	<10	<5.0	<5.0
Methyl-ethyl-ketone	<50	<50	<50	<50	<50	<50	<12.5	<12.5
4-Methyl-2-pentanone	<50	<50	<50	<50	<50	<50	<12.5	<12.5
Styrene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
Tetrachloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
Toluene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
1,1,1-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
1,1,2-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
Trichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
Vinyl chloride	<2	<2	<5.0	<5.0	<2.0	<2.0	<1.0	<1.0
Total Xylenes	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
PCBs (ug/L):								
Aroclor 1016	<1	<1	NA	NA	NA	NA	NA	NA
Aroclor 1221	<1	<1	NA	NA	NA	NA	NA	NA
Aroclor 1232	<1	<1	NA	NA	NA	NA	NA	NA
Aroclor 1242	<1	<1	NA	NA	NA	NA	NA	NA
Aroclor 1248	<1	<1	NA	NA	NA	NA	NA	NA
Aroclor 1254	<1	<1	NA	NA	NA	NA	NA	NA
Aroclor 1260	<1	<1	NA	NA	NA	NA	NA	NA

Notes:
1. NA = Not Analyzed

Table 18
Columbia City Municipal Water Supply Well Results - Metals and Inorganics
Wayne Reclamation and Recycling
Columbia City, Indiana

	Municipal Well No. 7 10/14/1998	Municipal Well No. 8 10/14/1998	Municipal Well No. 7 12/9/1999	Municipal Well No. 8 12/9/1999	Municipal Well No. 7 10/3/2000	Municipal Well No. 8 10/3/2000	Municipal Well No. 7 10/31/2001	Municipal Well No. 8 10/31/2001
Total Metals (mg/L):								
Aluminum	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.050	<0.050
Antimony	<0.005	<0.005	<0.005	<0.005	<0.026	<0.026	<0.0010	<0.0010
Arsenic	0.0083	0.0071	0.0091	0.0056	<0.028	<0.028	0.0087	0.0062
Barium	0.15	0.13	0.12	0.11	0.15	0.13	0.161	0.138
Beryllium	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.0010	<0.0010
Cadmium	<0.005	<0.005	<0.010	<0.010	<0.005	<0.005	<0.0010	<0.0010
Calcium	86	83	70	67	87	80	80.2	75.8
Chromium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0020	<0.0020
Cobalt	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.0050	<0.0050
Copper	<0.010	<0.010	<0.010	<0.010	<0.005	<0.005	<0.0050	<0.0050
Iron	2	1.6	1.6	1.4	1.8	1.5	1.82	1.5
Lead	<0.005	<0.005	<0.005	<0.005	<0.018	<0.018	<0.0010	<0.0010
Magnesium	35	36	28	29	34	34	32.1	32.8
Manganese	0.16	0.14	0.11	0.12	0.12	0.13	0.109	0.114
Mercury	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
Molybdenum	0.023	0.031	0.025	0.031	<0.020	0.021	<0.020	0.021
Nickel	<0.020	<0.020	<0.020	<0.020	<0.002	<0.0068	<0.0050	<0.0050
Potassium	1.4	1.5	<5.0	<5.0	<5.0	<5.0	1.6	1.8
Selenium	<0.005	<0.005	<0.005	<0.005	<0.036	<0.005	<0.20	<0.20
Silver	<0.020	<0.020	<0.020	<0.020	<0.005	<0.005	<0.0005	<0.0005
Sodium	13	17	11	13	14	17	14	15.8
Thallium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0100	<0.0100
Vanadium	<0.02	<0.02	<0.020	<0.020	<0.02	<0.02	<0.050	<0.050
Zinc	0.024	<0.020	<0.020	<0.020	<0.020	0.04	<0.050	<0.050
Inorganics/Wet Chemistry (mg/L):								
BOD	<5	<5	NA	NA	NA	NA	NA	NA
COD	<10	<10	NA	NA	NA	NA	NA	NA
Total Cyanide	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Oil and Grease	<5	<5	NA	NA	NA	NA	NA	NA
Total Phenols	<0.010	<0.010	NA	NA	NA	NA	NA	NA
Total Phosphorus	<0.05	<0.05	NA	NA	NA	NA	NA	NA
Surfactants (MBAs)	0.10	<0.1	NA	NA	NA	NA	NA	NA
Total Suspended Solids	<5	<5	NA	NA	NA	NA	NA	NA
Nitrite Nitrogen	0.021	0.022	NA	NA	NA	NA	NA	NA
Nitrate Nitrogen	<0.02	<0.02	NA	NA	NA	NA	NA	NA
Ammonia Nitrogen	0.38	0.41	NA	NA	NA	NA	NA	NA
Total Kjeldahl Nitrogen	0.64	0.73	NA	NA	NA	NA	NA	NA

Notes:
1. NA = Not Analyzed

Table 19
VOC Removal Rates - SVE and Air Stripper Systems
Wayne Reclamation and Recycling
Columbia City, Indiana

Date/Constituent	SE Area SVE System (1)			AST Area - SVE Branch Line G (2)			AST Area - SVE Branch Line H (3)			Air Stripper (4)				Sum of VOCs
	Air Flow Rate (scfm)	Conc. (ppb)	Removal Rate (lbs/day)	Air Flow Rate (scfm)	Conc. (ppb)	Removal Rate (lbs/day)	Air Flow Rate (scfm)	Conc. (ppb)	Removal Rate (lbs/day)	Groundwater Flow Rate (gpm)	Inf. - Eff. Conc. (ug/l)	Removal Rate (lbs/day)		Removed (lbs/day)
Oct/Nov 2001 - TCE	1600	410	0.32	225	150	0.02	225	0	0.00	90	241	0.26		0.59
Oct/Nov 2001 - 1,2-DCE	1600	1500	0.94	225	130	0.01	225	0	0.00	90	1447	1.56		2.52
Oct/Nov 2001 - VC	1600	0	0.00	225	3	0.00	225	0	0.00	90	121	0.13		0.13
Total			1.26			0.03			0.00			1.96	**Total**	**3.24**
April 2001 - TCE	1600	140	0.11	105	57	0.00	120	48	0.00	65	190	0.15		0.26
April 2001 - 1,2-DCE	1600	150	0.09	105	21	0.00	120	70	0.00	65	1230	0.96		1.06
April 2001 - VC	1600	0	0.00	105	0	0.00	120	0	0.00	65	146	0.11		0.11
Total			0.20			0.00			0.01			1.22	**Total**	**1.44**
October 2000 - TCE	1500	750	0.54	187	710	0.06	213	78	0.01	55	120	0.08		0.69
October 2000 - 1,2-DCE	1500	1300	0.77	187	300	0.02	213	190	0.02	55	1580	1.04		1.85
October 2000 - VC	1500	0	0.00	187	0	0.00	213	0	0.00	55	170	0.11		0.11
Total			1.31			0.09			0.02			1.24	**Total**	**2.65**
April 2000 - TCE	1500	710	0.51	187	590	0.05	213	50	0.01	51	250	0.15		0.73
April 2000 - 1,2-DCE	1500	1400	0.82	187	330	0.02	213	150	0.01	51	1450	0.89		1.75
April 2000 - VC	1500	0	0.00	187	0	0.00	213	0	0.00	51	170	0.10		0.10
Total			1.34			0.08			0.02			1.15	**Total**	**2.58**
Nov/Dec 1999 - TCE	2590	540	0.68	187	9	0.00	213	23	0.00	47	120	0.07		0.75
Nov/Dec 1999 - 1,2-DCE	2590	1300	1.32	187	24	0.00	213	89	0.01	47	888	0.50		1.83
Nov/Dec 1999 - VC	2590	29	0.02	187	4	0.00	213	0	0.00	47	120	0.07		0.09
Total			2.01			0.00			0.01			0.64	**Total**	**2.66**
April 1999 - TCE	2730	94	0.12	98	8	0.00	112	21	0.00	71	254	0.22		0.34
April 1999 - 1,2-DCE	2730	210	0.23	98	21	0.00	112	47	0.00	71	1560	1.33		1.56
April 1999 - VC	2730	15	0.01	98	2	0.00	112	2	0.00	71	210	0.18		0.19
Total			0.36			0.00			0.00			1.73	**Total**	**2.09**
October 1998 - TCE	2575	2900	3.60	140	48	0.00	160	300	0.02	56	83	0.06		3.69
October 1998 - 1,2-DCE	2575	3500	3.54	140	50	0.00	160	250	0.02	56	254	0.17		3.73
October 1998 - VC	2575	0	0.00	140	0	0.00	160	0	0.00	56	110	0.07		0.07
Total			7.14			0.01			0.04			0.30	**Total**	**7.49**
April 1998 - TCE	1350	540	0.35	140	57	0.00	160	100	0.01	30	140	0.05		0.41
April 1998 - 1,2-DCE	1350	1000	0.53	140	110	0.01	160	200	0.01	30	1190	0.43		0.98
April 1998 - VC	1350	0	0.00	140	7	0.00	160	0	0.00	30	240	0.09		0.09
Total			0.88			0.01			0.02			0.57	**Total**	**1.48**

Notes:
(1) VOC removal rate based on air flow rate and VOC concentrations measured in combined SE Area SVE line.
(2) VOC removal rate based on air flow rate and VOC concentrations measured in AST Area Branch Line G.
(3) VOC removal rate based on air flow rate and VOC concentrations measured in AST Area Branch Line H.
(4) VOC removal rate based on groundwater flow rate and difference between groundwater influent and effluent concentrations.

Table 20
Recovery Well VOC Mass Balance
Wayne Reclamation and Recycling
Columbia City, Indiana

Item (1)	AST Area					SE Area					Predicted Influent Conc. (2)	Actual Influent Conc. 11/18/2001	% Error Predicted vs. Actual	95% UCL Influent Conc. (3)
	RW1	RW2	RW3	RW4	RW5	RW6	RW7	RW8	RW9	RW10				
Flow Rate (gpm)	1.7	1.1	10.2	11.2	5.7	10.4	9.5	9.3	6.4	6.8	72.3	72.9	-1%	
					11/2/01 Data *(4)*									
TCE (ug/l)	2.4	1.2	99.1	258	348		101	5,250	585	308	851	226	276%	238
cis 1,2-DCE (ug/l)	119	45	349	1,580	5,310	43	653	18,500	3,880	11,000	4,566	1,470	211%	1,795
VC (ug/l)	54.8	5.3	30.4	142	939	112	174	802	306	548	322	133	142%	183
					4/21/98 Data for RW-4, RW-5, RW-8 (4)									
TCE (ug/l)	2.4	1.2	99.1		130		101	270	585	308	153	226	-32%	238
cis 1,2-DCE (ug/l)	119	45	349	180	4,000	43	653	5,500	3,880	11,000	2,573	1,470	75%	1,795
VC (ug/l)	54.8	5.3	30.4		1,100	112	174		306	548	210	133	58%	183

Notes:

(1) TCE = trichloroethene; cis 1,2 DCE = cis 1,2-dichloroethene; VC = vinyl chloride

(2) Predicted influent concentrations calculated from mass balance, *i.e.*, (individual recovery well flow rates) times (individual recovery well concentrations) divided by (sum of individual recovery well flow rates).

(3) The 95% Upper Confidence Limit of treatment system influent data for the period July 2000 through January 2002.

(4) Blank entries indicate that constituent was not detected.

FIGURES

NOTES

1. BASE MAP DEVELOPED FROM AERIAL SURVEY PERFORMED BY ABRAMS AERIAL CORPORATION, LANSING, MICHIGAN. DRAWING NO. 24537, DATED 05-28-92 AND SITE SURVEY CONDUCTED BY AYRES, LEWIS, MORRIS, AND MAY INC., ANN ARBOR, MICHIGAN, SEPTEMBER 1992.
2. TOPOGRAPHIC CONTOUR INTERVAL IS 1 FOOT.
3. ELEVATIONS BASED ON COLUMBIA CITY BENCHMARK #24-CASQ-14. REFER TO THE COLUMBIA CITY RECORDS FOR LOCATION AND BENCHMARK ELEVATION.
4. FOR ABBREVIATIONS, GENERAL NOTES, AND LEGEND, SEE SHT C1.
5. REFER TO DRAWING SB1 FOR EXISTING SITE FEATURES AND SOIL BORINGS.
6. SEE SHT C18 FOR GW EXTRACTION WELL SCHEDULE.
7. REFER TO SHEETS C5 FOR P & ID FLOW DIAGRAM.
8. RECORD OF CONSTRUCTION PIPING LAYOUT IS BASED ON FIELD MEASUREMENTS AND OBSERVATIONS. PIPING LAYOUT WAS NOT SURVEYED.

PIPING LEGEND

GWU SINGLE WALL PIPING

GWU DOUBLE WALL PIPING

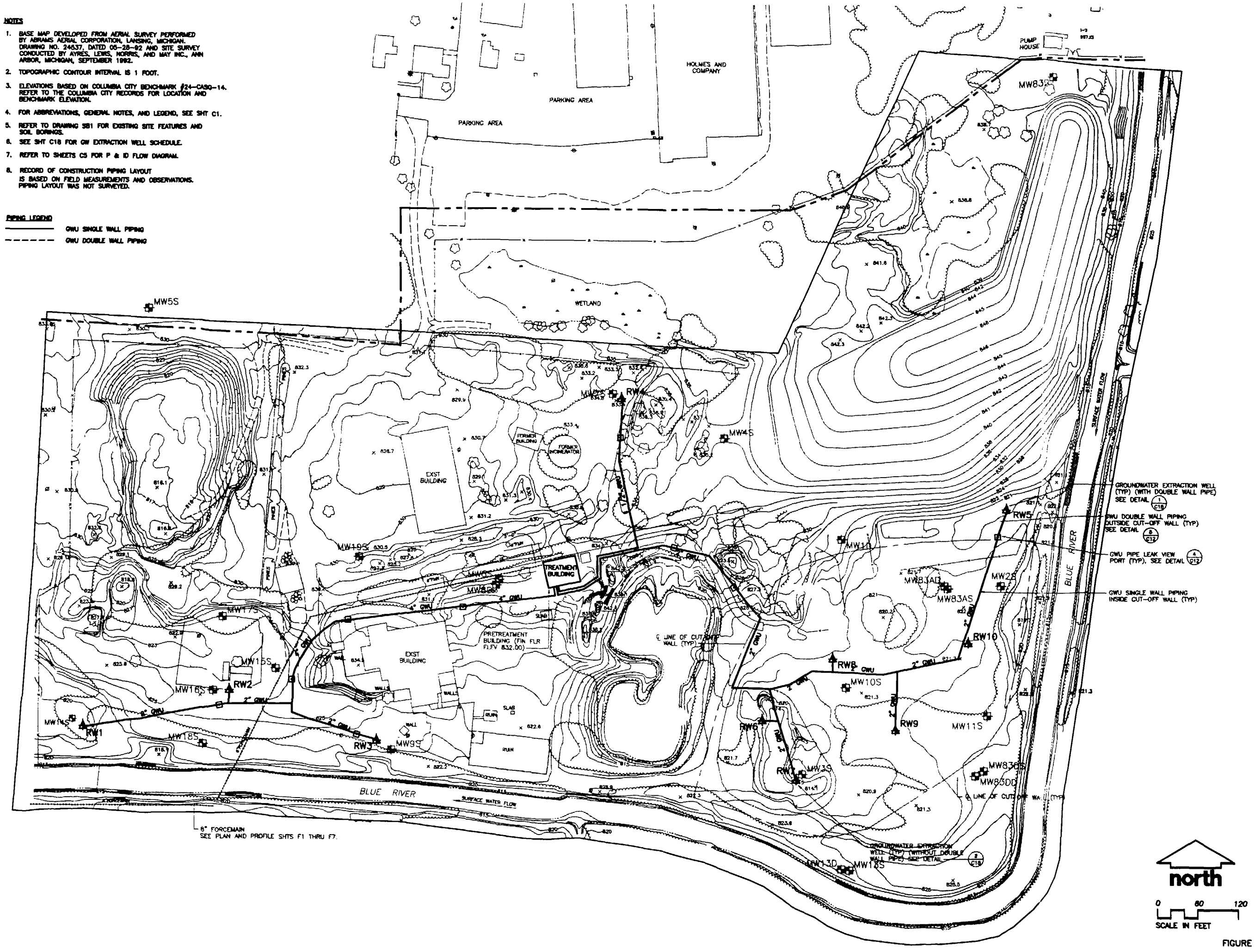

FIGURE 1

Issued	Revisions	Date	By	Approved
1	ISSUED FOR INTERIMEDIATE DESIGN	5/27/93		
2	ISSUED FOR PRE-FINAL DESIGN	9/10/93		
3	ISSUED FOR 100% DESIGN	11/10/93		
4	OWNER'S REVIEW	11/18/93		
5	ISSUED FOR 100% DESIGN	3/18/94		
6	ISSUED FOR BIDS	9/06/95		
7	RECORD OF CONSTRUCTION			

Drawn By EBM

Developed By CSY,MJB,BTM

Approved By

Date

References

Comments

SITE PLAN - GROUNDWATER EXTRACTION

RECORDS OF CONSTRUCTION
WAYNE RECLAMATION AND RECYCLE INC.
COLUMBIA CITY, INDIANA

Printed

Sheet Number

Drawing Number
70210013
C9

MWH

NOTES

1. BASE MAP DEVELOPED FROM AERIAL SURVEY PERFORMED BY ABRAMS AERIAL CORPORATION, LANSING, MICHIGAN. DRAWING NO. 24537, DATED 05-28-92 AND SITE SURVEY CONDUCTED BY AYRES, LEWIS, NORRIS, AND MAY INC., ANN ARBOR, MICHIGAN, SEPTEMBER 1992.
2. TOPOGRAPHIC CONTOUR INTERVAL IS 1 FOOT.
3. ELEVATIONS BASED ON COLUMBIA CITY BENCHMARK #24-CASG-14. REFER TO THE COLUMBIA CITY RECORDS FOR LOCATION AND BENCHMARK ELEVATION.
4. FOR ABBREVIATIONS, GENERAL NOTES, AND LEGEND, SEE SHT C1.
5. REFER TO DRAWING SB1 FOR EXISTING SITE FEATURES AND SOIL BORINGS.
6. SEE SHT C19 FOR SOIL VAPOR EXTRACTION WELL SCHEDULE.
7. REFER TO SHEETS C6 FOR P & ID FLOW DIAGRAM.
8. RECORD OF CONSTRUCTION PIPING LAYOUT IS BASED ON FIELD MEASUREMENTS AND OBSERVATIONS. PIPING LAYOUT WAS NOT SURVEYED.

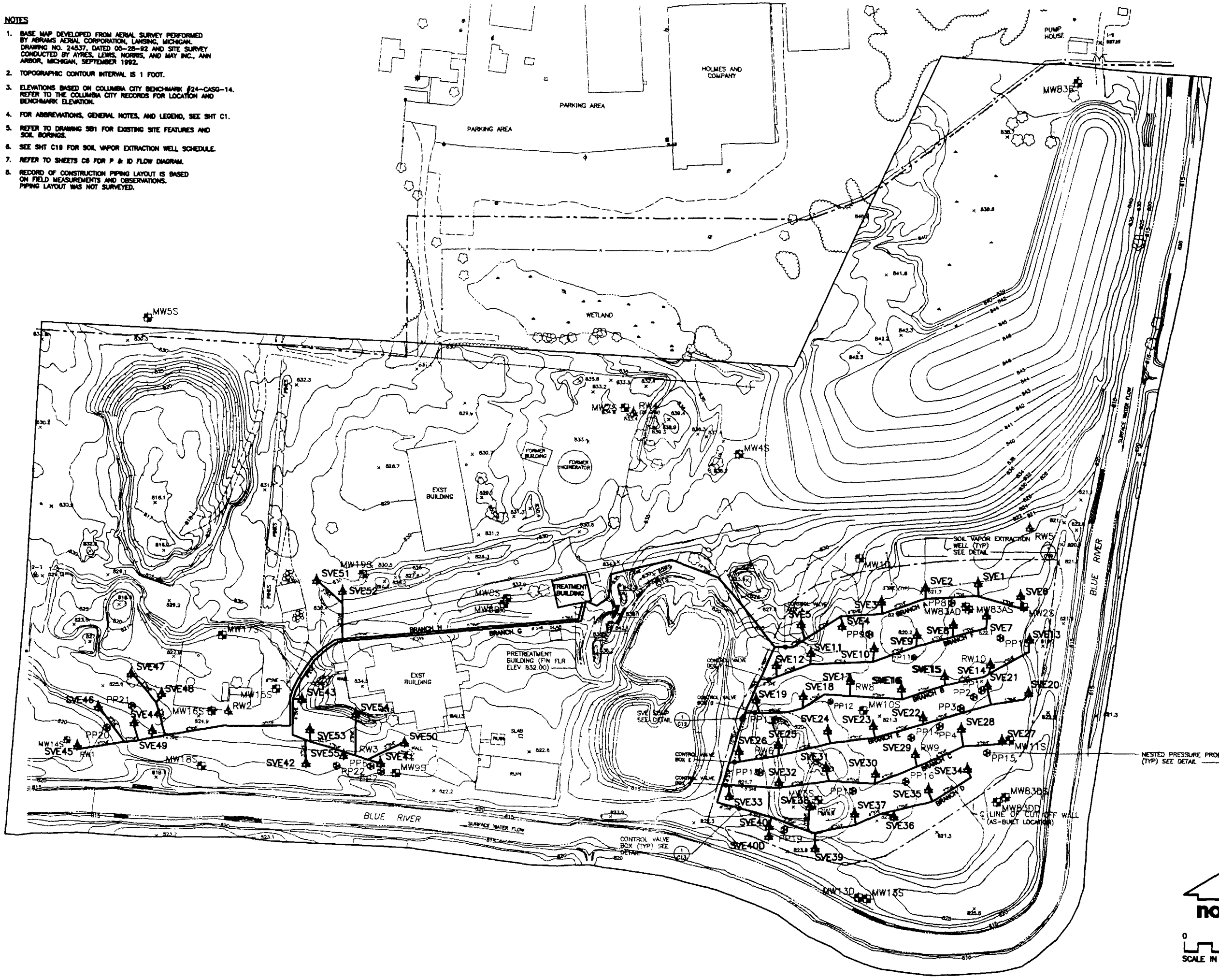

FIGURE 2

Revisions	Issuance/Revisions	Date	By	Approval
1.	ISSUED FOR INTERMEDIATE DESIGN	5/27/93		
2.	ISSUED FOR PRE-FINAL DESIGN	9/10/93		
3.	ISSUED FOR 100% DESIGN OWNER'S REVIEW	11/10/93		
4.	ISSUED FOR 100% DESIGN	3/18/94		
5.	ISSUED FOR BIDS	6/04/95		
6.	RECORD OF CONSTRUCTION			

Developed By CSY,MJB,BTM
Drawn By EBM
Approved By
Date
Reference
Consultants

SITE PLAN - SOIL VAPOR EXTRACTION

RECORDS OF CONSTRUCTION
WAYNE RECLAMATION AND RECYCLE INC.
COLUMBIA CITY, INDIANA

Printed
Sheet Number
Drawing Number 70210D14
C10

MWH

NOTES

1. BASE MAP DEVELOPED FROM AERIAL SURVEY PERFORMED BY ABRAMS AERIAL CORPORATION, LANSING, MICHIGAN. DRAWING NO. 24537, DATED 05-28-92 AND SITE SURVEY CONDUCTED BY AYRES, LEWIS, NORRIS, AND MAY INC., ANN ARBOR, MICHIGAN, SEPTEMBER 1992.
2. TOPOGRAPHIC CONTOUR INTERVAL IS 1 FOOT.
3. ELEVATIONS BASED ON COLUMBIA CITY BENCHMARK #24-CASG-14. REFER TO THE COLUMBIA CITY RECORDS FOR LOCATION AND BENCHMARK ELEVATION.
4. FOR ABBREVIATIONS, GENERAL NOTES, AND LEGEND, SEE SHT C1.
5. REFER TO DRAWING SB1 FOR EXISTING SITE FEATURES AND SOIL BORINGS.
6. SEE SHT C19 FOR NESTED AIR SPARGING WELL SCHEDULE.
7. REFER TO SHEETS C6 FOR P & ID FLOW DIAGRAM.
8. RECORD OF CONSTRUCTION PIPING LAYOUT IS BASED ON FIELD MEASUREMENT AND OBSERVATIONS. PIPING LAYOUT WAS NOT SURVEYED.

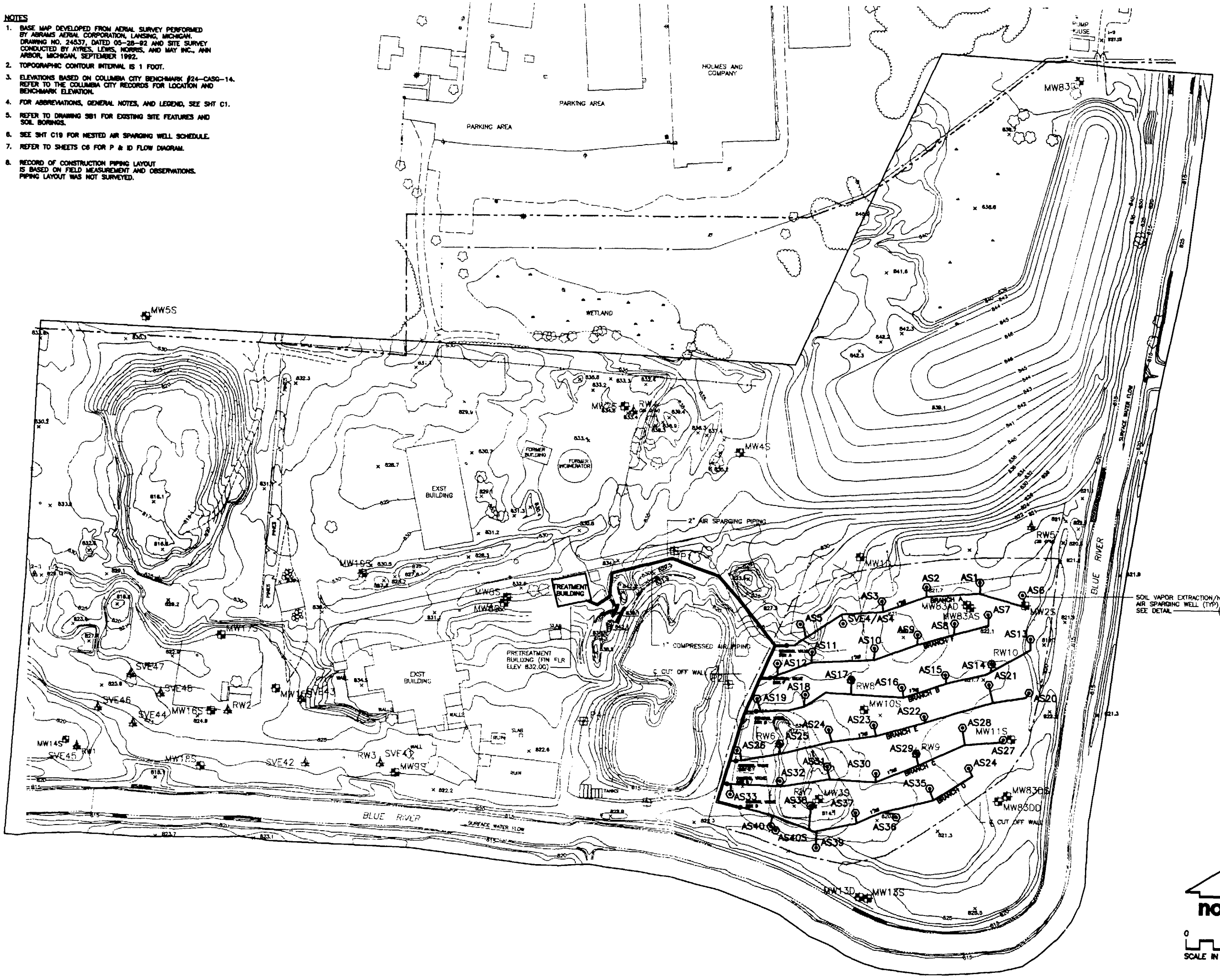

FIGURE 3

Reference	Issuance/Revision	Date	By	Approved
1.	ISSUED FOR INTERMEDIATE DESIGN	5/27/93		
2.	ISSUED FOR PRE-FINAL DESIGN	9/10/93		
3.	ISSUED FOR 100% DESIGN	11/10/93		
4.	OWNER'S REVIEW	11/19/93		
5.	ISSUED FOR 100% DESIGN	3/16/94		
6.	ISSUED FOR BIDS	8/04/95		
	RECORD OF CONSTRUCTION			

Developed By CSY,MJB,BTM
Drawn By EBM
Approved By
Date
Reference
Consultants

SITE PLAN – AIR SPARGING AND PNEUMATIC CONTROL PIPING

RECORDS OF CONSTRUCTION
WAYNE RECLAMATION AND RECYCLE INC.
COLUMBIA CITY, INDIANA

Printed
Sheet Number
Drawing Number 70210015
C11

MWH

NOTES

1. BASE MAP DEVELOPED FROM AERIAL SURVEY PERFORMED BY ABRAMS AERIAL CORPORATION, LANSING, MICHIGAN. DRAWING NO. 24537, DATED 05-28-92 AND SITE SURVEY CONDUCTED BY AYRES, LEWIS, NORRIS, AND MAY INC., ANN ARBOR, MICHIGAN, SEPTEMBER 1992.
2. TOPOGRAPHIC CONTOUR INTERVAL IS 1 FOOT.
3. ELEVATIONS BASED ON COLUMBIA CITY BENCHMARK #24-CASO-14. REFER TO THE COLUMBIA CITY RECORDS FOR LOCATION AND BENCHMARK ELEVATION.
4. INDICATED CONTOURS BASED ON AVAILABLE MONTHLY WATER ELEVATIONS.
5. WATER ELEVATION FOR MW83AD SHOWN TO INDICATE VERTICAL GRADIENT.

LEGEND

809.00 —— GROUNDWATER CONTOUR (IN FEET) REFERENCED TO MEAN SEA LEVEL (DASHED WHERE INFERRED) CONTOUR INTREVAL = 0.5 FEET

MW8S MONITORING WELL LOCATION AND NUMBER

RW6 RECOVERY WELL LOCATION AND NUMBER

GROUNDWATER FLOW DIRECTION

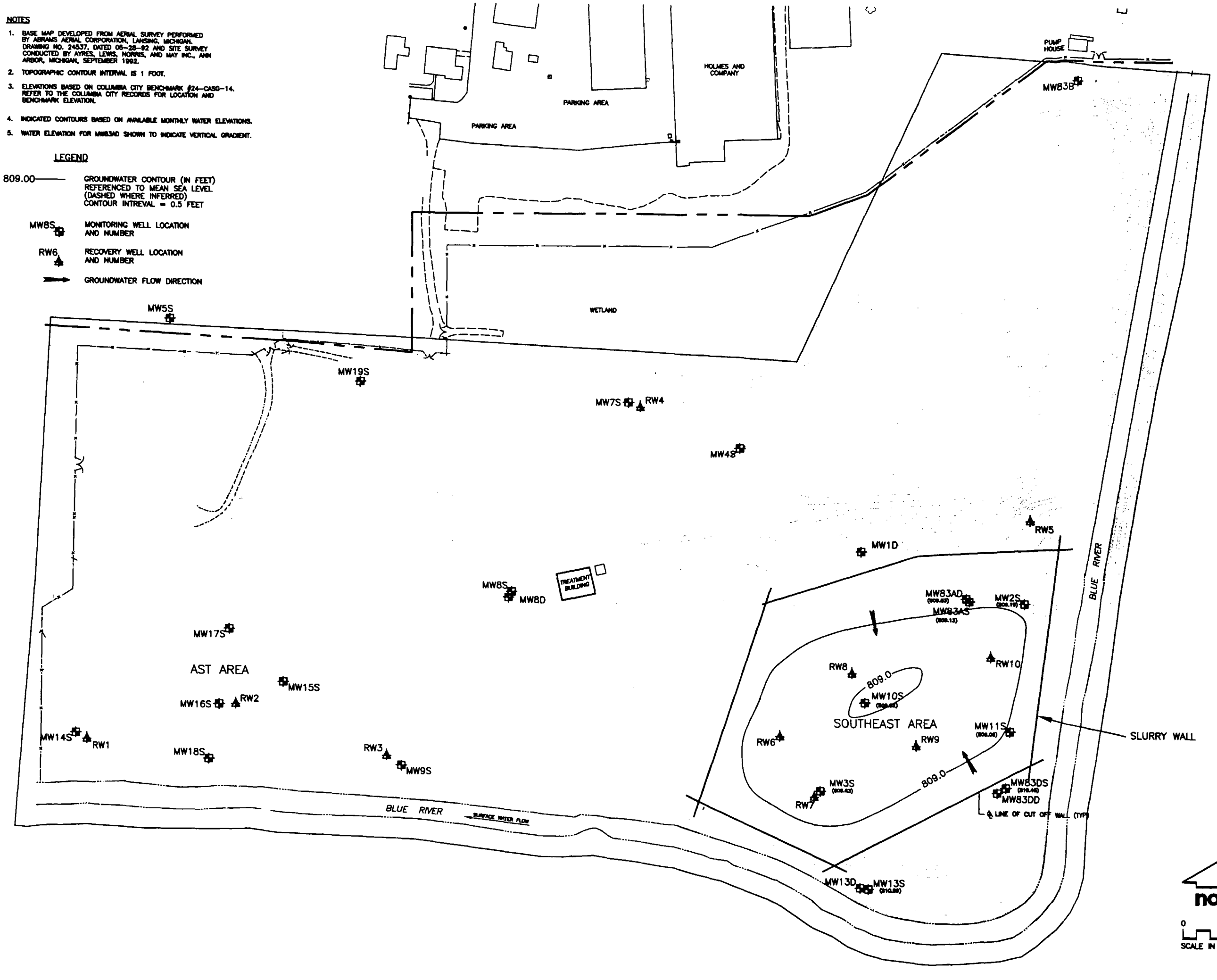

FIGURE 4-1

GROUNDWATER CONTOURS - JULY 2001

RECORDS OF CONSTRUCTION
WAYNE RECLAMATION AND RECYCLE INC.
COLUMBIA CITY, INDIANA

Drawing Number 70210D13 C9

MWH

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NOTES

1. BASE MAP DEVELOPED FROM AERIAL SURVEY PERFORMED BY ABRAMS AERIAL CORPORATION, LANSING, MICHIGAN. DRAWING NO. 24537, DATED 05-28-92 AND SITE SURVEY CONDUCTED BY AYRES, LEWIS, NORRIS, AND MAY INC., ANN ARBOR, MICHIGAN, SEPTEMBER 1992.
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3. ELEVATIONS BASED ON COLUMBIA CITY BENCHMARK #24-CASG-14. REFER TO THE COLUMBIA CITY RECORDS FOR LOCATION AND BENCHMARK ELEVATION.
4. INDICATED CONTOURS BASED ON AVAILABLE MONTHLY WATER ELEVATIONS.
5. WATER ELEVATION FOR MW83AD SHOWN TO INDICATE VERTICAL GRADIENT.

LEGEND

809.00 —— GROUNDWATER CONTOUR (IN FEET) REFERENCED TO MEAN SEA LEVEL (DASHED WHERE INFERRED) CONTOUR INTREVAL = 0.5 FEET

MW8S MONITORING WELL LOCATION AND NUMBER

RW6 RECOVERY WELL LOCATION AND NUMBER

GROUNDWATER FLOW DIRECTION

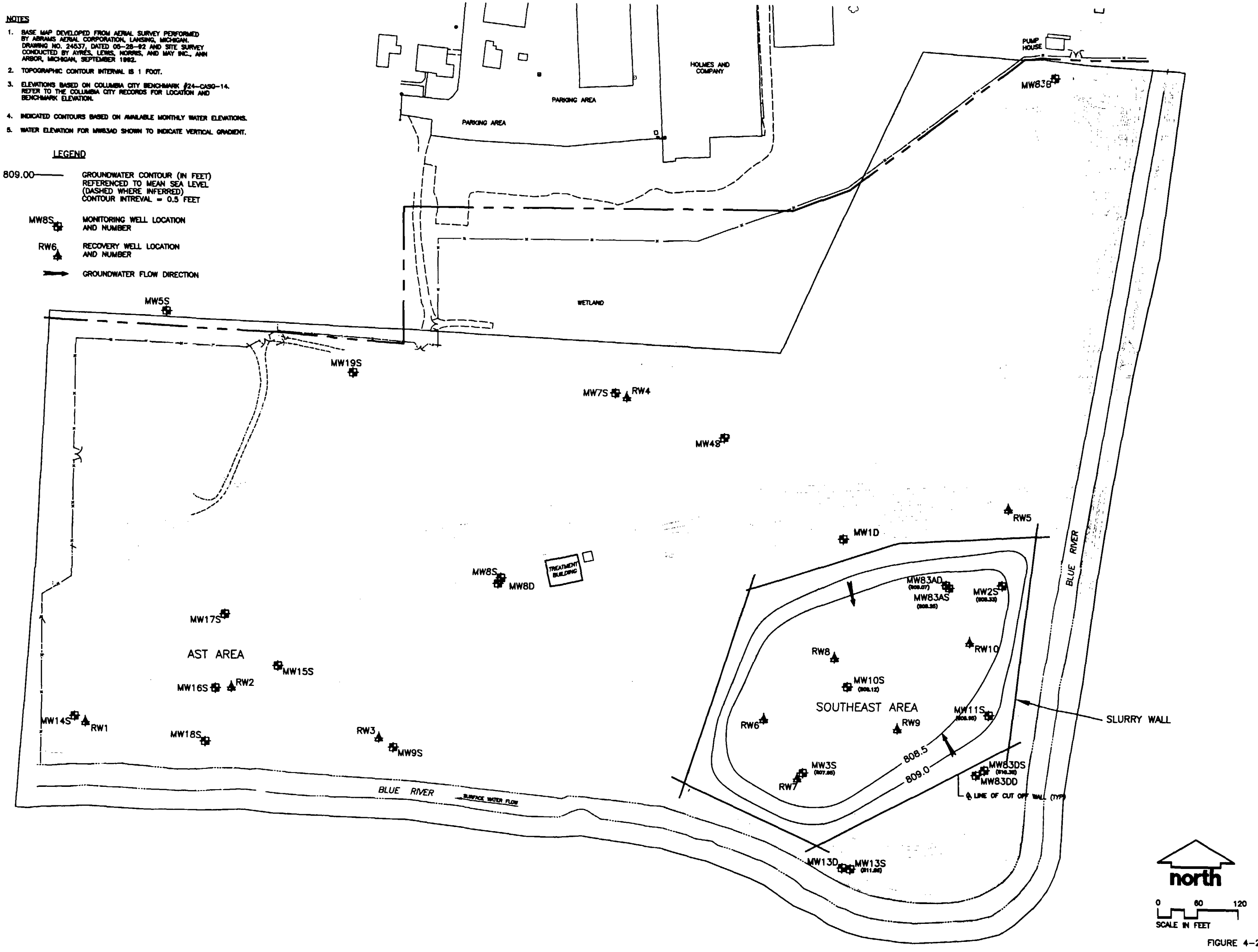

FIGURE 4-2

GROUNDWATER CONTOURS - AUGUST 2001

RECORDS OF CONSTRUCTION
WAYNE RECLAMATION AND RECYCLE INC.
COLUMBIA CITY, INDIANA

Drawing Number 70210D13 C9

MWH

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NOTES

1. BASE MAP DEVELOPED FROM AERIAL SURVEY PERFORMED BY ABRAMS AERIAL CORPORATION, LANSING, MICHIGAN. DRAWING NO. 24537, DATED 05-28-92 AND SITE SURVEY CONDUCTED BY AYRES, LEWIS, NORRIS, AND MAY INC., ANN ARBOR, MICHIGAN, SEPTEMBER 1992.
2. TOPOGRAPHIC CONTOUR INTERVAL IS 1 FOOT.
3. ELEVATIONS BASED ON COLUMBIA CITY BENCHMARK #24-CASO-14. REFER TO THE COLUMBIA CITY RECORDS FOR LOCATION AND BENCHMARK ELEVATION.
4. INDICATED CONTOURS BASED ON AVAILABLE MONTHLY WATER ELEVATIONS.
5. WATER ELEVATION FOR MW83AD SHOWN TO INDICATE VERTICAL GRADIENT.

LEGEND

809.00 — GROUNDWATER CONTOUR (IN FEET) REFERENCED TO MEAN SEA LEVEL (DASHED WHERE INFERRED) CONTOUR INTREVAL = 0.5 FEET

MW8S — MONITORING WELL LOCATION AND NUMBER

RW6 — RECOVERY WELL LOCATION AND NUMBER

GROUNDWATER FLOW DIRECTION

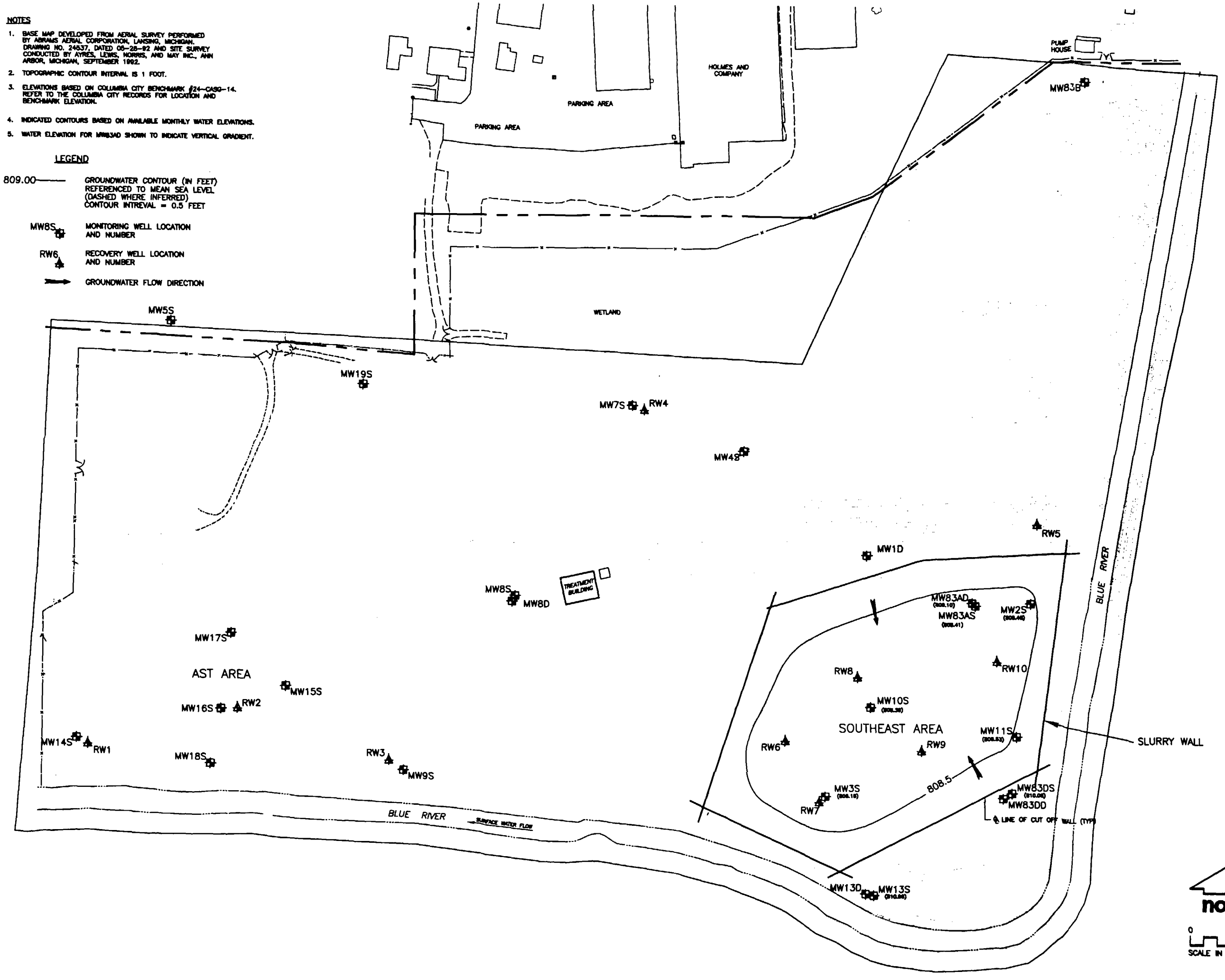

FIGURE 4-3

GROUNDWATER CONTOURS - SEPTEMBER 2001

RECORDS OF CONSTRUCTION
WAYNE RECLAMATION AND RECYCLE INC.
COLUMBIA CITY, INDIANA

Drawing Number 70210013 C9

MWH

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NOTES

1. BASE MAP DEVELOPED FROM AERIAL SURVEY PERFORMED BY ABRAMS AERIAL CORPORATION, LANSING, MICHIGAN. DRAWING NO. 24537, DATED 05-28-92 AND SITE SURVEY CONDUCTED BY AYRES, LEWIS, NORRIS, AND MAY INC., ANN ARBOR, MICHIGAN, SEPTEMBER 1992.
2. TOPOGRAPHIC CONTOUR INTERVAL IS 1 FOOT.
3. ELEVATIONS BASED ON COLUMBIA CITY BENCHMARK #24-CASC-14. REFER TO THE COLUMBIA CITY RECORDS FOR LOCATION AND BENCHMARK ELEVATION.
4. INDICATED CONTOURS BASED ON AVAILABLE MONTHLY WATER ELEVATIONS.
5. WATER ELEVATION FOR MW83AD SHOWN TO INDICATE VERTICAL GRADIENT.

LEGEND

809.00 — GROUNDWATER CONTOUR (IN FEET) REFERENCED TO MEAN SEA LEVEL (DASHED WHERE INFERRED) CONTOUR INTREVAL = 0.5 FEET

MW8S — MONITORING WELL LOCATION AND NUMBER

RW6 — RECOVERY WELL LOCATION AND NUMBER

GROUNDWATER FLOW DIRECTION

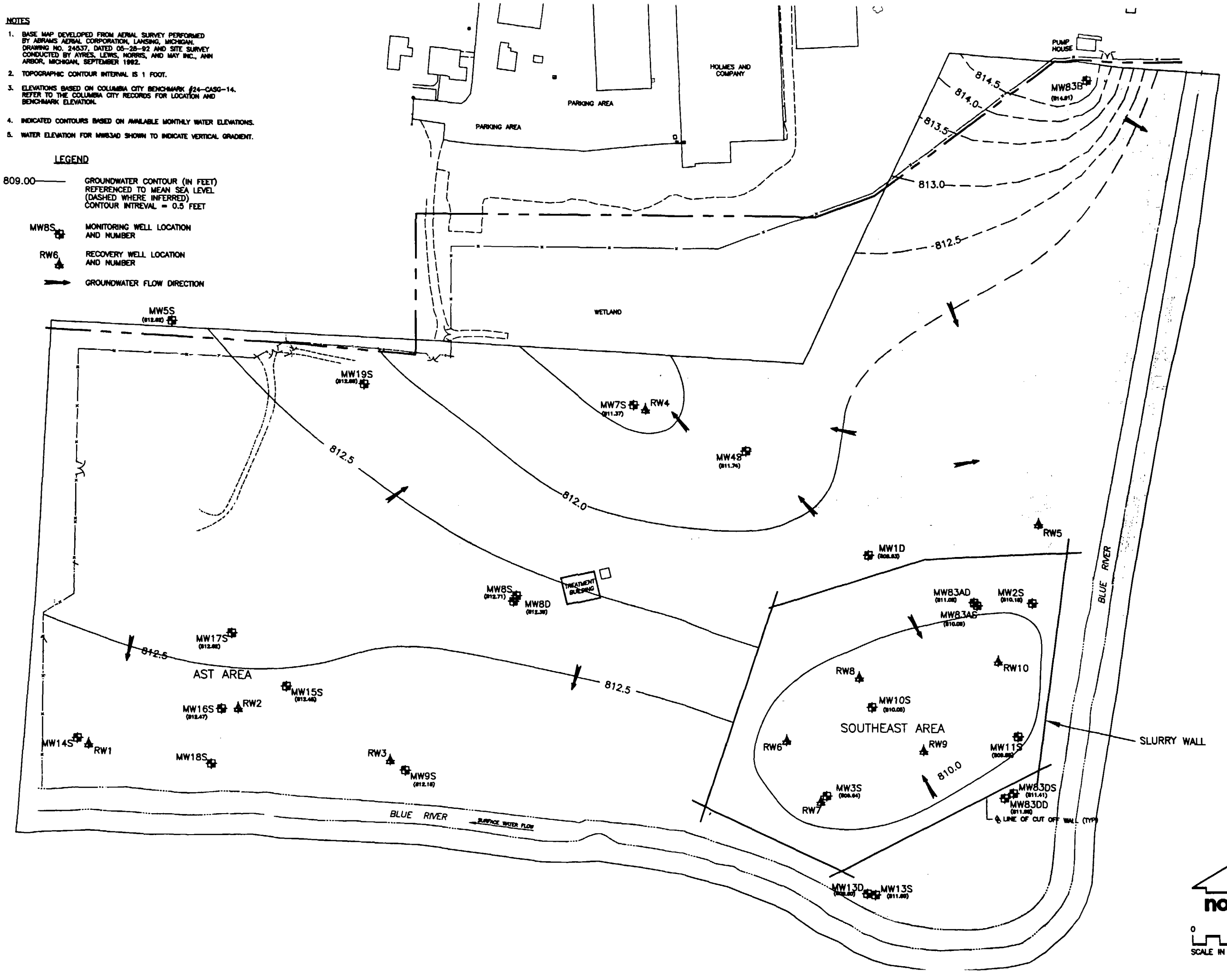

FIGURE 4-4

GROUNDWATER CONTOURS - OCTOBER 2001

RECORDS OF CONSTRUCTION
WAYNE RECLAMATION AND RECYCLE INC.
COLUMBIA CITY, INDIANA

Drawing Number
70210D13
C9

MWH

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NOTES

1. BASE MAP DEVELOPED FROM AERIAL SURVEY PERFORMED BY ABRAMS AERIAL CORPORATION, LANSING, MICHIGAN. DRAWING NO. 24537, DATED 05-28-92 AND SITE SURVEY CONDUCTED BY AYRES, LEWIS, MORRIS, AND MAY INC., ANN ARBOR, MICHIGAN, SEPTEMBER 1992.
2. TOPOGRAPHIC CONTOUR INTERVAL IS 1 FOOT.
3. ELEVATIONS BASED ON COLUMBIA CITY BENCHMARK #24-CASC-14. REFER TO THE COLUMBIA CITY RECORDS FOR LOCATION AND BENCHMARK ELEVATION.
4. INDICATED CONTOURS BASED ON AVAILABLE MONTHLY WATER ELEVATIONS.
5. WATER ELEVATION FOR MW83AD SHOWN TO INDICATE VERTICAL GRADIENT.

LEGEND

809.00 —— GROUNDWATER CONTOUR (IN FEET) REFERENCED TO MEAN SEA LEVEL (DASHED WHERE INFERRED) CONTOUR INTREVAL = 0.5 FEET

MW8S MONITORING WELL LOCATION AND NUMBER

RW6 RECOVERY WELL LOCATION AND NUMBER

GROUNDWATER FLOW DIRECTION

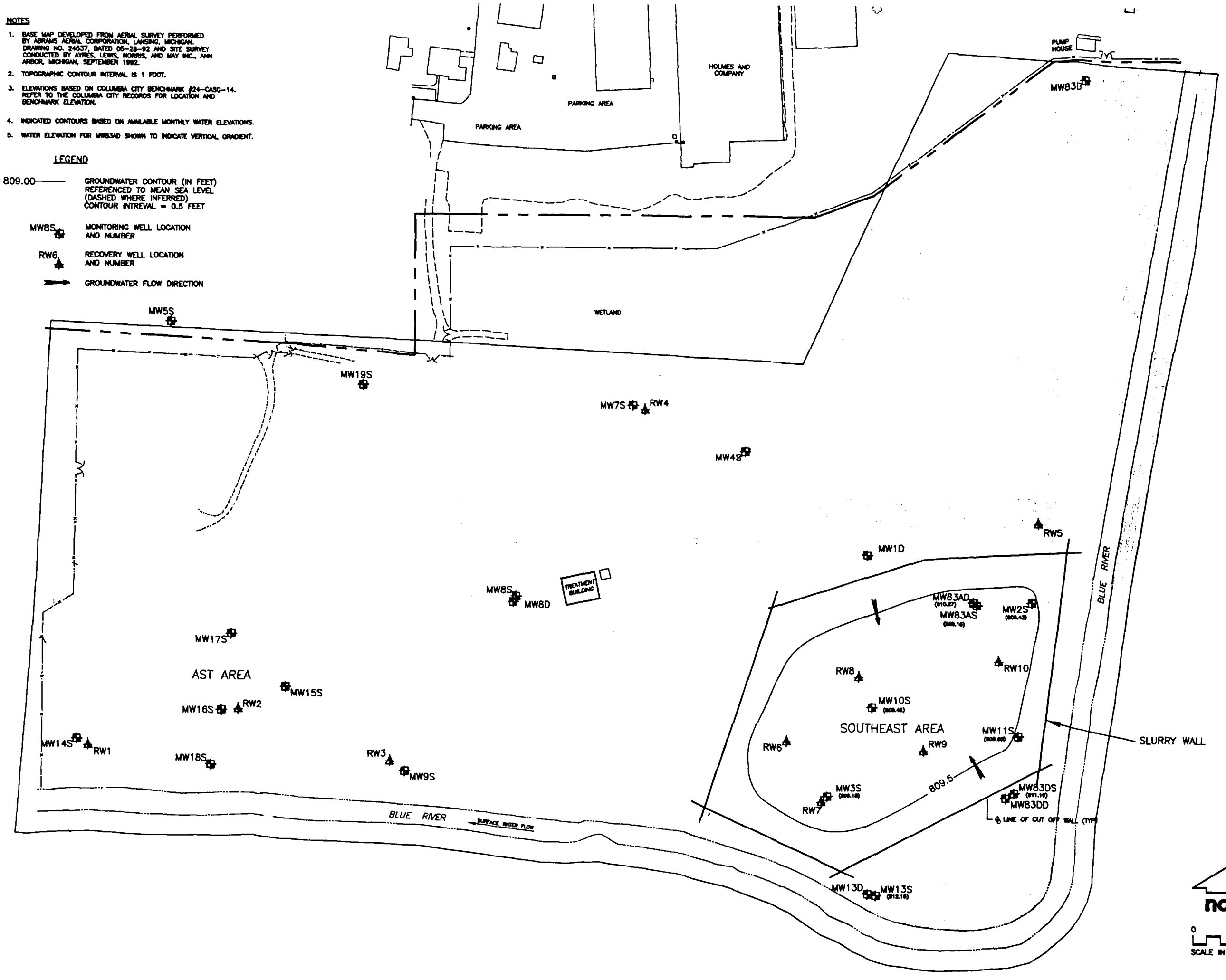

FIGURE 4-5

GROUNDWATER CONTOURS - NOVEMBER 2001

RECORDS OF CONSTRUCTION
WAYNE RECLAMATION AND RECYCLE INC.
COLUMBIA CITY, INDIANA

Drawing Number 70210013 C9

MWH

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NOTES

1. BASE MAP DEVELOPED FROM AERIAL SURVEY PERFORMED BY ABRAMS AERIAL CORPORATION, LANSING, MICHIGAN. DRAWING NO. 24537, DATED 05-28-92 AND SITE SURVEY CONDUCTED BY AYRES, LEWIS, NORRIS, AND MAY INC., ANN ARBOR, MICHIGAN, SEPTEMBER 1992.
2. TOPOGRAPHIC CONTOUR INTERVAL IS 1 FOOT.
3. ELEVATIONS BASED ON COLUMBIA CITY BENCHMARK #24-CASC-14. REFER TO THE COLUMBIA CITY RECORDS FOR LOCATION AND BENCHMARK ELEVATION.
4. INDICATED CONTOURS BASED ON AVAILABLE MONTHLY WATER ELEVATIONS.
5. WATER ELEVATION FOR MW83AD SHOWN TO INDICATE VERTICAL GRADIENT.

LEGEND

809.00 — GROUNDWATER CONTOUR (IN FEET) REFERENCED TO MEAN SEA LEVEL (DASHED WHERE INFERRED) CONTOUR INTREVAL = 0.5 FEET

MW8S — MONITORING WELL LOCATION AND NUMBER

RW6 — RECOVERY WELL LOCATION AND NUMBER

GROUNDWATER FLOW DIRECTION

COMPOUND ABBREVIATION

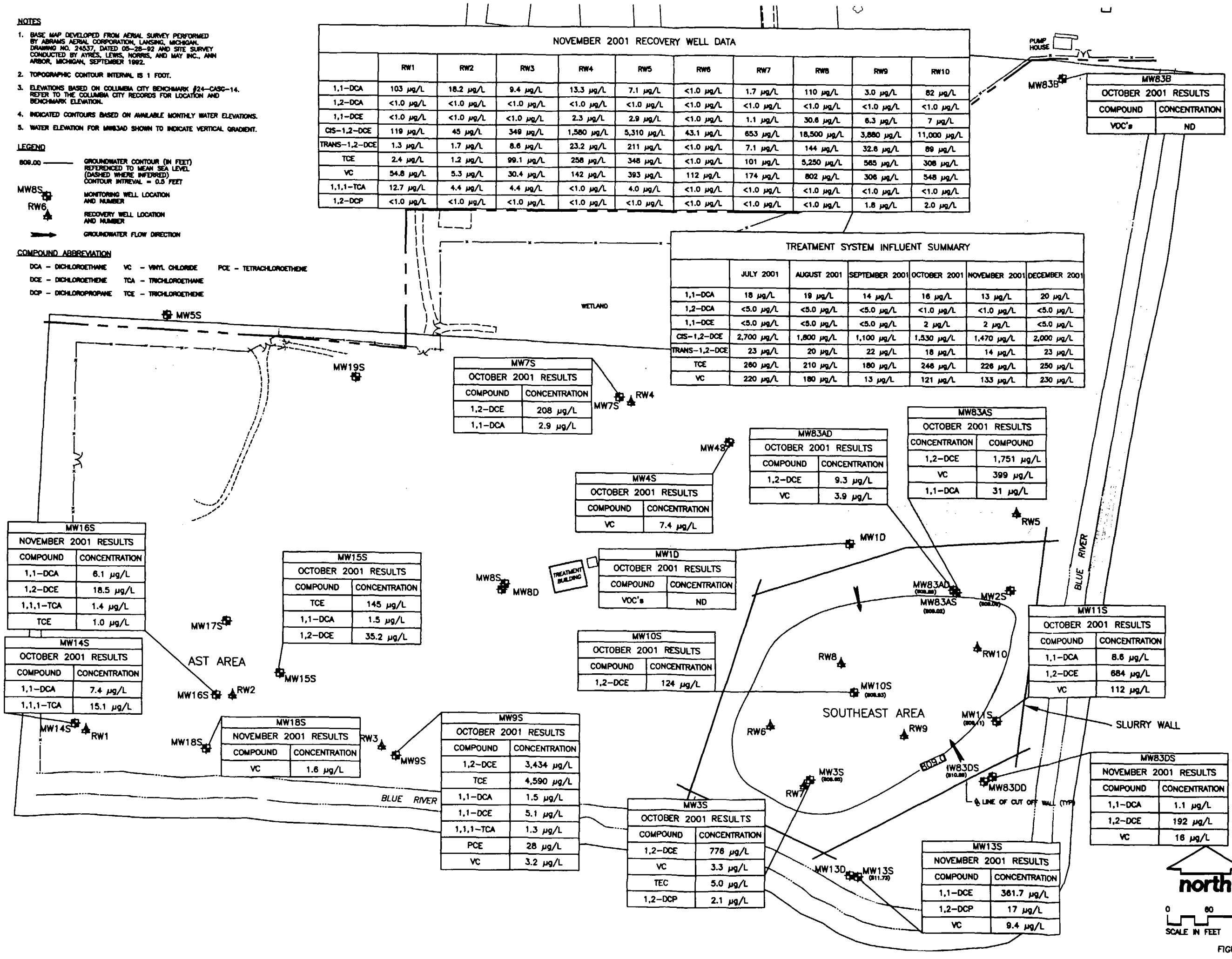
DCA - DICHLOROETHANE
DCE - DICHLOROETHENE
DCP - DICHLOROPROPANE
VC - VINYL CHLORIDE
TCA - TRICHLOROETHANE
TCE - TRICHLOROETHENE
PCE - TETRACHLOROETHENE

NOVEMBER 2001 RECOVERY WELL DATA

	RW1	RW2	RW3	RW4	RW5	RW6	RW7	RW8	RW9	RW10
1,1-DCA	103 µg/L	18.2 µg/L	9.4 µg/L	13.3 µg/L	7.1 µg/L	<1.0 µg/L	1.7 µg/L	110 µg/L	3.0 µg/L	82 µg/L
1,2-DCA	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L
1,1-DCE	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	2.3 µg/L	2.9 µg/L	<1.0 µg/L	1.1 µg/L	30.6 µg/L	6.3 µg/L	7 µg/L
CIS-1,2-DCE	119 µg/L	45 µg/L	349 µg/L	1,580 µg/L	5,310 µg/L	43.1 µg/L	653 µg/L	18,500 µg/L	3,880 µg/L	11,000 µg/L
TRANS-1,2-DCE	1.3 µg/L	1.7 µg/L	8.6 µg/L	23.2 µg/L	211 µg/L	<1.0 µg/L	7.1 µg/L	144 µg/L	32.6 µg/L	89 µg/L
TCE	2.4 µg/L	1.2 µg/L	99.1 µg/L	258 µg/L	348 µg/L	<1.0 µg/L	101 µg/L	5,250 µg/L	565 µg/L	308 µg/L
VC	54.8 µg/L	5.3 µg/L	30.4 µg/L	142 µg/L	393 µg/L	112 µg/L	174 µg/L	802 µg/L	306 µg/L	548 µg/L
1,1,1-TCA	12.7 µg/L	4.4 µg/L	4.4 µg/L	<1.0 µg/L	4.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L
1,2-DCP	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	1.8 µg/L	2.0 µg/L

TREATMENT SYSTEM INFLUENT SUMMARY

	JULY 2001	AUGUST 2001	SEPTEMBER 2001	OCTOBER 2001	NOVEMBER 2001	DECEMBER 2001
1,1-DCA	18 µg/L	19 µg/L	14 µg/L	16 µg/L	13 µg/L	20 µg/L
1,2-DCA	<5.0 µg/L	<5.0 µg/L	<5.0 µg/L	<1.0 µg/L	<1.0 µg/L	<5.0 µg/L
1,1-DCE	<5.0 µg/L	<5.0 µg/L	<5.0 µg/L	2 µg/L	2 µg/L	<5.0 µg/L
CIS-1,2-DCE	2,700 µg/L	1,800 µg/L	1,100 µg/L	1,530 µg/L	1,470 µg/L	2,000 µg/L
TRANS-1,2-DCE	23 µg/L	20 µg/L	22 µg/L	18 µg/L	14 µg/L	23 µg/L
TCE	260 µg/L	210 µg/L	180 µg/L	246 µg/L	226 µg/L	250 µg/L
VC	220 µg/L	180 µg/L	13 µg/L	121 µg/L	133 µg/L	230 µg/L



MW83B

OCTOBER 2001 RESULTS	
COMPOUND	CONCENTRATION
VOC's	ND

MW7S

OCTOBER 2001 RESULTS	
COMPOUND	CONCENTRATION
1,2-DCE	208 µg/L
1,1-DCA	2.9 µg/L

MW4S

OCTOBER 2001 RESULTS	
COMPOUND	CONCENTRATION
VC	7.4 µg/L

MW83AD

OCTOBER 2001 RESULTS	
COMPOUND	CONCENTRATION
1,2-DCE	9.3 µg/L
VC	3.9 µg/L

MW83AS

OCTOBER 2001 RESULTS	
CONCENTRATION	COMPOUND
1,2-DCE	1,751 µg/L
VC	399 µg/L
1,1-DCA	31 µg/L

MW16S

NOVEMBER 2001 RESULTS	
COMPOUND	CONCENTRATION
1,1-DCA	6.1 µg/L
1,2-DCE	18.5 µg/L
1,1,1-TCA	1.4 µg/L
TCE	1.0 µg/L

MW15S

OCTOBER 2001 RESULTS	
COMPOUND	CONCENTRATION
TCE	145 µg/L
1,1-DCA	1.5 µg/L
1,2-DCE	35.2 µg/L

MW1D

OCTOBER 2001 RESULTS	
COMPOUND	CONCENTRATION
VOC's	ND

MW14S

OCTOBER 2001 RESULTS	
COMPOUND	CONCENTRATION
1,1-DCA	7.4 µg/L
1,1,1-TCA	15.1 µg/L

MW10S

OCTOBER 2001 RESULTS	
COMPOUND	CONCENTRATION
1,2-DCE	124 µg/L

MW11S

OCTOBER 2001 RESULTS	
COMPOUND	CONCENTRATION
1,1-DCA	8.6 µg/L
1,2-DCE	684 µg/L
VC	112 µg/L

MW18S

NOVEMBER 2001 RESULTS	
COMPOUND	CONCENTRATION
VC	1.6 µg/L

MW9S

OCTOBER 2001 RESULTS	
COMPOUND	CONCENTRATION
1,2-DCE	3,434 µg/L
TCE	4,590 µg/L
1,1-DCA	1.5 µg/L
1,1-DCE	5.1 µg/L
1,1,1-TCA	1.3 µg/L
PCE	28 µg/L
VC	3.2 µg/L

MW3S

OCTOBER 2001 RESULTS	
COMPOUND	CONCENTRATION
1,2-DCE	776 µg/L
VC	3.3 µg/L
TEC	5.0 µg/L
1,2-DCP	2.1 µg/L

MW13S

NOVEMBER 2001 RESULTS	
COMPOUND	CONCENTRATION
1,1-DCE	361.7 µg/L
1,2-DCP	17 µg/L
VC	9.4 µg/L

MW83DS

NOVEMBER 2001 RESULTS	
COMPOUND	CONCENTRATION
1,1-DCA	1.1 µg/L
1,2-DCE	192 µg/L
VC	16 µg/L

FIGURE 4-6

GROUNDWATER CONTOURS - DECEMBER 2001

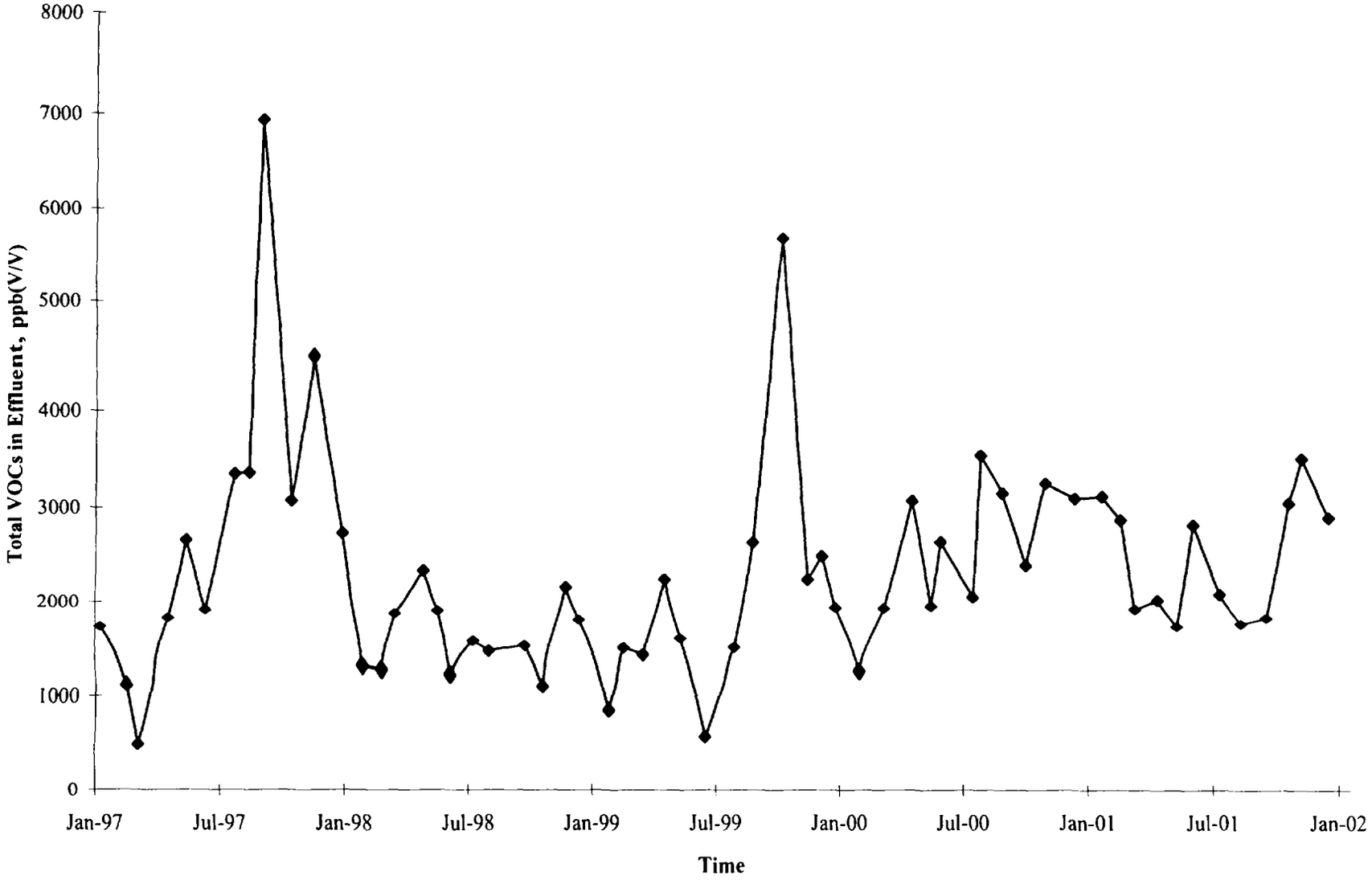
RECORDS OF CONSTRUCTION
WAYNE RECLAMATION AND RECYCLE INC.
COLUMBIA CITY, INDIANA

Drawing Number 70210D13 C9

MWH

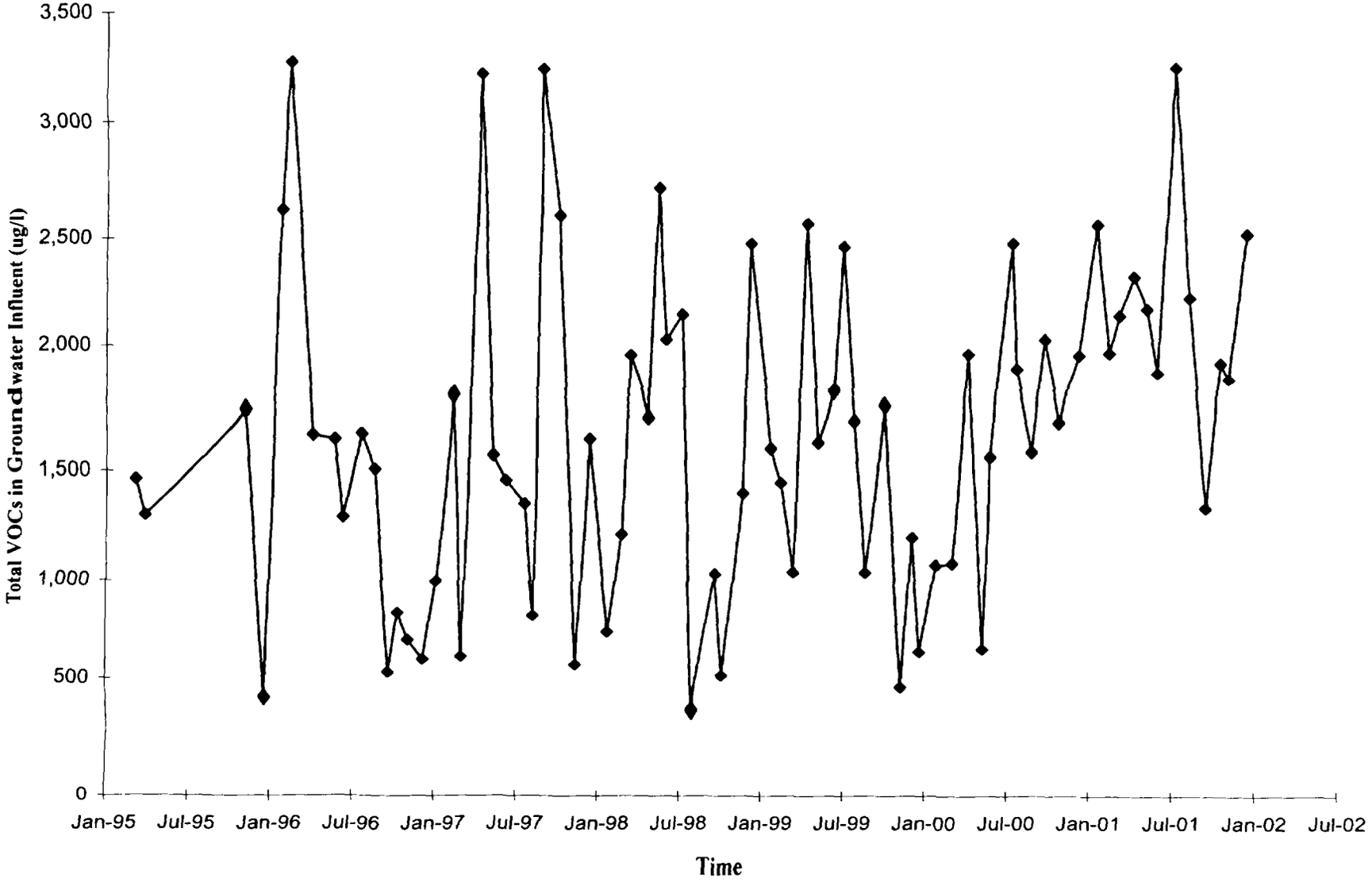
J:\jobs\3868\cadd\prog rpt\prog rpt13\fig 4-6

Figure 5
Summary of Air Treatment System Effluent Data
Wayne Reclamation and Recycling
Columbia City, Indiana



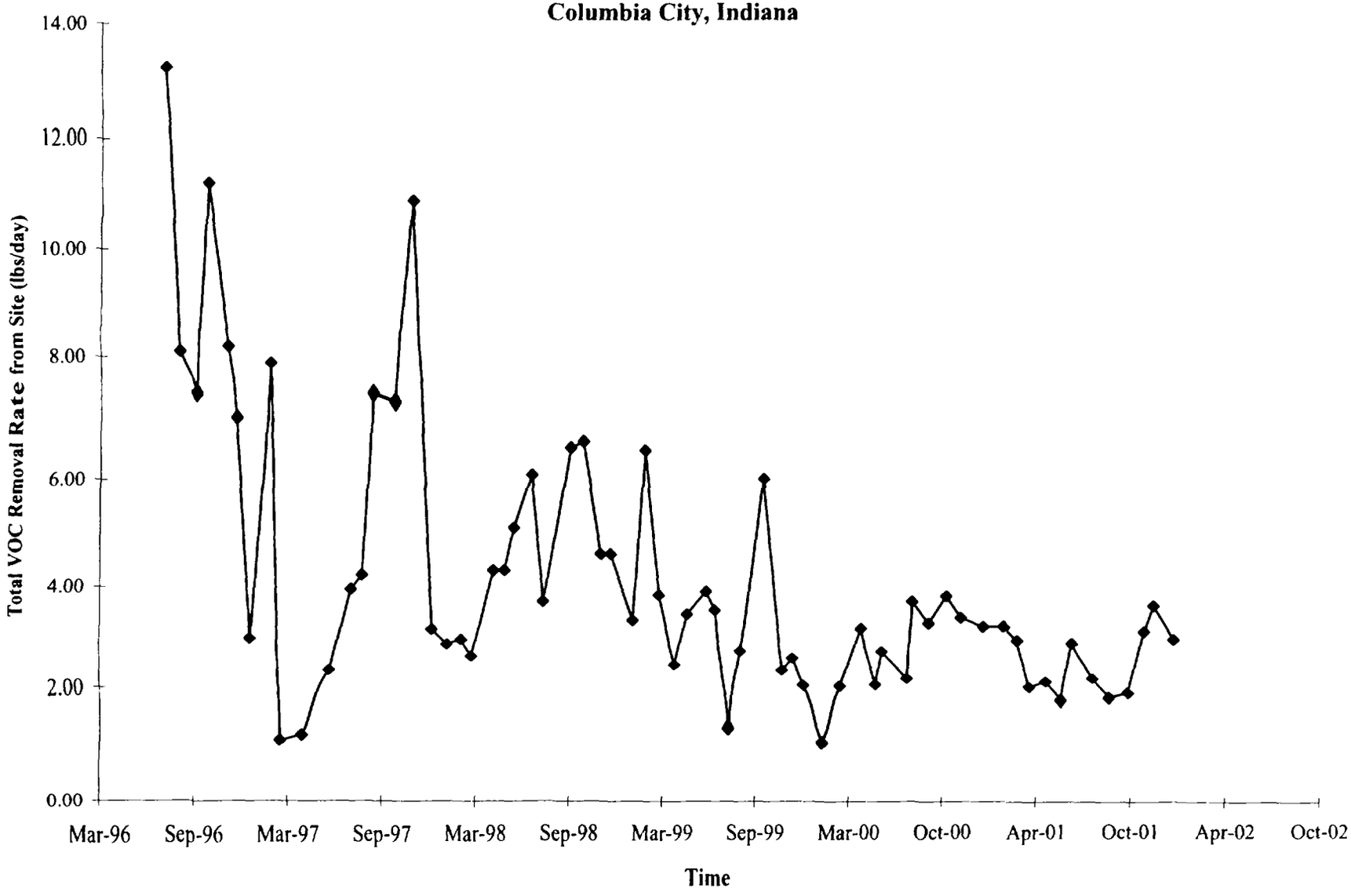
J:\3868\0120\prgrpt13\tables\table14.xls (Figure 5)
3/26/2002

Figure 6
Summary of Groundwater Treatment System Influent Data
Wayne Reclamation and Recycling
Columbia City, Indania



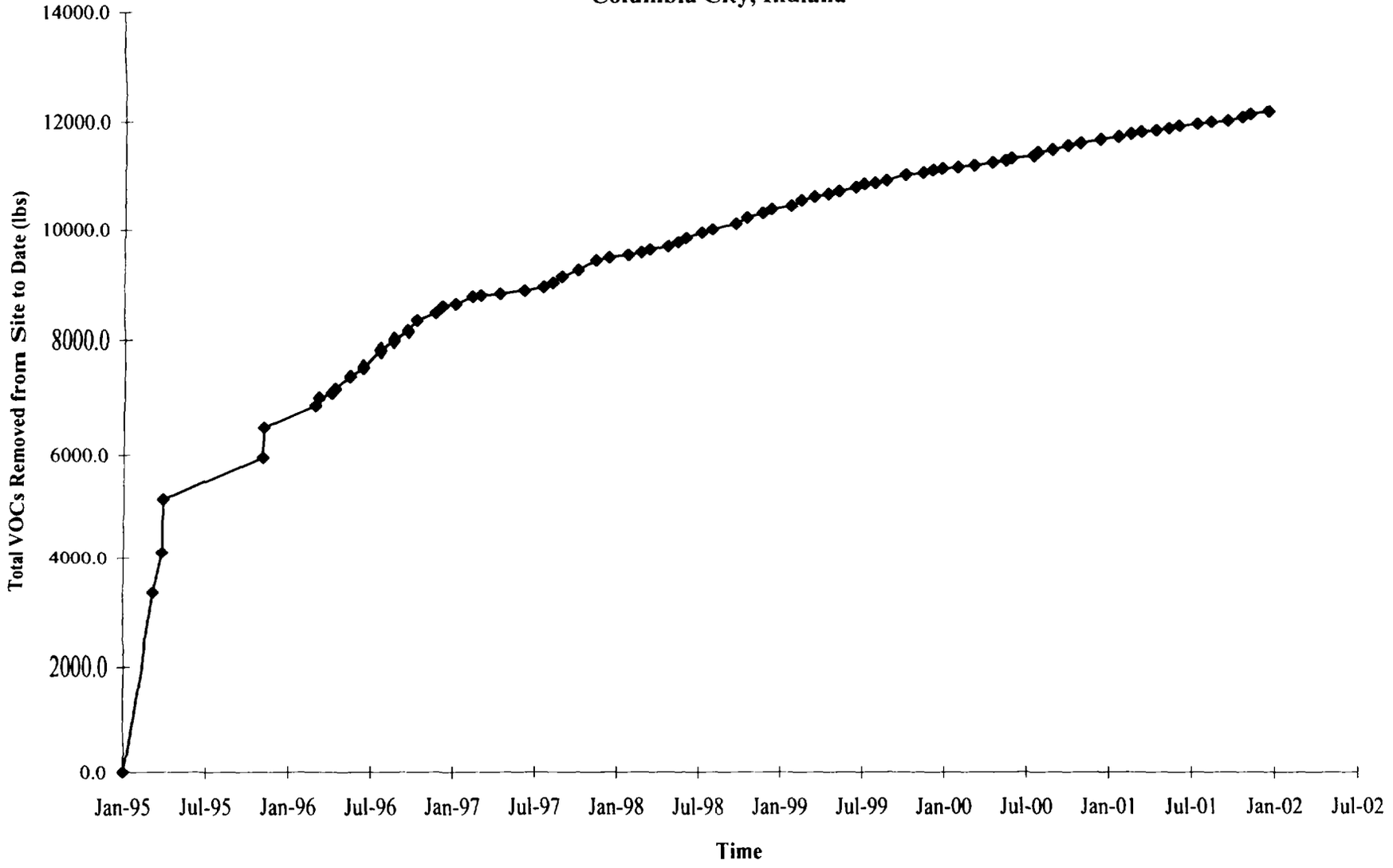
J:\3868\0120\prgrpt13\tables\table15.xls (Figure 7)
3/26/2002

Figure 7
Summary of Site VOC Removal Rates
Soil and Groundwater Remediation Systems
Wayne Reclamation and Recycling
Columbia City, Indiana



J:\3868\120\prgrpt13\tables\table12 (Figure7)
3/26/2002

Figure 8
Cumulative VOCs Removed From Site
Soil and Groundwater Remediation Systems
Wayne Reclamation and Recycling
Columbia City, Indiana



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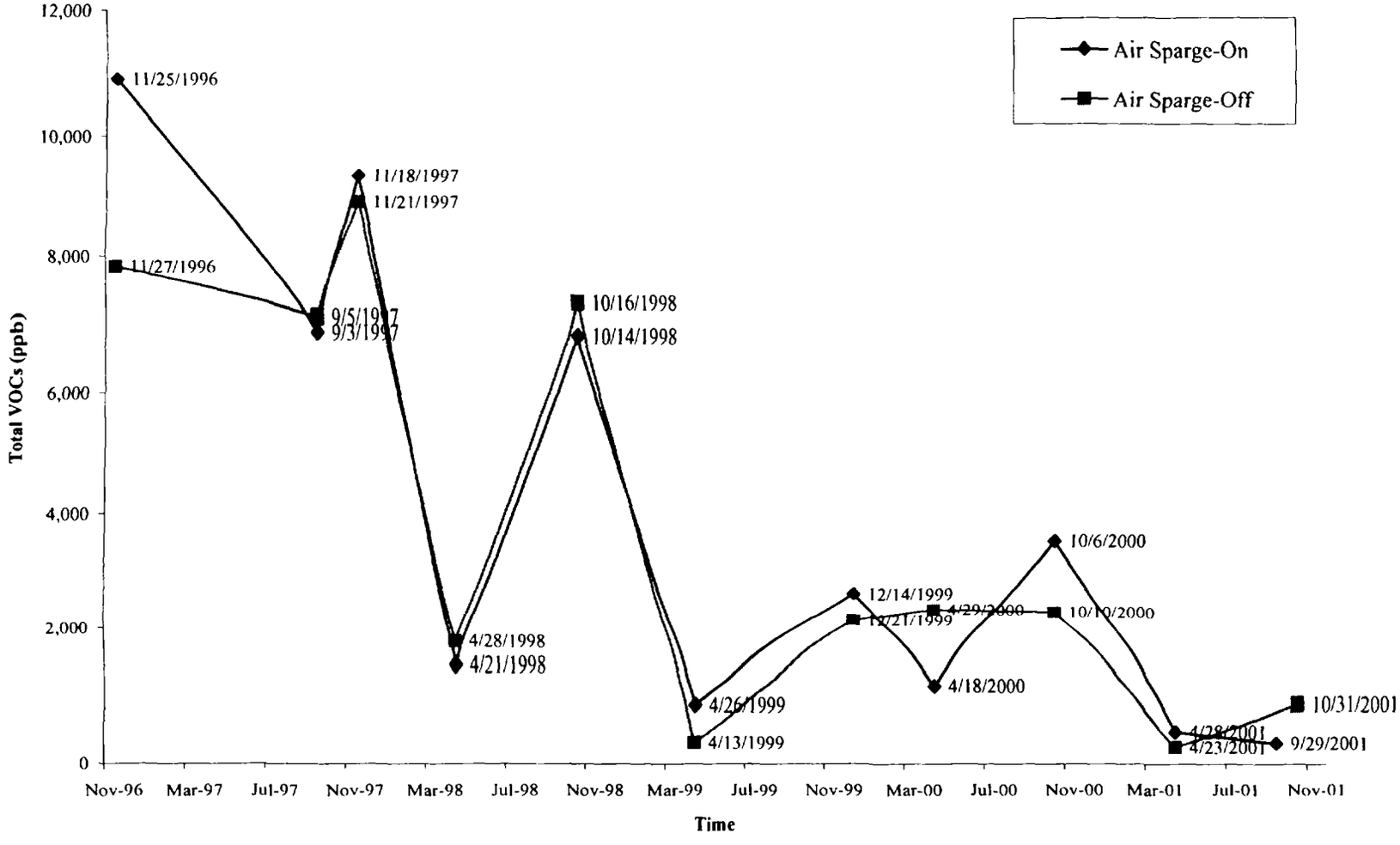
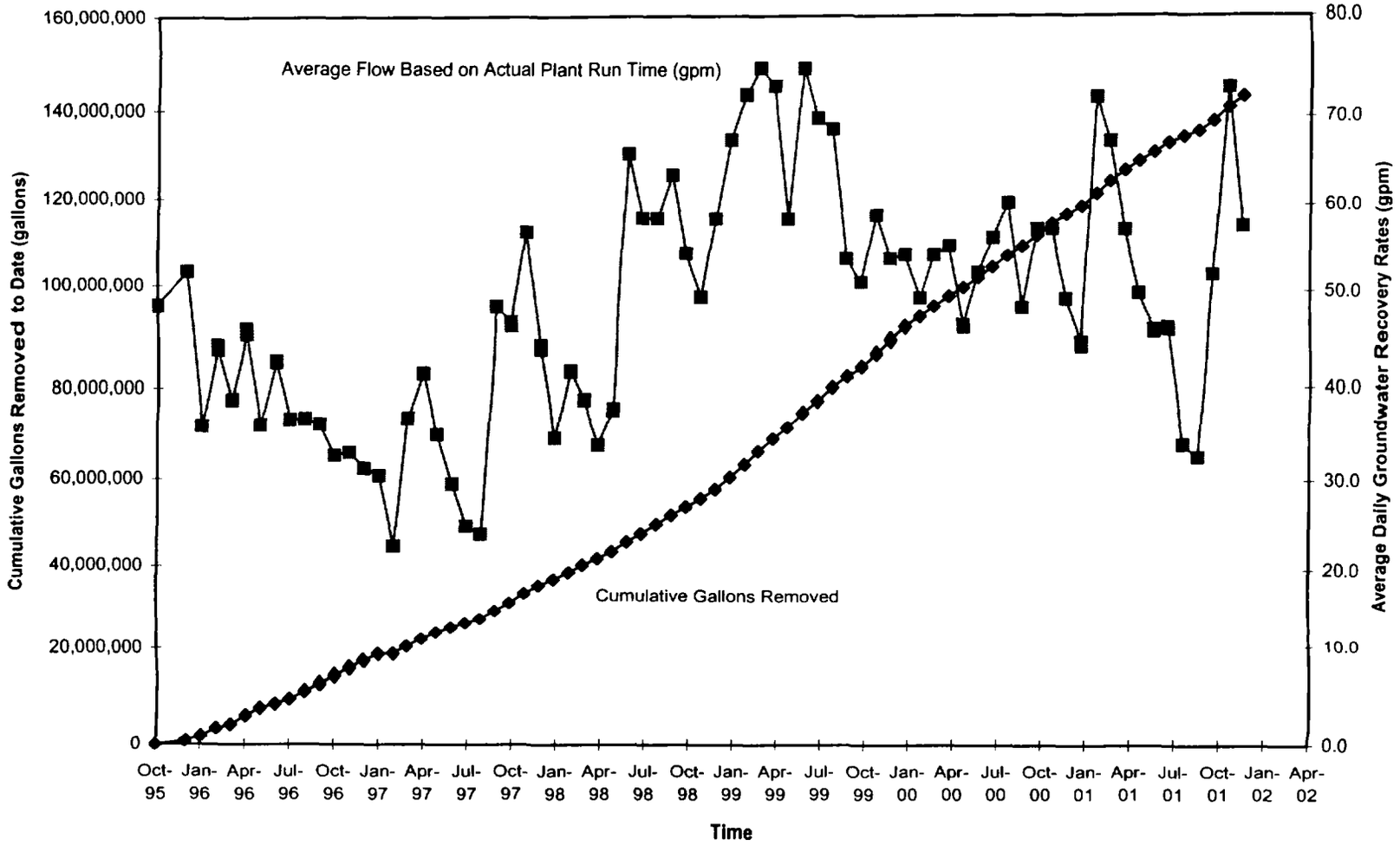
3/26/2002

Figure 9
Effect of Air Sparge on SVE VOC Concentrations
Wayne Reclamation and Recycling
Columbia City, Indiana



J:\3868\0120\prgrpt13\tables\Figure 10 Chart 2 (Figure 9)
3/26/2002

Figure 10
Cumulative and Sustained Groundwater Recovery
Wayne Reclamation and Recycling
Columbia City, Indiana



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3/26/2002

APPENDIX A

SUMMARY OF AIR DISPERSION MODELING AND CUMULATIVE CANCER RISK CALCULATIONS

APPENDIX A

Summary of Air Dispersion Modeling and Cumulative Cancer Risk Calculations
Wayne Reclamation and Recycling
Columbia City, Indiana

The following summarizes the air modeling conducted by Montgomery Watson for the Wayne Reclamation and Recycling facility in Columbia City, Indiana to assess the maximum annual average ground-level concentration that could occur at any point outside the perimeter of the Wayne Reclamation site. A description of the model, modeling procedures, and results is provided below.

AIR DISPERSION MODELING PROCEDURES

The modeling was performed by utilizing the United States Environmental Protection Agency (USEPA) model Industrial Source Complex Long Term (ISC-LT) to evaluate the ambient air impact of emissions from the site. Dispersion modeling was conducted on both the treatment system influent and effluent in order to compare the risks associated with both treated and untreated air.

Meteorological Data

Meteorological data from 1985 was inputted into the model for the Columbia City, Indiana region. Model output is highly sensitive to such data, as changes in atmospheric conditions will directly affect the ability of a discharged pollutant to disperse in the surrounding air. Meteorological data such as wind speed, wind direction, urban and rural mixing heights, Pasquill Stability Classifications (rated A to G, G being the most stable), and ambient air temperature were converted into a binary data package. The package was then loaded into the ISC-LT model. The model then evaluated these conditions with the remaining model input parameters to identify which combinations of these conditions would result in maximum ground level pollutant concentrations.

Emissions Source Data

The following data represents the emissions parameters at the Wayne Reclamation site which were inputted into the model:

Stack Height	9.1 meters
Stack Diameter	0.4064 meters
Stack Base Elevation	6.1 meters
Exhaust Temperature	73° C
Gas Exit Velocity	13.08 m/s
Volumetric Flow Rate	1.7 cubic meters/sec
Influent/Effluent Conc.	Sampling events (see Table 14)
Terrain	Flat
Dispersion Coefficients	Rural
Final Plume Rise	On

Stack-tip Downwash	On
Receptor Height	0 meters

Modeling Procedure

A grid was established to describe the relationship of the emission source with its surroundings, including the location of the site boundaries and any potential receptors. A cartesian grid was established around the facility to determine ground-level concentration locations.

HUMAN HEALTH RISK ASSESSMENT

The maximum concentrations determined by the air modeling study were multiplied by unit risk factors to obtain the excess carcinogenic risk posed by the emissions through the inhalation route. The unit risk factors used in this study were developed from toxicity values included in U.S.EPA's Integrated Risk Information System (IRIS), U.S.EPA's "Health Assessment Summary Tables" (HEAST, Annual FY-1995), and information provided by the U.S.EPA Environmental Criteria Assessment Office (ECAO). The unit risk factors assume a chronic exposure to the carcinogenic chemicals for 24 hours a day, 365 days a year for 70 years. The unit risk factors for the constituents of concern are:

Vinyl Chloride -	7.80E-05
1,1-Dichloroethane -	1.63E-08
Trichloroethene -	2.00E-06
Tetrachloroethene -	5.90E-06

The excess cancer risk to the maximally exposed individual can be calculated by multiplying the unit risk factor by the ambient concentration of the chemical in question. In a residential zone, the maximally exposed individual is assumed to be continuously exposed to the chemical for 70 years.

The maximum individual excess cancer risk (MICR) to the maximally exposed individual due to air toxic emissions from the Wayne Reclamation site was calculated by multiplying the appropriate risk factor by the maximum annual ground level concentration (GLC) at the maximally exposed individual:

$$MICR = URF * GLC$$

A summary of these calculations using concentrations generated from the model output is provided in Table 15. An example model input/output is attached.

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CO STARTING
CO TITLEONE Fort Wayne Reclamation Site, 30 ft stack
CO MODELOPT DFAULT CONC RURAL
CO AVERTIME ANNUAL
CO POLLUTID OTHER
CO DCAYCOEF .000000
CO RUNORNOT RUN
CO ERRORFIL ERRORS.OUT
CO FINISHED

SO STARTING
 * Source Location Cards:
 *                SRCID SRCTYP          XS          YS          ZS
SO LOCATION         1   POINT         0.000       0.000       0.000

 * Source Parameter Cards:
 * POINT:   SRCID      QS      HS        TS        VS        DS
** VOLUME:  SRCID      QS      HS      SYINIT    SZINIT
 * AREA:    SRCID      QS      HS      XINIT

SO SRCPARAM 1          0.007 9.1440    293.15     7.5       1.0000
SO EMISUNIT        .100000E+07 (GRAMS/SEC)    (MICROGRAMS/CUBIC-METER)
SO SRCGROUP ALL
SO FINISHED

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RE DISCCART -241 116
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RE DISCCART -198 114
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RE DISCCART -155 112
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RE DISCCART -69 144
RE DISCCART -68 107
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RE DISCCART -1 -99
RE DISCCART 16 181
RE DISCCART 43 -103
RE DISCCART 59 181
RE DISCCART 70 -111
RE DISCCART 97 -119
RE DISCCART 102 183
RE DISCCART 102 231
RE DISCCART 123 -133
RE DISCCART 142 231
RE DISCCART 149 -146
RE DISCCART 182 231
RE DISCCART 184 -145
RE DISCCART 202 -137
RE DISCCART 209 -116
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OU STARTING
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************************************
*** SETUP Finishes Successfully ***
************************************
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```
*** ISCLT3 - VERSION 95250 ***     *** Fort Wayne Reclamation Site, 30 ft stack
                                   ***

*** MODELING OPTIONS USED:  CONC   RURAL  FLAT          DFAULT

                                         ***     MODEL SETUP OPTIONS SUMMARY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 *Model Is Setup For Calculation of Average CONCentration Values.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

 *Model Uses NO plume DEPLETION.

**Model Uses RURAL Dispersion.

 *Model Uses Regulatory DEFAULT Options:
           1. Final Plume Rise.
           2. Stack-tip Downwash.
           3. Buoyancy-induced Dispersion.
           4. Default Wind Profile Exponents.
           5. Default Vertical Potential Temperature Gradients.
           6. "Upper Bound" Values For Supersquat Buildings.
           7. No Exponential Decay for RURAL Mode

**Model Assumes Receptors on FLAT Terrain.

**Model Assumes No FLAGPOLE Receptor Heights.

**Model Calculates   1 STAR Average(s) for the Following Months:  0  0  0  0  0
                                              Seasons/Quarters:  0  0  0  0
                                                    and Annual:  1

**Data File Includes  1 STAR Summaries for the Following Months:  0  0  0  0  0
                                              Seasons/Quarters:  0  0  0  0
                                                    and Annual:  1

**This Run Includes:    1 Source(s);      1 Source Group(s); and    386 Recepto

**The Model Assumes A Pollutant Type of:  OTHER

**Model Set To Continue RUNning After the Setup Testing.

**Output Options Selected:
         Model Outputs Tables of Long Term Values by Receptor (RECTABLE Keyword

**Misc. Inputs:  Anem. Hgt. (m) =    10.00 ;    Decay Coef. =    .0000     ;
                 Emission Units = (GRAMS/SEC)                               ;  E
                 Output Units   = (MICROGRAMS/CUBIC-METER)

**Input Runstream File: INPUT.FIL                                  ;  **Output Pri
**Error Message File: ERRORS.OUT
```

*** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (USER UNITS)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	E
1	0	.70000E-02	.0	.0	.0	9.14	293.15	

*** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** SOURCE IDs DEFINING SOURCE GROUPS

GROUP ID		SOURCE IDs
ALL	1	,

*** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** DISCRETE CARTESIAN RECEPTORS **
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(	-241.0,	116.0,	.0,	.0);	(-239.0,	-85.
(	-239.0,	-45.0,	.0,	.0);	(-239.0,	-5.
(	-239.0,	35.0,	.0,	.0);	(-239.0,	75.
(	-204.0,	-86.0,	.0,	.0);	(-198.0,	114.
(	-169.0,	-86.0,	.0,	.0);	(-155.0,	112.
(	-134.0,	-86.0,	.0,	.0);	(-112.0,	110.
(	-89.0,	-91.0,	.0,	.0);	(-70.0,	181.
(	-69.0,	144.0,	.0,	.0);	(-68.0,	107.
(	-45.0,	-95.0,	.0,	.0);	(-27.0,	181.
(	-1.0,	-99.0,	.0,	.0);	(16.0,	181.
(	43.0,	-103.0,	.0,	.0);	(59.0,	181.
(	70.0,	-111.0,	.0,	.0);	(97.0,	-119.
(	102.0,	183.0,	.0,	.0);	(102.0,	231.
(	123.0,	-133.0,	.0,	.0);	(142.0,	231.
(	149.0,	-146.0,	.0,	.0);	(182.0,	231.
(	184.0,	-145.0,	.0,	.0);	(202.0,	-137.
(	209.0,	-116.0,	.0,	.0);	(215.0,	-69.
(	221.0,	-31.0,	.0,	.0);	(222.0,	231.
(	227.0,	7.0,	.0,	.0);	(223.0,	45.
(	242.0,	91.0,	.0,	.0);	(251.0,	136.
(	260.0,	181.0,	.0,	.0);	(262.0,	207.
(	264.0,	232.0,	.0,	.0);	(-900.0,	-800.
(	-900.0,	-700.0,	.0,	.0);	(-900.0,	-600.
(	-900.0,	-500.0,	.0,	.0);	(-900.0,	-400.
(	-900.0,	-300.0,	.0,	.0);	(-900.0,	-200.
(	-900.0,	-100.0,	.0,	.0);	(-900.0,	.
(	-900.0,	100.0,	.0,	.0);	(-900.0,	200.
(	-900.0,	300.0,	.0,	.0);	(-900.0,	400.
(	-900.0,	500.0,	.0,	.0);	(-900.0,	600.
(	-900.0,	700.0,	.0,	.0);	(-900.0,	800.
(	-900.0,	900.0,	.0,	.0);	(-800.0,	-800.
(	-800.0,	-700.0,	.0,	.0);	(-800.0,	-600.
(	-800.0,	-500.0,	.0,	.0);	(-800.0,	-400.
(	-800.0,	-300.0,	.0,	.0);	(-800.0,	-200.
(	-800.0,	-100.0,	.0,	.0);	(-800.0,	.
(	-800.0,	100.0,	.0,	.0);	(-800.0,	200.
(	-800.0,	300.0,	.0,	.0);	(-800.0,	400.
(	-800.0,	500.0,	.0,	.0);	(-800.0,	600.
(	-800.0,	700.0,	.0,	.0);	(-800.0,	800.
(	-800.0,	900.0,	.0,	.0);	(-700.0,	-800
(	-700.0,	-700.0,	.0,	.0);	(-700.0,	-600
(	-700.0,	-500.0,	.0,	.0);	(-700.0,	-400
(	-700.0,	-300.0,	.0,	.0);	(-700.0,	-200
(	-700.0,	-100.0,	.0,	.0);	(-700.0,	
(	-700.0,	100.0,	.0,	.0);	(-700.0,	200

*** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** DISCRETE CARTESIAN RECEPTORS **
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(	-700.0,	300.0,	.0,	.0);	(-700.0,	400.
(	-700.0,	500.0,	.0,	.0);	(-700.0,	600.
(	-700.0,	700.0,	.0,	.0);	(-700.0,	800.
(	-700.0,	900.0,	.0,	.0);	(-600.0,	-800.
(	-600.0,	-700.0,	.0,	.0);	(-600.0,	-600.
(	-600.0,	-500.0,	.0,	.0);	(-600.0,	-400.
(	-600.0,	-300.0,	.0,	.0);	(-600.0,	-200.
(	-600.0,	-100.0,	.0,	.0);	(-600.0,	.
(	-600.0,	100.0,	.0,	.0);	(-600.0,	200.
(	-600.0,	300.0,	.0,	.0);	(-600.0,	400.
(	-600.0,	500.0,	.0,	.0);	(-600.0,	400.
(	-600.0,	300.0,	.0,	.0);	(-600.0,	500.
(	-600.0,	600.0,	.0,	.0);	(-600.0,	700.
(	-600.0,	800.0,	.0,	.0);	(-600.0,	900.
(	-500.0,	-800.0,	.0,	.0);	(-500.0,	-700.
(	-500.0,	-600.0,	.0,	.0);	(-500.0,	-500.
(	-500.0,	-400.0,	.0,	.0);	(-500.0,	-300.
(	-500.0,	-200.0,	.0,	.0);	(-500.0,	-100.
(	-500.0,	.0,	.0,	.0);	(-500.0,	100.
(	-500.0,	200.0,	.0,	.0);	(-500.0,	300.
(	-500.0,	400.0,	.0,	.0);	(-500.0,	300.
(	-500.0,	200.0,	.0,	.0);	(-500.0,	100.
(	-500.0,	200.0,	.0,	.0);	(-500.0,	300.
(	-500.0,	400.0,	.0,	.0);	(-500.0,	500.
(	-500.0,	600.0,	.0,	.0);	(-500.0,	700.
(	-500.0,	800.0,	.0,	.0);	(-500.0,	900.
(	-400.0,	-800.0,	.0,	.0);	(-400.0,	-700.
(	-400.0,	-600.0,	.0,	.0);	(-400.0,	-500.
(	-400.0,	-400.0,	.0,	.0);	(-400.0,	-300.
(	-400.0,	-200.0,	.0,	.0);	(-400.0,	-100.
(	-400.0,	.0,	.0,	.0);	(-400.0,	100.
(	-400.0,	200.0,	.0,	.0);	(-400.0,	300.
(	-400.0,	400.0,	.0,	.0);	(-400.0,	500.
(	-400.0,	600.0,	.0,	.0);	(-400.0,	700.
(	-400.0,	800.0,	.0,	.0);	(-400.0,	900.
(	-300.0,	-800.0,	.0,	.0);	(-300.0,	-700.
(	-300.0,	-600.0,	.0,	.0);	(-300.0,	-500.
(	-300.0,	-400.0,	.0,	.0);	(-300.0,	-300.
(	-300.0,	-200.0,	.0,	.0);	(-300.0,	-100.
(	-300.0,	.0,	.0,	.0);	(-300.0,	100.
(	-300.0,	200.0,	.0,	.0);	(-300.0,	300.
(	-300.0,	400.0,	.0,	.0);	(-300.0,	500.
(	-300.0,	600.0,	.0,	.0);	(-300.0,	700.
(	-300.0,	800.0,	.0,	.0);	(-300.0,	900.
(	-200.0,	-800.0,	.0,	.0);	(-200.0,	-700.

*** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** DISCRETE CARTESIAN RECEPTORS **
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(	-200.0,	-600.0,	.0,	.0);	(-200.0,	-500.
(	-200.0,	-400.0,	.0,	.0);	(-200.0,	-300.
(	-200.0,	-200.0,	.0,	.0);	(-200.0,	-100.
(	-200.0,	.0,	.0,	.0);	(-200.0,	100.
(	-200.0,	200.0,	.0,	.0);	(-200.0,	300.
(	-200.0,	400.0,	.0,	.0);	(-200.0,	500.
(	-200.0,	600.0,	.0,	.0);	(-200.0,	700.
(	-200.0,	800.0,	.0,	.0);	(-200.0,	900.
(	-100.0,	-800.0,	.0,	.0);	(-100.0,	-700.
(	-100.0,	-600.0,	.0,	.0);	(-100.0,	-500.
(	-100.0,	-400.0,	.0,	.0);	(-100.0,	-300.
(	-100.0,	-200.0,	.0,	.0);	(-100.0,	-100.
(	-100.0,	.0,	.0,	.0);	(-100.0,	100.
(	-100.0,	200.0,	.0,	.0);	(-100.0,	300.
(	-100.0,	400.0,	.0,	.0);	(-100.0,	500.
(	-100.0,	600.0,	.0,	.0);	(-100.0,	700.
(	-100.0,	800.0,	.0,	.0);	(-100.0,	900.
(	.0,	-800.0,	.0,	.0);	(.0,	-700.
(	.0,	-600.0,	.0,	.0);	(.0,	-500.
(	.0,	-400.0,	.0,	.0);	(.0,	-300.
(	.0,	-200.0,	.0,	.0);	(.0,	-100.
(	.0,	-200.0,	.0,	.0);	(.0,	-100.
(	.0,	.0,	.0,	.0);	(.0,	100.
(	.0,	200.0,	.0,	.0);	(.0,	300.
(	.0,	400.0,	.0,	.0);	(.0,	500.
(	.0,	600.0,	.0,	.0);	(.0,	700.
(	.0,	800.0,	.0,	.0);	(.0,	900.
(	100.0,	-800.0,	.0,	.0);	(100.0,	-700.
(	100.0,	-600.0,	.0,	.0);	(100.0,	-500.
(	100.0,	-400.0,	.0,	.0);	(100.0,	-300.
(	100.0,	-200.0,	.0,	.0);	(100.0,	-100.
(	100.0,	.0,	.0,	.0);	(100.0,	100.
(	100.0,	200.0,	.0,	.0);	(100.0,	300.
(	100.0,	400.0,	.0,	.0);	(100.0,	500.
(	100.0,	600.0,	.0,	.0);	(100.0,	700.
(	100.0,	800.0,	.0,	.0);	(100.0,	900.
(	200.0,	-800.0,	.0,	.0);	(200.0,	-700.
(	200.0,	-600.0,	.0,	.0);	(200.0,	-500.
(	200.0,	-400.0,	.0,	.0);	(200.0,	-300.
(	200.0,	-200.0,	.0,	.0);	(200.0,	-100.
(	200.0,	.0,	.0,	.0);	(200.0,	100.
(	200.0,	200.0,	.0,	.0);	(200.0,	300.
(	200.0,	400.0,	.0,	.0);	(200.0,	500.
(	200.0,	600.0,	.0,	.0);	(200.0,	700.
(	200.0,	800.0,	.0,	.0);	(200.0,	900.

*** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** DISCRETE CARTESIAN RECEPTORS **
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(	300.0,	-800.0,	.0,	.0);	(300.0,	-700.
(	300.0,	-600.0,	.0,	.0);	(300.0,	-500.
(	300.0,	-400.0,	.0,	.0);	(300.0,	-300.
(	300.0,	-200.0,	.0,	.0);	(300.0,	-100.
(	300.0,	.0,	.0,	.0);	(300.0,	100.
(	300.0,	200.0,	.0,	.0);	(300.0,	300.
(	300.0,	400.0,	.0,	.0);	(300.0,	500.
(	300.0,	600.0,	.0,	.0);	(300.0,	700.
(	300.0,	800.0,	.0,	.0);	(300.0,	900.
(	400.0,	-800.0,	.0,	.0);	(400.0,	-700.
(	400.0,	-600.0,	.0,	.0);	(400.0,	-500.
(	400.0,	-600.0,	.0,	.0);	(400.0,	-500.
(	400.0,	-400.0,	.0,	.0);	(400.0,	-300.
(	400.0,	-200.0,	.0,	.0);	(400.0,	-100.
(	400.0,	.0,	.0,	.0);	(400.0,	100.
(	400.0,	200.0,	.0,	.0);	(400.0,	300.
(	400.0,	400.0,	.0,	.0);	(400.0,	500.
(	400.0,	600.0,	.0,	.0);	(400.0,	700.
(	400.0,	800.0,	.0,	.0);	(400.0,	900.
(	500.0,	-800.0,	.0,	.0);	(500.0,	-700.
(	500.0,	-600.0,	.0,	.0);	(500.0,	-500.
(	500.0,	-400.0,	.0,	.0);	(500.0,	-300.
(	500.0,	-200.0,	.0,	.0);	(500.0,	-100.
(	500.0,	.0,	.0,	.0);	(500.0,	100.
(	500.0,	200.0,	.0,	.0);	(500.0,	300.
(	500.0,	400.0,	.0,	.0);	(500.0,	500.
(	500.0,	600.0,	.0,	.0);	(500.0,	700.
(	500.0,	800.0,	.0,	.0);	(500.0,	900.
(	600.0,	-800.0,	.0,	.0);	(600.0,	-700.
(	600.0,	-600.0,	.0,	.0);	(600.0,	-500.
(	600.0,	-400.0,	.0,	.0);	(600.0,	-300.
(	600.0,	-200.0,	.0,	.0);	(600.0,	-100.
(	600.0,	.0,	.0,	.0);	(600.0,	100.
(	600.0,	200.0,	.0,	.0);	(600.0,	300.
(	600.0,	400.0,	.0,	.0);	(600.0,	500.
(	600.0,	600.0,	.0,	.0);	(600.0,	700.
(	600.0,	800.0,	.0,	.0);	(600.0,	900.
(	700.0,	-700.0,	.0,	.0);	(700.0,	-600.
(	700.0,	-500.0,	.0,	.0);	(700.0,	-400.
(	700.0,	-300.0,	.0,	.0);	(700.0,	-200.
(	700.0,	-100.0,	.0,	.0);	(700.0,	.
(	700.0,	100.0,	.0,	.0);	(700.0,	200.
(	700.0,	300.0,	.0,	.0);	(700.0,	400.
(	700.0,	500.0,	.0,	.0);	(700.0,	600.
(	700.0,	700.0,	.0,	.0);	(700.0,	800.

*** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** DISCRETE CARTESIAN RECEPTORS **
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(	700.0,	900.0,	.0,	.0);	(	800.0,	-600.
(	800.0,	-500.0,	.0,	.0);	(	800.0,	-400.
(	800.0,	-300.0,	.0,	.0);	(	800.0,	-200.
(	800.0,	-100.0,	.0,	.0);	(	800.0,	.
(	800.0,	100.0,	.0,	.0);	(	800.0,	200.
(	800.0,	300.0,	.0,	.0);	(	800.0,	400.
(	800.0,	500.0,	.0,	.0);	(	800.0,	600.
(	800.0,	700.0,	.0,	.0);	(	800.0,	800.
(	900.0,	-300.0,	.0,	.0);	(	900.0,	-200.
(	900.0,	-100.0,	.0,	.0);	(	900.0,	.
(	900.0,	100.0,	.0,	.0);	(	900.0,	200.
(	900.0,	300.0,	.0,	.0);	(	900.0,	400.
(	900.0,	500.0,	.0,	.0);	(	900.0,	600.

** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

* SOURCE-RECEPTOR COMBINATIONS FOR WHICH CALCULATIONS MAY
LESS THAN 1.0 METER OR 3*ZLB IN DISTANCE, OR WITHIN C

SOURCE ID	- - RECEPTOR LOCATION - - XR (METERS)	YR (METERS)
1	.0	.0

*** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** AVERAGE SPEED FOR EACH WIND SPEED CA
(METERS/SEC)

1.54, 3.09, 3.95, 5.14, 8.2

*** WIND PROFILE EXPONENTS **

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4
A	.70000E-01	.70000E-01	.70000E-01	.7000
B	.70000E-01	.70000E-01	.70000E-01	.7000
C	.10000E+00	.10000E+00	.10000E+00	.1000
D	.15000E+00	.15000E+00	.15000E+00	.1500
E	.35000E+00	.35000E+00	.35000E+00	.3500
F	.55000E+00	.55000E+00	.55000E+00	.5500

*** VERTICAL POTENTIAL TEMPERATURE GRA
(DEGREES KELVIN PER METER)

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4
A	.00000E+00	.00000E+00	.00000E+00	.0000
B	.00000E+00	.00000E+00	.00000E+00	.0000
C	.00000E+00	.00000E+00	.00000E+00	.0000
D	.00000E+00	.00000E+00	.00000E+00	.0000
E	.20000E-01	.20000E-01	.20000E-01	.2000
F	.35000E-01	.35000E-01	.35000E-01	.3500

*** AVERAGE AMBIENT AIR TEMPERATURE (KEL

	STABILITY CATEGORY A	STABILITY CATEGORY B	STABILITY CATEGORY C	STABILITY CATEGORY D	C
ANNUAL	280.0000	280.0000	280.0000	280.0000	

** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** AVERAGE MIXING LAYER HEIGHT (METERS) **

	WIND SPEED CATEGORY 1	WIND SPEED CATEGORY 2	ANNUAL WIND SPEED CATEGORY 3	WIND SPEED CATEGORY 4
STABILITY CATEGORY A	440.0000	440.0000	440.0000	440.0000
STABILITY CATEGORY B	440.0000	440.0000	440.0000	440.0000
STABILITY CATEGORY C	440.0000	440.0000	440.0000	440.0000
STABILITY CATEGORY D	440.0000	440.0000	440.0000	440.0000
STABILITY CATEGORY E	440.0000	440.0000	440.0000	440.0000
STABILITY CATEGORY F	440.0000	440.0000	440.0000	440.0000

** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** FREQUENCY OF OCCURRENCE OF WIND SPEED, DIRECTION AND STABILITY *

FILE: METFIL.STR
SURFACE STATION NO.: 14827
NAME: SURFNAME
YEAR: 1985

FORMAT: FREE
UPPER AIR STATION NO.
NAME
YEAR

ANNUAL: STABILITY CATEGORY A

DIRECTION (DEGREES)	WIND SPEED CATEGORY 1 (1.540 M/S)	WIND SPEED CATEGORY 2 (3.090 M/S)	WIND SPEED CATEGORY 3 (3.950 M/S)	WIND SPEED CATEGORY 4 (5.140 M/S)	WIND SPEED CATEGORY 5 (8.230 M/S)	W C (1 -
.000	.00000000	.00000000	.00000000	.00000000	.00000000	
22.500	.00000000	.00000000	.00000000	.00000000	.00000000	
45.000	.00000000	.00000000	.00000000	.00000000	.00000000	
67.500	.00000000	.00000000	.00000000	.00000000	.00000000	
90.000	.00000000	.00000000	.00000000	.00000000	.00000000	
112.500	.00000000	.00000000	.00000000	.00000000	.00000000	
135.000	.00000000	.00000000	.00000000	.00000000	.00000000	
157.500	.00000000	.00000000	.00000000	.00000000	.00000000	
180.000	.00000000	.00000000	.00000000	.00000000	.00000000	
202.500	.00000000	.00000000	.00000000	.00000000	.00000000	
225.000	.00000000	.00000000	.00000000	.00000000	.00000000	
247.500	.00000000	.00000000	.00000000	.00000000	.00000000	
270.000	.00000000	.00000000	.00000000	.00000000	.00000000	
292.500	.00000000	.00000000	.00000000	.00000000	.00000000	
315.000	.00000000	.00000000	.00000000	.00000000	.00000000	
337.500	.00000000	.00000000	.00000000	.00000000	.00000000	

ANNUAL: STABILITY CATEGORY B

DIRECTION DEGREES)	WIND SPEED CATEGORY 1 (1.540 M/S)	WIND SPEED CATEGORY 2 (3.090 M/S)	WIND SPEED CATEGORY 3 (3.950 M/S)	WIND SPEED CATEGORY 4 (5.140 M/S)	WIND SPEED CATEGORY 5 (8.230 M/S)	W C (1 -
.000	.00000000	.00000000	.00000000	.00000000	.00000000	
22.500	.00000000	.00000000	.00000000	.00000000	.00000000	
45.000	.00000000	.00000000	.00000000	.00000000	.00000000	
67.500	.00000000	.00000000	.00000000	.00000000	.00000000	
90.000	.00000000	.00000000	.00000000	.00000000	.00000000	
112.500	.00000000	.00000000	.00000000	.00000000	.00000000	
135.000	.00000000	.00000000	.00000000	.00000000	.00000000	
157.500	.00000000	.00000000	.00000000	.00000000	.00000000	
180.000	.00000000	.00000000	.00000000	.00000000	.00000000	
202.500	.00000000	.00000000	.00000000	.00000000	.00000000	
225.000	.00000000	.00000000	.00000000	.00000000	.00000000	
247.500	.00000000	.00000000	.00000000	.00000000	.00000000	
270.000	.00000000	.00000000	.00000000	.00000000	.00000000	
292.500	.00000000	.00000000	.00000000	.00000000	.00000000	
315.000	.00000000	.00000000	.00000000	.00000000	.00000000	
337.500	.00000000	.00000000	.00000000	.00000000	.00000000	

* * ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

* * MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** FREQUENCY OF OCCURRENCE OF WIND SPEED, DIRECTION AND STABILITY *

FILE: METFIL.STR FORMAT: FREE
SURFACE STATION NO.: 14827 UPPER AIR STATION NO.
NAME: SURFNAME NAME
YEAR: 1985 YEAR

ANNUAL: STABILITY CATEGORY C

DIRECTION (DEGREES)	WIND SPEED CATEGORY 1 (1.540 M/S)	WIND SPEED CATEGORY 2 (3.090 M/S)	WIND SPEED CATEGORY 3 (3.950 M/S)	WIND SPEED CATEGORY 4 (5.140 M/S)	WIND SPEED CATEGORY 5 (8.230 M/S)	W C (1 -
.000	.00000000	.00000000	.00000000	.00000000	.00000000	
22.500	.00000000	.00000000	.00000000	.00000000	.00000000	
45.000	.00000000	.00000000	.00000000	.00000000	.00000000	
67.500	.00000000	.00000000	.00000000	.00000000	.00000000	
90.000	.00000000	.00000000	.00000000	.00000000	.00000000	
112.500	.00000000	.00000000	.00000000	.00000000	.00000000	
135.000	.00000000	.00000000	.00000000	.00000000	.00000000	
157.500	.00000000	.00000000	.00000000	.00000000	.00000000	
180.000	.00000000	.00000000	.00000000	.00000000	.00000000	
202.500	.00000000	.00000000	.00000000	.00000000	.00000000	
225.000	.00000000	.00000000	.00000000	.00000000	.00000000	
247.500	.00000000	.00000000	.00000000	.00000000	.00000000	
270.000	.00000000	.00000000	.00000000	.00000000	.00000000	
292.500	.00000000	.00000000	.00000000	.00000000	.00000000	
315.000	.00000000	.00000000	.00000000	.00000000	.00000000	
337.500	.00000000	.00000000	.00000000	.00000000	.00000000	

ANNUAL: STABILITY CATEGORY D

DIRECTION (DEGREES)	WIND SPEED CATEGORY 1 (1.540 M/S)	WIND SPEED CATEGORY 2 (3.090 M/S)	WIND SPEED CATEGORY 3 (3.950 M/S)	WIND SPEED CATEGORY 4 (5.140 M/S)	WIND SPEED CATEGORY 5 (8.230 M/S)	W C (1 -
.000	.00067300	.00807100	.01059300	.00588500	.00000000	
22.500	.00056000	.00739800	.00420300	.00218600	.00000000	
45.000	.00056000	.00504400	.00689400	.00353100	.00000000	
67.500	.00056000	.00739800	.01193800	.00655700	.00067300	
90.000	.00201800	.01412300	.02135300	.01227400	.00100900	
112.500	.00168100	.00739800	.00723000	.00252200	.00000000	
135.000	.00302600	.00874300	.00588500	.00151300	.00000000	
157.500	.00302600	.01008800	.00674200	.00151300	.00000000	
180.000	.00403500	.01345100	.01462800	.00689400	.00050400	
202.500	.00269000	.01244200	.01368600	.00790200	.00084100	
225.000	.00336300	.01513200	.02377400	.01731800	.00302600	
247.500	.00201800	.01042400	.01704900	.01395500	.00336300	
270.000	.00168100	.01412300	.02209300	.02471600	.00505300	
292.500	.00067300	.00773400	.01025600	.00790200	.00067300	
315.000	.00067300	.00739800	.01025600	.00823900	.00067300	
337.500	.00067300	.00739800	.00958400	.00622100	.00033600	

*** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** FREQUENCY OF OCCURRENCE OF WIND SPEED, DIRECTION AND STABILITY *

FILE: METFIL.STR FORMAT: FREE
SURFACE STATION NO.: 14827 UPPER AIR STATION NO.
NAME: SURFNAME NAME
YEAR: 1985 YEAR

ANNUAL: STABILITY CATEGORY E

DIRECTION (DEGREES)	WIND SPEED CATEGORY 1 (1.540 M/S)	WIND SPEED CATEGORY 2 (3.090 M/S)	WIND SPEED CATEGORY 3 (3.950 M/S)	WIND SPEED CATEGORY 4 (5.140 M/S)	WIND SPEED CATEGORY 5 (8.230 M/S)	W C (1
.000	.00029200	.00350200	.00459700	.00255400	.00000000	
22.500	.00024300	.00321000	.00182400	.00094900	.00000000	
45.000	.00024300	.00218900	.00299200	.00153200	.00000000	
67.500	.00024300	.00321000	.00518000	.00284600	.00029200	
90.000	.00087600	.00612900	.00926700	.00532600	.00043800	
112.500	.00073000	.00321000	.00313700	.00109400	.00000000	
135.000	.00131300	.00379400	.00255400	.00065700	.00000000	
157.500	.00131300	.00437800	.00292600	.00065700	.00000000	
180.000	.00175100	.00583700	.00634800	.00299200	.00021900	
202.500	.00116700	.00539900	.00593900	.00342900	.00036500	
225.000	.00145900	.00656700	.01031700	.00751500	.00131300	
247.500	.00087600	.00452400	.00739900	.00605600	.00145900	
270.000	.00073000	.00612900	.00958800	.01072600	.00262700	
292.500	.00029200	.00335600	.00445100	.00342900	.00029200	
315.000	.00029200	.00321000	.00445100	.00357500	.00029200	
337.500	.00029200	.00321000	.00415900	.00270000	.00014600	

ANNUAL: STABILITY CATEGORY F

DIRECTION (DEGREES)	WIND SPEED CATEGORY 1 (1.540 M/S)	WIND SPEED CATEGORY 2 (3.090 M/S)	WIND SPEED CATEGORY 3 (3.950 M/S)	WIND SPEED CATEGORY 4 (5.140 M/S)	WIND SPEED CATEGORY 5 (8.230 M/S)	W C (1
.000	.00030500	.00365500	.00479700	.00266500	.00000000	
22.500	.00025400	.00335000	.00190300	.00099000	.00000000	
45.000	.00025400	.00228400	.00312200	.00159900	.00000000	
67.500	.00025400	.00335000	.00540600	.00296900	.00030500	
90.000	.00091400	.00639600	.00966900	.00555800	.00045700	
112.500	.00076100	.00335000	.00327400	.00114200	.00000000	
135.000	.00137000	.00395900	.00266500	.00068500	.00000000	
157.500	.00137000	.00456800	.00305300	.00068500	.00000000	
180.000	.00182700	.00609100	.00662400	.00312200	.00022800	
202.500	.00121800	.00563400	.00619800	.00357800	.00038100	
225.000	.00152300	.00685200	.01076600	.00784200	.00137000	
247.500	.00091400	.00472000	.00772000	.00631900	.00152300	
270.000	.00076100	.00639600	.01000400	.01119200	.00274100	
292.500	.00030500	.00350200	.00464400	.00357800	.00030500	
315.000	.00030500	.00335000	.00464400	.00373100	.00030500	
337.500	.00030500	.00335000	.00434000	.00281700	.00015200	

SUM OF FREQUENCIES, FTOTAL = .99381

*** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack
***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** THE ANNUAL AVERAGE CONCENTRATION VALUES FOR
INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POI

** CONC OF OTHER IN (MICROGRAMS/CUBIC

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)
-241.00	116.00	.009316	-239.00
-239.00	-45.00	.019247	-239.00
-239.00	35.00	.018958	-239.00
-204.00	-86.00	.013180	-198.00
-169.00	-86.00	.010928	-155.00
-134.00	-86.00	.007475	-112.00
-89.00	-91.00	.003213	-70.00
-69.00	144.00	.006313	-68.00
-45.00	-95.00	.001210	-27.00
-1.00	-99.00	.001800	16.00
43.00	-103.00	.003187	59.00
70.00	-111.00	.005509	97.00
102.00	183.00	.020349	102.00
123.00	-133.00	.011355	142.00
149.00	-146.00	.012918	182.00
184.00	-145.00	.013191	202.00
209.00	-116.00	.013247	215.00
221.00	-31.00	.025667	222.00
227.00	7.00	.032258	223.00
242.00	91.00	.023422	251.00
260.00	181.00	.025157	262.00
264.00	232.00	.025917	-900.00
-900.00	-700.00	.002927	-900.00
-900.00	-500.00	.003943	-900.00
-900.00	-300.00	.005665	-900.00
-900.00	-100.00	.008457	-900.00
-900.00	100.00	.008129	-900.00
-900.00	300.00	.004771	-900.00
-900.00	500.00	.003555	-900.00
-900.00	700.00	.003315	-900.00
-900.00	900.00	.003028	-800.00
-800.00	-700.00	.002913	-800.00
-800.00	-500.00	.004093	-800.00
-800.00	-300.00	.005869	-800.00
-800.00	-100.00	.009370	-800.00
-800.00	100.00	.008947	-800.00
-800.00	300.00	.004738	-800.00
-800.00	500.00	.003946	-800.00
-800.00	700.00	.003616	-800.00
-800.00	900.00	.003270	-700.00

*** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** THE ANNUAL AVERAGE CONCENTRATION VALUES FOR INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POI

** CONC OF OTHER IN (MICROGRAMS/CUBIC

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)
-700.00	-700.00	.002837	-700.00
-700.00	-500.00	.004189	-700.00
-700.00	-300.00	.006057	-700.00
-700.00	-100.00	.010420	-700.00
-700.00	100.00	.009859	-700.00
-700.00	300.00	.004724	-700.00
-700.00	500.00	.004397	-700.00
-700.00	700.00	.003949	-700.00
-700.00	900.00	.003527	-600.00
-600.00	-700.00	.003036	-600.00
-600.00	-500.00	.004188	-600.00
-600.00	-300.00	.006458	-600.00
-600.00	-100.00	.011580	-600.00
-600.00	100.00	.010808	-600.00
-600.00	300.00	.005380	-600.00
-600.00	500.00	.004911	-600.00
-600.00	300.00	.005380	-600.00
-600.00	600.00	.004621	-600.00
-600.00	800.00	.004060	-600.00
-500.00	-800.00	.002900	-500.00
-500.00	-600.00	.003601	-500.00
-500.00	-400.00	.005218	-500.00
-500.00	-200.00	.008743	-500.00
-500.00	.00	.017213	-500.00
-500.00	200.00	.006715	-500.00
-500.00	400.00	.005846	-500.00
-500.00	200.00	.006715	-500.00
-500.00	200.00	.006715	-500.00
-500.00	400.00	.005846	-500.00
-500.00	600.00	.005127	-500.00
-500.00	800.00	.004408	-500.00
-400.00	-800.00	.003025	-400.00
-400.00	-600.00	.003835	-400.00
-400.00	-400.00	.004952	-400.00
-400.00	-200.00	.009255	-400.00
-400.00	.00	.020561	-400.00
-400.00	200.00	.007474	-400.00
-400.00	400.00	.006624	-400.00
-400.00	600.00	.005677	-400.00
-400.00	800.00	.004765	-400.00

*** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** THE ANNUAL AVERAGE CONCENTRATION VALUES FOR INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POI

** CONC OF OTHER IN (MICROGRAMS/CUBIC

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)
-300.00	-800.00	.003316	-300.00
-300.00	-600.00	.004027	-300.00
-300.00	-400.00	.005368	-300.00
-300.00	-200.00	.009348	-300.00
-300.00	.00	.024357	-300.00
-300.00	200.00	.008639	-300.00
-300.00	400.00	.007534	-300.00
-300.00	600.00	.006251	-300.00
-300.00	800.00	.005392	-300.00
-200.00	-800.00	.004059	-200.00
-200.00	-600.00	.004703	-200.00
-200.00	-400.00	.005696	-200.00
-200.00	-200.00	.007920	-200.00
-200.00	.00	.023386	-200.00
-200.00	200.00	.009527	-200.00
-200.00	400.00	.008564	-200.00
-200.00	600.00	.007572	-200.00
-200.00	800.00	.006679	-200.00
-100.00	-800.00	.004824	-100.00
-100.00	-600.00	.006024	-100.00
-100.00	-400.00	.007492	-100.00
-100.00	-200.00	.007056	-100.00
-100.00	.00	.004122	-100.00
-100.00	200.00	.009661	-100.00
-100.00	400.00	.011791	-100.00
-100.00	600.00	.009842	-100.00
-100.00	800.00	.008017	-100.00
.00	-800.00	.005559	.00
.00	-600.00	.007343	.00
.00	-400.00	.010323	.00
.00	-200.00	.011686	.00
.00	-200.00	.011686	.00
.00	.00	.000000	.00
.00	200.00	.017497	.00
.00	400.00	.016600	.00
.00	600.00	.012147	.00
.00	800.00	.009317	.00
100.00	-800.00	.005428	100.00
100.00	-600.00	.007086	100.00
100.00	-400.00	.009733	100.00

*** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** THE ANNUAL AVERAGE CONCENTRATION VALUES FOR INCLUDING SOURCE(S): 1

*** DISCRETE CARTESIAN RECEPTOR POI

** CONC OF OTHER IN (MICROGRAMS/CUBIC

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)
100.00	-200.00	.011923	100.00
100.00	.00	.007042	100.00
100.00	200.00	.019802	100.00
100.00	400.00	.015498	100.00
100.00	600.00	.011588	100.00
100.00	800.00	.009006	100.00
200.00	-800.00	.005219	200.00
200.00	-600.00	.006699	200.00
200.00	-400.00	.009144	200.00
200.00	-200.00	.013223	200.00
200.00	.00	.031916	200.00
200.00	200.00	.030070	200.00
200.00	400.00	.015798	200.00
200.00	600.00	.010848	200.00
200.00	800.00	.008577	200.00
300.00	-800.00	.004950	300.00
300.00	-600.00	.006397	300.00
300.00	-400.00	.008718	300.00
300.00	-200.00	.011626	300.00
300.00	.00	.031605	300.00
300.00	200.00	.023039	300.00
300.00	400.00	.018028	300.00
300.00	600.00	.011207	300.00
300.00	800.00	.008063	300.00
400.00	-800.00	.004780	400.00
400.00	-600.00	.006156	400.00
400.00	-600.00	.006156	400.00
400.00	-400.00	.008112	400.00
400.00	-200.00	.009952	400.00
400.00	.00	.026241	400.00
400.00	200.00	.017838	400.00
400.00	400.00	.018785	400.00
400.00	600.00	.012226	400.00
400.00	800.00	.008431	400.00
500.00	-800.00	.004623	500.00
500.00	-600.00	.005829	500.00
500.00	-400.00	.007239	500.00
500.00	-200.00	.008877	500.00
500.00	.00	.021792	500.00
500.00	200.00	.014526	500.00

*** ISCLT3 - VERSION 95250 *** *** Fort Wayne Reclamation Site, 30 ft stack ***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** THE ANNUAL AVERAGE CONCENTRATION VALUES FOR INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POI

** CONC OF OTHER IN (MICROGRAMS/CUBIC

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)
500.00	400.00	.015504	500.00
500.00	600.00	.012684	500.00
500.00	800.00	.008978	500.00
600.00	-800.00	.004424	600.00
600.00	-600.00	.005460	600.00
600.00	-400.00	.006470	600.00
600.00	-200.00	.009191	600.00
600.00	.00	.018475	600.00
600.00	200.00	.013327	600.00
600.00	400.00	.012965	600.00
600.00	600.00	.012726	600.00
600.00	800.00	.009268	600.00
700.00	-700.00	.004617	700.00
700.00	-500.00	.005398	700.00
700.00	-300.00	.006136	700.00
700.00	-100.00	.012475	700.00
700.00	100.00	.014116	700.00
700.00	300.00	.010481	700.00
700.00	500.00	.011119	700.00
700.00	700.00	.010780	700.00
700.00	900.00	.008193	800.00
800.00	-500.00	.004892	800.00
800.00	-300.00	.006101	800.00
800.00	-100.00	.011270	800.00
800.00	100.00	.012533	800.00
800.00	300.00	.009528	800.00
800.00	500.00	.009592	800.00
800.00	700.00	.009529	800.00
900.00	-300.00	.006089	900.00
900.00	-100.00	.010204	900.00
900.00	100.00	.011200	900.00
900.00	300.00	.008836	900.00
900.00	500.00	.008345	900.00

```
*** ISCLT3 - VERSION 95250 ***     *** Fort Wayne Reclamation Site, 30 ft stack
                                   ***

*** MODELING OPTIONS USED:  CONC   RURAL  FLAT          DFAULT

*** Message Summary : ISCLT3 Model Execution ***

 --------- Summary of Total Messages --------

A Total of            0 Fatal Error Message(s)
  Total of            0 Warning Message(s)
  Total of            0 Informational Message(s)

   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***

   ********   WARNING MESSAGES   ********
              ***  NONE  ***

   ************************************
   *** ISCLT3 Finishes Successfully ***
   ************************************
```

APPENDIX B

EMI LETTER TO USEPA DATED OCTOBER 23, 2001

ENGINEERING MANAGEMENT, INC.
1500 Ardmore Blvd., Suite 502
Pittsburgh, Pennsylvania 15221-4468
(412) 244-0917
(412) 243-3704 (Fax)

October 23, 2001

Mr. Jeffrey Gore
U.S. Environmental Protection Agency
Region V (SR-6J)
77 West Jackson Blvd.
Chicago, IL 60604-3590

Re: Summary of Site Investigation Data
Monitoring Well MW9s and GM-4 Areas
Wayne Reclamation and Recycling Site

Dear Mr. Gore:

As you know, we have been discussing groundwater impact at the monitoring well MW9s and GM-4 areas of the Wayne Reclamation and Recycling Site (Site). You had inquired whether the Remedial Investigation (RI) provided any information regarding the degree of impact in these areas. We have reviewed the RI data and have summarized the information in this letter. The attached figure shows soil and groundwater sampling locations in the MW9s and GM-4 areas. Two tables are also attached: Table One summarizes the data for the MW9s area and Table Two summarizes the data for the GM-4 area. The data is discussed below.

MW9s Area

The data from the MW9s area indicate that the impacted area is relatively small and that the horizontal and vertical limits of the impact have been accurately defined. Soil borings were installed during two phases of RI field activity. The first phase was conducted from February through March 1988 and the second phase was conducted from July through September 1988. During the first phase, soil boring SB-7 was advanced and monitoring well MW9s was subsequently installed in the borehole. Based on the results of the soil samples from SB-7, five additional soil borings (SB-007, SB-007N, SB-007S, SB-007E, and SB-007W) were advanced during phase two to delineate the impact area. The attached figure shows the location of these boring. Table One shows the sample results.

Soil sample results from SB-7 (see Table One) show that volatile organic compounds (VOCs) are at relatively low levels at 0-2 feet below ground surface (bgs) and increase sharply at depths intervals of 2-6 and 6-10 feet bgs. The water table was encountered at 10 feet bgs at SB-7. Three borings, SB-007E, SB-007N, and SB-007W, were installed within approximately 30 feet of SB-7 and soil samples from these borings showed non-detect or low levels of VOCs. This data shows that the extent of the impacted around SB-7 is limited. The RI does not include boring logs for SB-007 or SB-007S and soil samples were not collected from these borings.

RI groundwater data for monitoring well MW9s shows elevated levels of TCE, 1,2-DCE and VC. The most recent sample collected from MW9s in April 2001 shows decreased VOC concentrations, although historical data from MW9s shows a high degree of variability.

Based on the soil boring data it is expected that area of groundwater impact around MW9s is small; however, groundwater samples were not collected from borings SB-007E, SB-007N and SB-007W to confirm this hypothesis. If groundwater is migrating from the MW9s area it is moving towards the Blue River. Surface water and sediment data collected during the RI did not indicate any impact to the Blue River from the MW9s area (see Table One). With respect to surface water impact, the RI data is worst case because a groundwater extraction well (RW-3) was installed in this area in 1995. Water level measurements collected in the spring of 2001 show a 2-foot gradient from MW9s to RW-3 (approximately 45 feet apart). It is expected that this gradient will prohibit migration of VOCs from MW9s to the Blue River.

GM-4 Area

RI data was not collected in close proximity to GM-4. Soil sampling data from soil borings SB-18 and SB-18A (approximately 225 northwest of GM-4) were used for comparison (see Table Two). As shown on Table Two, VOCs of interest were not detected in soil samples from SB-18 and SB-18A. Groundwater results from former MW1s, MW1d, and MW1i, which were located approximately 225 feet northwest of GM-4, and from former MW12s, which was located approximately 75 feet northeast of GM-4, were used for comparison. The RI groundwater data indicates the presence of Site constituents of concern 1,2-dichloroethene and vinyl chloride but the levels do not define a potential source area in the vicinity of these wells. In addition, trichloroethene was not detected in RI groundwater samples from MW1s, MW1d, MW1i, and MW12S, but it is prevalent in the groundwater sampling results submitted by the City of Columbia City for GM-4. Of note, the former SB-18, SB-18A, MW1s, MW1d, and MW1i were removed by the City of Columbia City as part of landfill cap construction. For comparison purposes, the most recent groundwater sampling data from GM-4, recovery well RW-5, and relocated MW1D are presented on Table Two. The attached figure shows the locations of the referenced soil borings and monitoring wells.

If groundwater is migrating from the GM-4 area it is moving towards the Blue River. Surface water and sediment data collected during the RI did not indicate any impact to the Blue River surface water from the GM-4 area, while the sediment data indicates a possible impact the source is not clear (see Table Two). With respect to surface water impact, the RI data is worst case because a groundwater extraction well (RW-5) was installed between GM-4 and the Blue River in 1995. We do not currently have water level data for GM-4 and RW-5 to establish a gradient; however, a location analysis suggests that RW-5 should control migration of groundwater from the GM-4 area.

The combined groundwater sampling scheduled for later this month will provide additional information for our consideration. However, based on the analysis presented in this letter there is clearly no need for immediate action. Further, it appears that adjustment of the pumping rates at RW-3 and RW-5 should address any longer term concerns that you may have.

Should you have any questions, please do not hesitate to contact me.

Very truly yours,

ENGINEERING MANAGEMENT, INC.

For

James R. Campbell, Ph.D., P.E.

attachment

cc: J. Fehrenbach (Winston & Strawn, w/ attachment)
S. Grady (IDEM, w/ attachment)
E. Schlemmer (Liberty Mutual, w/ attachment)
Technical Committee (w/ attachment)

wayne\epa\gore MW9S letter

Table Two
Historical Data Summary
GM-4 Area

Wayne Reclamation and Recycling Site

Location (2)		Volatile Organic Compound (1) PCE	TCE	1,2-DCE	VC
RI DATA					
SB-18	0-2 ft bgs (3)	ND (4)	ND	ND	ND
	2-6 ft bgs	ND	ND	ND	ND
	6-10 ft bgs	ND	ND	ND	ND
SB-18A	5 ft bgs	ND	ND	ND	ND
	10 ft bgs	ND	ND	ND	ND
MW1s	Mar-88	ND	ND	ND	29
	Sep-88	ND	ND	ND	28
MW1i	Sep-88	ND	ND	ND	ND
MW1d	Sep-88	ND	ND	ND	ND
MW12s	Sep-88	ND	ND	470	2
SW2	upstream	ND	ND	ND	ND
SW3	downstream	ND	ND	1	0
SD2	upstream	ND	ND	ND	ND
SD3	downstream	ND	ND	960	270
RECENT DATA					
Relocated MW1D (Oct-00)		ND	ND	ND	ND
GM-4	Jun-01	ND	1,800	557	5
RW-5	Apr-98	ND	130	4,260	1,100

Notes:
(1) - Results are presented in ug/kg for soil and sediment and ug/l for groundwater and surface water. PCE = tetrachloroethene, TCE = trichloroethene, 1,2-DCE = total 1,2-dichloroethene, VC = vinyl chloride
(2) - SB = soil boring, MW = monitoring well, SW = surface water, SD = sediment
(3) - ft bgs - Indicates sample depth in feet below the ground surface.
(4) - ND - The constituent was not detected.

Table One
Historical Data Summary
MW9s Area

Wayne Reclamation and Recycling Site

Location (2)		Volatile Organic Compound (1) PCE	TCE	1,2-DCE	VC
SB-7/MW9s	0-2 ft bgs (3)	60	390	ND (4)	ND
	2-6 ft bgs	5,400	24,000	780	ND
	6-10 ft bgs	ND	43,000	51,000	ND
SB-007E	5 ft bgs	ND	ND	ND	ND
	10 ft bgs	ND	ND	ND	ND
SB-007N	5 ft bgs	8	26	2	ND
	10 ft bgs	2	13	66	ND
SB-007W	5 ft bgs	ND	1	ND	ND
	10 ft bgs	ND	ND	ND	ND
MW9s	Mar-88	ND	18,000	33,000	ND
	Sep-88	27	21,500	35,000	605
	Apr-01	ND	16,000	5,400	ND
SW5	upstream	ND	ND	4	ND
SW6	downstream	ND	ND	4	ND
SD5	upstream	ND	28	9	ND
SD6	downstream	ND	4	3	ND

Notes:
(1) - Results are presented in ug/kg for soil and sediment and ug/l for groundwater and surface water. PCE = tetrachloroethene, TCE = trichloroethene, 1,2-DCE = total 1,2-dichloroethene, VC = vinyl chloride
(2) - SB = soil boring, MW = monitoring well, SW = surface water, SD = sediment
(3) - ft bgs - Indicates sample depth in feet below the ground surface.
(4) - ND - The constituent was not detected.

LEGEND

- MW83a — MONITORING WELL LOCATION & NUMBER (PREVIOUSLY EXISTING)
- MW7a — MONITORING WELL LOCATION & NUMBER (PHASE I)
- MW12a — MONITORING WELL LOCATION & NUMBER (PHASE II)
- SB-9 — SOIL BORING LOCATION & NUMBER (PHASE I)
- SB-U — SOIL BORING LOCATION & NUMBER (PHASE II)
- SW7 — SURFACE WATER AND SEDIMENT SAMPLING LOCATION & NUMBER (PHASE I)
- SS2 — SURFACE SOIL SAMPLING LOCATION & NUMBER (PHASE I)
- TP1 — TEST PIT LOCATION & NUMBER (PHASE I)
- SG4 — STAFF GAUGE LOCATION & NUMBER (PHASE I)
- P4 — PIEZOMETER LOCATION & NUMBER (PHASE II)

NOTES:

1. BASE MAP CONSTRUCTED FROM AERIAL PHOTO DEVELOPED BY ABRAMS AERIAL SURVEY CORPORATION; LANSING, MICHIGAN DATED MAY 11, 1988.
2. VERTICAL DATUM IS SITE DATUM, USGS DATUM IS SITE DATUM MINUS 5.00 FEET. CONTOUR INTERVAL IS 1 (ONE) FOOT.
3. MONITORING WELLS (MW83a (SHALLOW AND DEEP), MW83b, MW83d, AND MW83e) WERE DRILLED AND INSTALLED BY PEERLESS-MIDWEST INC. UNDER THE SUPERVISION OF BERANEK ASSOCIATES IN MAY 1983.
4. MONITORING WELLS (MW1s TO MW11s) FOR PHASE I WERE DRILLED AND INSTALLED BY EXPLORATION TECHNOLOGY INC. (ETI) UNDER THE SUPERVISION OF WARZYN IN FEBRUARY AND MARCH 1988.
5. MONITORING WELLS (MW12s TO MW14s, MW1i, MW1d, MW8d, AND MW13d) FOR PHASE II WERE DRILLED AND INSTALLED BY EXPLORATION TECHNOLOGY INC. (ETI) UNDER THE SUPERVISION OF WARZYN IN JULY AND AUGUST 1988.
6. PH WELL (PH) WAS DRILLED AND INSTALLED BY A LOCAL PRIVATE WELL DRILLING CONTRACTOR ON FEBRUARY 24, 1960 FOR THE SPECIFIC USE OF PRODUCTION WATER FOR THE DANIEL BROTHER PACKING HOUSE. THIS WELL IS NO LONGER BEING USED AND THE PUMP HAS BEEN REMOVED.
7. LOCATION OF MONITORING WELLS WERE FIELD LOCATED BY WARZYN SUVEYORS ON MARCH 23, 1988 FOR PHASE I AND AUGUST 26, 1988 FOR PHASE II.
8. STAFF GAUGES ARE CONSTRUCTED OF IRON POLES AND WERE INSTALLED BY WARZYN ON MARCH 19, 1988.
9. LOCATIONS OF STAFF GAUGES WERE FIELD LOCATED BY WARZYN ON MARCH 23, 1988.
10. TEST PITS WERE PERFORMED BY ENVIRONMENTAL CLEAN-UP CONTRACTOR SERVICE, SERVICE, INC. (E.C.C.S.) UNDER THE DIRECTION OF WARZYN ON MARCH 23, 1988.
11. LOCATIONS OF TEST PITS WERE FIELD LOCATED BY WARZYN SURVEYORS ON MARCH 23, 1988
12. SOIL BORINGS (SB-1 TO SB-26) FOR PHASE I WERE DRILLED BY EXPLORATION TECHNOLOGY INC. (ETI) UNDER THE SUPERVISION OF WARZYN IN FEBRUARY AND MARCH 1988.
13. SOIL BORINGS (SB-A TO SB-V AND SB-27 TO SB-40) FOR PHASE II WERE DRILLED BY EXPLORATION TECHNOLOGY INC. (ETI) UNDER THE SUPERVISION OF WARZYN IN JULY AND AUGUST 1988.
14. LOCATION OF SOIL BORINGS WERE FIELD LOCATED BY WARZYN SURVEYORS ON MARCH 23, 1988 FOR PHASE I AND AUGUST 26, 1988 FOR PHASE II.
15. SURFACE SOIL SAMPLES WERE COLLECTED BY WARZYN ON MARCH 19, 1988.
16. LOCATION OF SURFACE SOIL SAMPLES WERE FIELD LOCATED BY WARZYN SURVEYORS ON MARCH 23, 1988.
17. SURFACE WATER AND SEDIMENT SAMPLES WERE COLLECTED BY WARZYN ON MARCH 17 & 18, 1988.
18. LOCATION OF SURFACE WATER AND SEDIMENT SAMPLES WERE FIELD LOCATED BY WARZYN SURVEYORS ON MARCH 23, 1988.
19. SEDIMENT SAMPLES WERE COLLECTED FROM BOTH BANKS OF THE BLUE RIVER AT LOCATIONS MARKED (R & L). THE LEFT BANK WOULD BE AS IF YOU ARE LOOKING UPSTREAM.
20. SD14 WAS COLLECTED IN A SURFACE WATER RUNOFF PATHWAY. NO STANDING WATER WAS PRESENT.

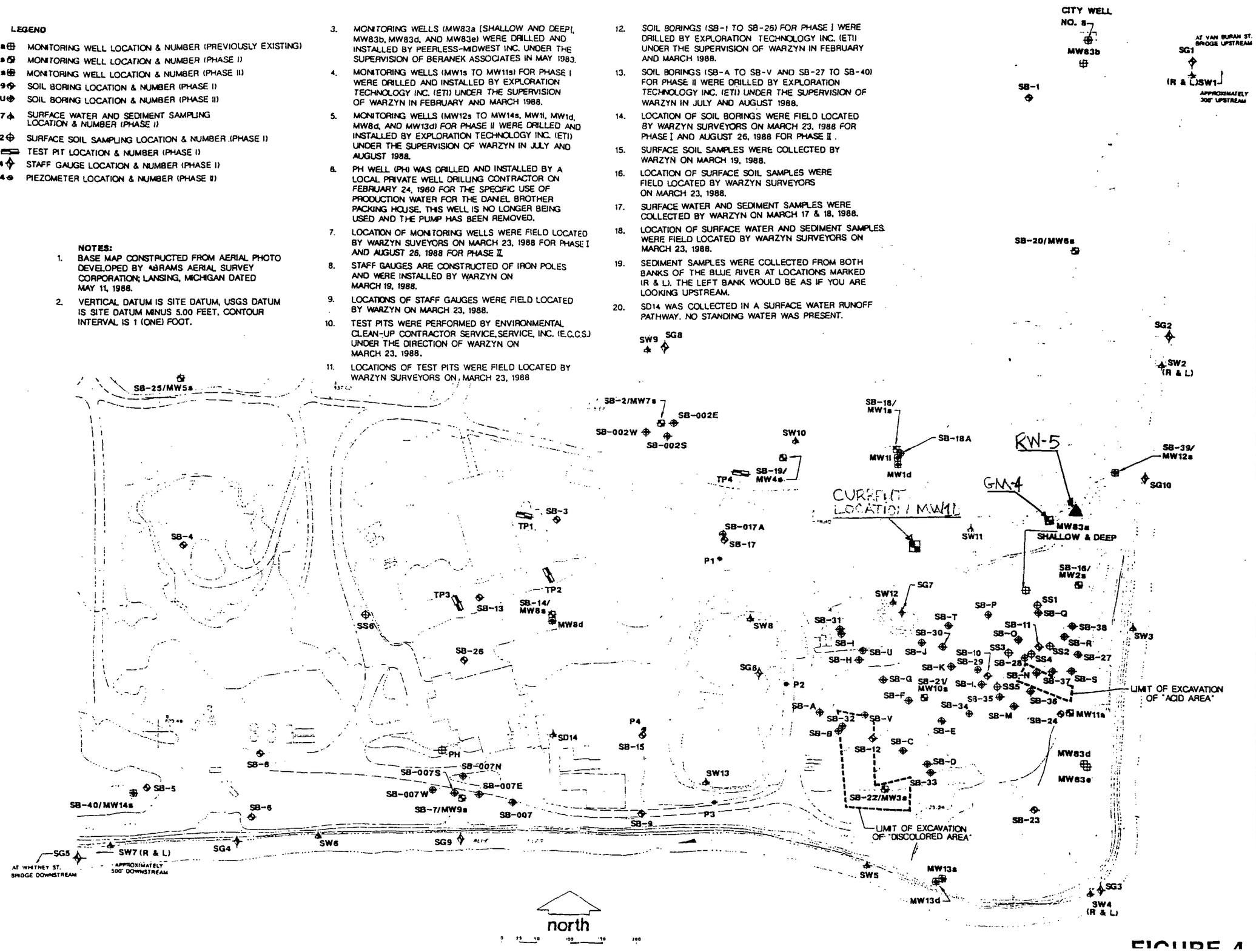

FIGURE 4

WARZYN
WARZYN ENGINEERING INC.
Environmental • Industrial • Consulting • Construction • Operations • Services

Designed by PJV
Drawn by D.L.L.
Checked by TJM
Approved by
Date 3/30/89

SUMMARY OF FIELD SAMPLING

WAYNE RECLAMATION AND RECYCLING RI/FS
COLUMBIA CITY, INDIANA

Project Number 68129.04

WARZYN