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INTERIM

SUMMARY DATA REPORT

OF GROUNDWATER SAMPLING

Performed for the

"General Switch" Property

located at

20 Industrial Place

City of Middletown

Orange County, New York

May 2003

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EXPOSURE INVESTIGATION

Prepared By:

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ESI File Number: LM97145.40

FEB 2 - 2005

Ecosystems Strategies, Inc. *Environmental Services and Solutions*

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Prepared By:

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Prepared For:

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P.O. Box 117
Hartsdale, New York 10530

The undersigned has reviewed this Report and certifies to Laurwal Holding Corporation that the information provided in this document is accurate as of the date of issuance by this office.

Any and all questions or comments, including requests for additional information, should be submitted to the undersigned.

Paul H

Paul H. Ciminello
President

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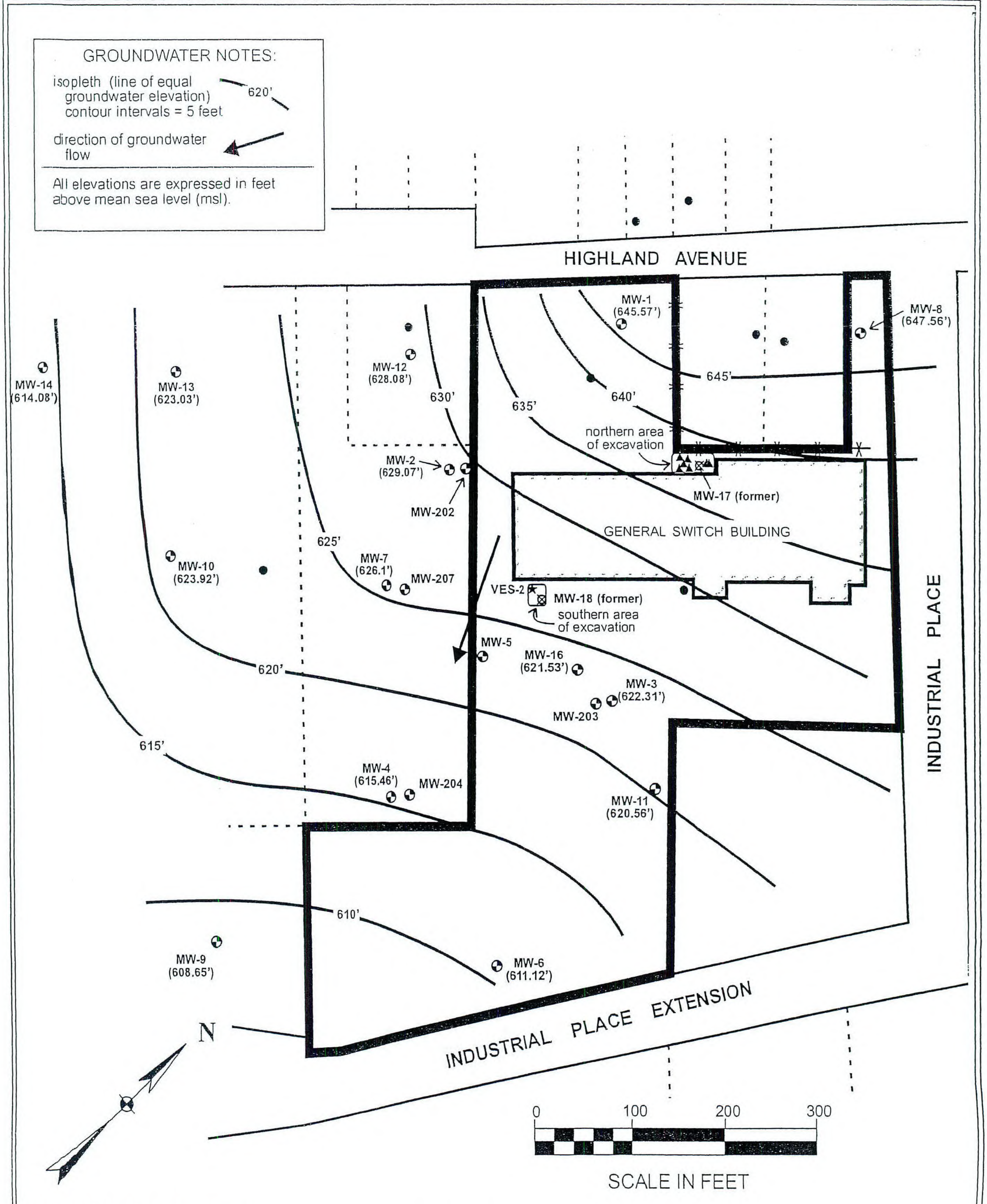

All feature locations are approximate.
Map sources: Shakti Consultants, Inc. 1991 and Lawler, Matusky & Skelly Engineers, LLP, 1998.

Groundwater Elevation Contour Map of Shallow Overburden Wells (January 7, 2003 Water Levels)

General Switch Site
City of Middletown
Orange County, New York

Legend:

monitoring well ⊕
previous sample locations ★ ▲
other well ●
subject property border ▬

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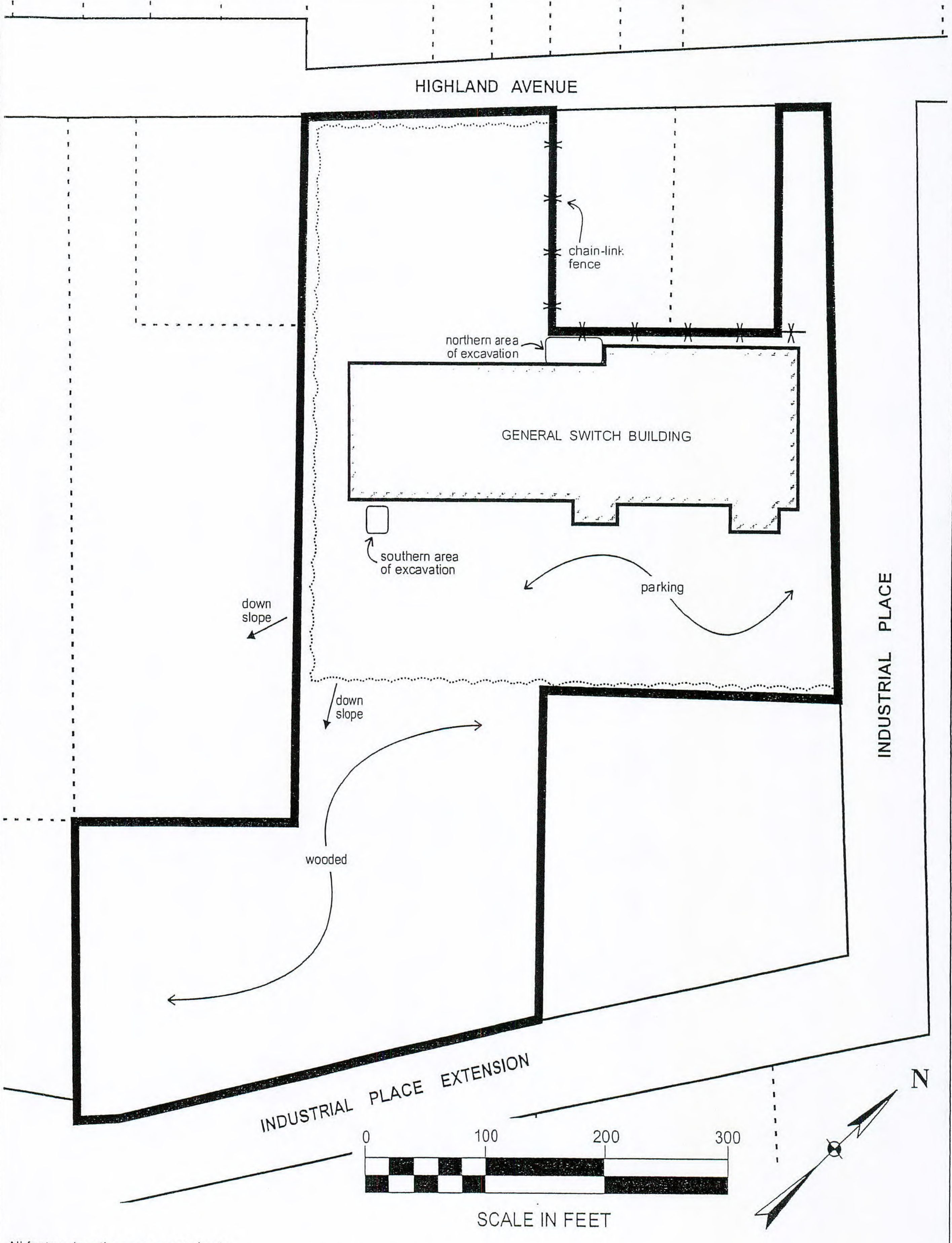
May 2003

Appendix A



All feature locations are approximate.
Map sources: Shakti Consultants, Inc. 1991 and Lawler, Matusky & Skelly Engineers, LLP, 1998.

Site Property Map

General Switch Site
City of Middletown, Orange County, New York

Legend:
subject property border ▬

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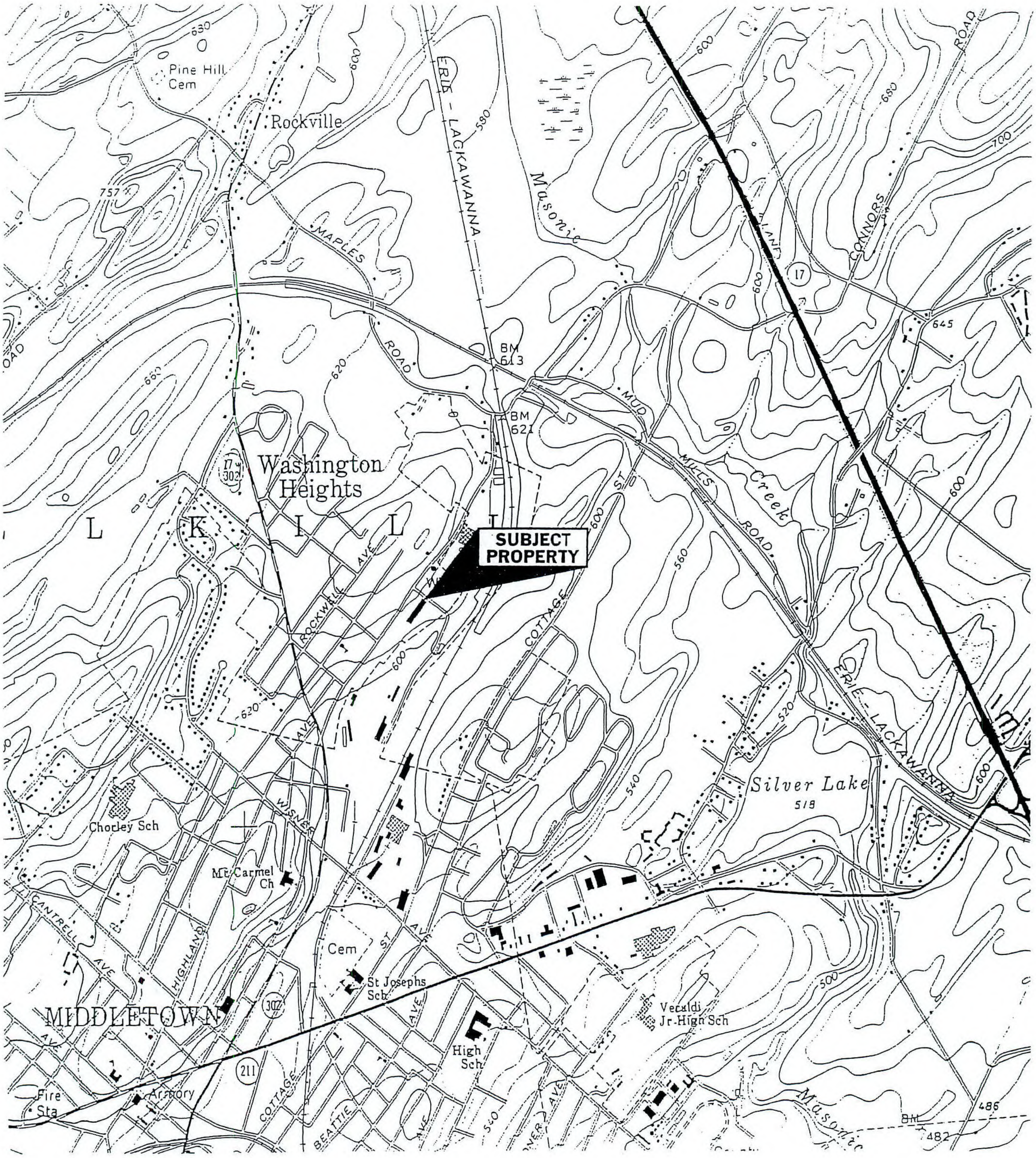
Appendix A



Source: U.S. Department of the Interior Geological Survey Topographic Map of the Middletown, NY Quadrangle, dated 1969 (photorevised 1976)

U.S.G.S. Topographic Map

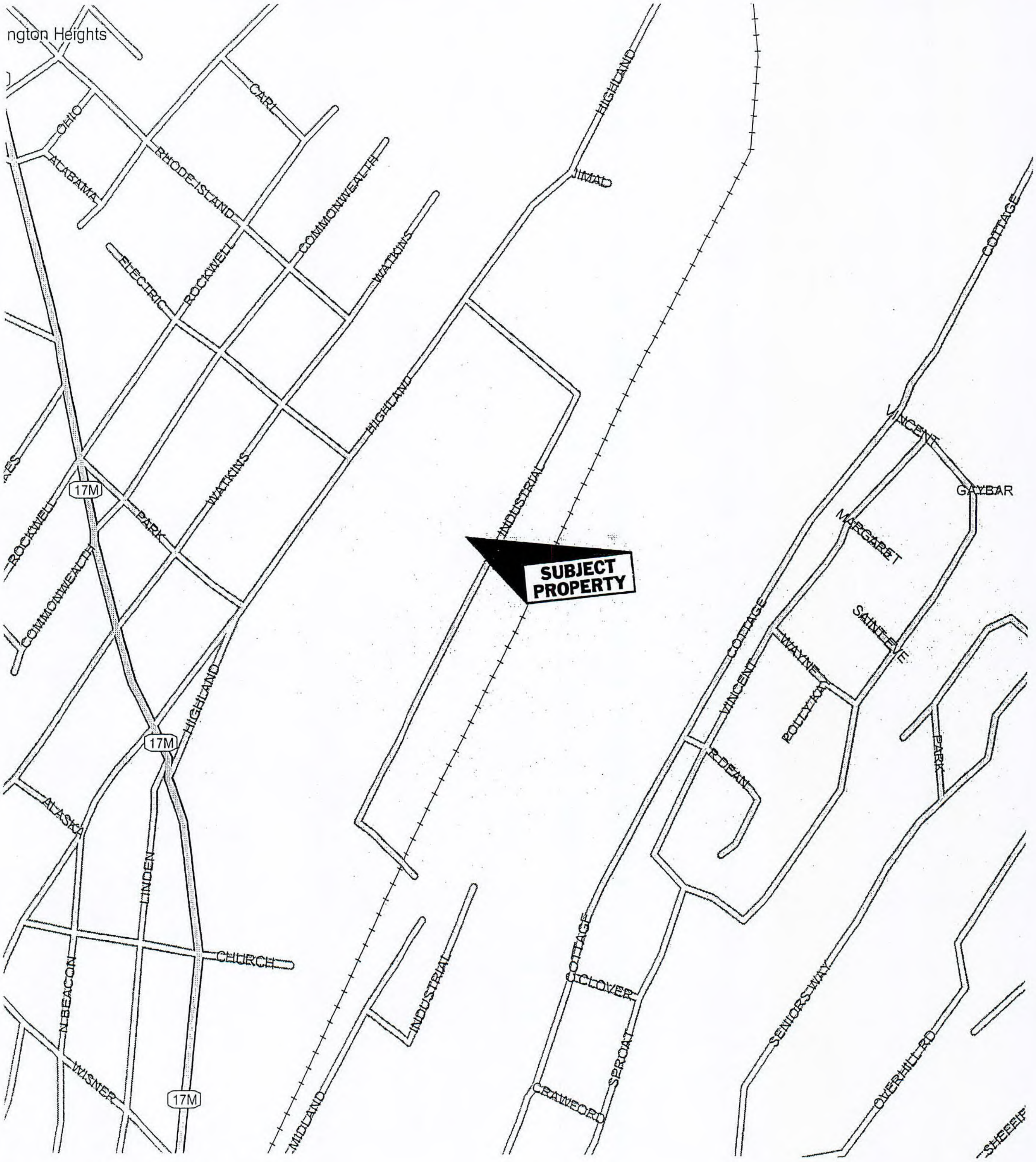
General Switch Property
20 Industrial Place
City of Middletown
Orange County, New York

N

ESI File: LM97145.40

Date: May 2003

Scale: 1:24000



Source: DeLorme USA Atlas 2001

Site Location Map

General Switch Property
20 Industrial Place
City of Middletown
Orange County, New York

N

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Date: May 2003

Appendix A

APPENDIX A

Maps

high range test, the low range test will be used to more accurately quantify the results. These new methods should be integrated into the recommended semi-annual sampling program. Laboratory analyses are recommended to continue as completed during the December 2002 to January 2003 sampling event.

7. Groundwater elevations were higher in the most recent sampling round (drought conditions occurred in the summers of 2000 and 2001). Data suggest a southeastern directional flow to the unconsolidated aquifer, with a southern directional flow to the bedrock aquifer.

The following recommendations are made, based on these findings:

1. Additional bedrock monitoring wells are recommended as MW-206, MW-209, and MW-211, forming couplet wells for the corresponding overburden wells MW-6, MW-9, and MW-11. A couplet to be named MW-19 and MW-219 is recommended to monitor downgradient migration and degradation of contaminants into the next decade or longer. A separate workplan defines the scope of work required for drilling, development, and logging of there proposed monitoring wells (see Attachment G).

2. It is recommended that the following shallow aquifer wells be sampled on a regular basis (semi-annually) to document improvements in groundwater quality: MW-8 and MW-1 as upgradient wells; MW-13 and MW-10 as cross-gradient wells; MW-2, MW-7, MW-16, MW 3 and MW-5 as "hot spot" wells; and MW-9 and MW-6 as down-gradient wells. It is recommended that two (2) wells be installed in the vicinity of MW-11. MW-11 has not yielded enough recharge to provide sufficient sampling during repeated sampling events. The re-drilling of MW-11 and a proposed bedrock well (proposed MW-211) in this vicinity would provide cross-gradient sampling points east of the area of known groundwater contamination. No additional wells are recommended.

   These wells should be sampled for chlorinated hydrocarbons (USEPA Method 8010 or comparable method) on a semi-annual basis (two times per calendar year), with the next sampling round to be instituted in the month of July, 2003.

3. Additionally, the deep bedrock aquifer wells MW-202, MW-203, MW-204, and MW-207 should be sampled twice yearly during the scheduled sampling regimen. Additional bedrock wells should be installed prior to this next sampling round.

4.0 Conclusions and Recommendations

This office has completed the services summarized in Section 2.0 for the property known as the General Switch Site located at the intersection of Highland Avenue and Industrial Place in the City of Middletown, Orange County, New York. All work was conducted consistent with USEPA guidelines and in accordance with a USEPA-approved Workplan.

Specific findings of this Report are:

1. Laboratory data of groundwater samples indicate the current (2003) presence of PCE in various concentrations exceeding 5 µg/l in wells MW-3, MW-4, MW-5, MW-6, MW-9, MW-11, MW-12, MW-13, MW-16, MW-202, MW-203, and MW-204.

2. PE concentrations appear to be decreasing, based on a comparison of current (2003) data to previously collected data (2000/2001 and 1992). Current December 2002/ January 2003 data comparisons show a reduction in peak PCE concentrations as well as a reduction in the number of wells documenting high PCE concentrations.

   The concentration of PCE, TCE and DCE is declining in all wells where detected. Total chlorinated VOCs have declined to an average of 38 percent and 28 percent of their maximum values for the overburden and bedrock contaminated wells, respectively. The presence of daughter products TCE and DCE(cis) suggest that PCE and TCE from the original release are degrading. Trace amounts of VC in a few analyses, oxidizing levels of dissolved oxygen and available organic carbon indicate that the degradation reaction is probably accelerated once VC is formed resulting in the breakdown products of carbon dioxide and chloride. This pattern is not apparent at MW-9; however, it is possible that chlorinated solvents may have arrived at the well later than other wells, or that reductive dechlorination may be hindered by concentrations of dissolved oxygen over 10 mg/L.

3. The lateral extent of PCE (and metabolite compounds) appears to be lessening, and most perimeter wells show acceptable levels of PCE.

4. High levels of PCE still exist and are concentrated in monitoring wells southeast of the General Switch building (in the immediate vicinity of the former "southern hot spot").

5. A comparison of data collected in 1992 with data obtained from groundwater samples collected in December and January 2000/2001 is not adequate or comprehensive enough to provide a long-term groundwater profile. Although existing data show a reduction in PCE levels on and off the site, the number of sampling events and availability of confirmatory data provide no continuous and verifiable data to support the reduction.

6. Existing data provide "limited evidence" for the presence of anaerobic biodegradation of chlorinated solvents by reductive dechlorination. Collection of additional data for parameters of alkalinity and total organic carbon, and more reproducible results for carbon dioxide, are recommended to provide "adequate evidence" for the case. Four additional field analytical tests are proposed for future sampling events: chloride high range, total organic carbon, and alkalinity. A drop-count titration test by Hach will be used for measuring alkalinity 20 to 400 mg/L. For high range chloride (0 to 400 mg/L) another titration test by Hach will be used. For total organic carbon a colorimetric Hach test will be used to measure in the high range of 20 to 700 mg/L. An alternate method of measuring dissolved oxygen is suggested in addition to the Horiba measurements which seem to change with time and never stabilize. Two colorimetric Hach methods for dissolved oxygen involve accu-vac ampules for high (0-10mg/L) and low (0-1000 ug/L) range using the photospectrometer. The high range will be used first. If a very low reading is obtained from the

Anaerobic Biodegradation Scores for Overburden Monitoring Wells

In the overburden, chlorinated solvents are detected in a plume centered off the southern corner of the General Switch Building and moving downgradient to the southwest (see Appendix A, Figure 6A). The highest concentrations of total volatile organic compounds are found in MW-5 (10,404 μg/l) with lesser amounts in MW-16 (2,670 μg/l) and MW-3 (4,770 μg/l). As drawn in conjunction with groundwater flow conditions, the plume is shown moving toward MW-9 (948 μg/l). A concentration of 836 μg/l was detected in MW-11, a cross gradient location which has been dry during previous sampling events. High water table conditions permitted sampling for the first time on January 6, 2003.

For scoring, the overburden wells were divided into two groups: near source wells (MW-5, MW-16, MW-3, MW-11), and downgradient wells (MW-4 and MW-9) as shown in Appendix B, Table 7A. Within the near source group, the highest scores are found in MW-5 and MW-3, which also exhibit the highest concentrations of PCE and daughter products TCE and DCE(cis). The scores from these two wells are interpreted as "limited evidence of anaerobic biodegradation of chlorinated organic compounds by reductive dechlorination processes." The scores for the other four overburden wells are interpreted as "inadequate evidence" for such processes at this time. However, all six overburden wells have concentrations of daughter products TCE and DEC(cis). Concentrations of chloride and carbon dioxide found in these wells are both two times background levels, indicating they are products of reductive dechlorination. The presence of dissolved oxygen at levels greater than 5 mg/L may limit or suppress the reductive pathway in these wells. Acidic readings in the range of 4.45 to 5 for pH are not conducive to reductive dechlorination. Insufficient alkalinity readings were taken and additional readings could influence scores from future sampling rounds.

Anaerobic Degradation Scores for Bedrock Monitoring Wells

As observed in Appendix A, Figure 6B and Appendix B Table 7B, concentrations of chlorinated volatile organic compounds are fragmented into three groups; near source wells, upgradient wells, and a downgradient well. These areas surround the centrally located MW-207 well in which 1.0 μg/l PCE was detected. This distribution is likely a result of installation of municipal water to homes on Highland Avenue and areas to the northwest, accompanied by disuse of homeowner wells, thereby reversing the groundwater flow direction from northwest to south. Use of a pump and treat system to remove several pounds of PCE from the groundwater occurred on the Parrella property and reduced PCE levels in the vicinity of MW-207.

MW-203 is located within the near source area plume corresponding to the area above it in the overburden wells. MW-204 is downgradient from the source area. MW-13 and MW-202 are in the upgradient plume area. The scores for the bedrock monitoring wells (see Appendix B, Table 7B) are somewhat higher than those calculated for the overburden wells (see Appendix B Table 7A). The scores fall in the range classified as "limited evidence of anaerobic biodegradation" with the exception of MW-202F. The score for that particular well is 16, which falls in the bottom of the category of "adequate evidence for anaerobic biodegradation."

MW-202, MW-203, MW-204, and MW-207 are deep bedrock wells extending through the on-site characteristic bedrock to depths greater than 100 feet below surface grade (bsg). Data from MW-202, MW-203, MW-204, and MW-207 document PCE concentrations in the bedrock aquifer.

MW-202, exhibited PCE concentrations of 4,700 μg/l and 9,600 μg/l during the September 1992 and November 1992 sampling events, respectively. PCE concentrations of 490 μg/l and 730 μg/l were detected during the December 2000 and January 2001 sampling events, respectively. A PCE concentration of 720 μg/l was detected during the current sampling event. Ground water existing at the fracture point of this well exhibited a PCE concentration of 450 μg/l for sample MW-202-F-1 during the current sampling event.

MW-203, exhibited PCE concentrations of 13,000 μg/l and 1,100 μg/l during the September 1992 and November 1992 sampling events, respectively. PCE concentrations of 6,000 μg/l and 3,100 μg/l were detected during the December 2000 and January 2001 sampling events, respectively. A PCE concentration of 2,100 μg/l was detected during the current sampling event. Ground water existing at the fracture point of this well exhibited a PCE concentration of 5,700 μg/l for sample MW-203-F-1 during the current sampling event.

MW-204, exhibited a PCE concentration of 1,300 μg/l during the October 1992 sampling event. PCE concentrations of 2,400 μg/ and 1,600 μg/l were detected during the December 2000 and January 2001 sampling events respectively. A PCE concentration of 610 μg/l was detected during the current sampling event.

MW-207, exhibited a PCE concentration of 390 μg/l during the November 1992 sampling event. A PCE concentration of 2 μg/l was detected during the December 2000 sampling event. A PCE concentration of 1 μg/l was detected during the current sampling event.

3.5 Groundwater Flow

Based on the depth to groundwater and calculated elevations of the water table (see Table of Water Levels and Elevations in Appendix B of this Report), maps of hydraulic gradient and flow direction were prepared representing hydraulic conditions on January 7, 2003 (see Shallow and Bedrock Groundwater Flow maps in Appendix A of this Report). The direction of shallow groundwater flow differs slightly from that in the bedrock, as shown by comparison of the Groundwater Flow maps in Appendix A. The water table was significantly higher during the current December 2002/January 2003 sampling event than measured during the December 2000/ January 2001 sampling event. In the shallow water-bearing zone, the upgradient water table was about five (5) feet higher along Highland Avenue and about two (2) feet higher downgradient along Industrial Place Extension. This rise in the water table reflects recharge of groundwater and partial recovery from a few years of drought.

3.6 Interpretation of Anaerobic Biodegradation Indicator Parameters

The analyses of indicator parameters for anaerobic biodegradation indicator parameters include the field monitoring of purge water in the flow cell (see Appendix B, Table 5), the field spectrophotometric and titration measurements (see Appendix B, Table 6), the laboratory halogenated VOC analyses (see Appendix B, Table 1), and additional lab analyses for ethene, ethane, methane, total organic carbon, alkalinity, and manganese (see Appendix B, Table 2).

Contamination by PCE, 1,1,1-trichloroethylene (TCE) and 1,2-dichloroethylene (cis) (DCEcis) has been detected in groundwater from the overburden monitoring wells and the bedrock wells at the General Switch site. A significant amount of contaminated soil and subsoil was removed from the site and a substantial amount of chlorinated solvent was removed by treatment of groundwater pumped from a well on the Parella property. However, dissolved chlorinated solvents have continued to be detected in water samples from many of the monitoring wells.

MW-3, exhibited a PCE concentration of 8,700 μg/l during the September 1992 sampling event. PCE concentrations of 7,300 μg/l and 2,900 μg/l were detected during the December 2000 and January 2001 sampling events, respectively. A PCE concentration of 4,300 μg/l was identified during the current sampling event.

MW-4, exhibited a PCE concentration of 20,000 μg/l during the September 1992 sampling event. PCE concentrations of 15,000 μg/l and 10,000 μg/l were detected during the December 2000 and January 2001 sampling events, respectively. A PCE concentration of 1,600 μg/l was detected during the current sampling event.

MW-5, exhibited a PCE concentration of 41,000 μg/l during the September 1992 sampling event. PCE concentrations of 13,000 μg/l and 28,000 μg/l were detected during the December 2000 and January 2001 sampling events, respectively. A PCE concentration of 9,800 μg/l was detected during the current sampling event.

MW-6, exhibited a PCE concentration of 27 μg/l during the September 1992 sampling event. A PCE concentration of 16 μg/l was detected during the January 2001 sampling event. A PCE concentration of 25 μg/l was detected during the current sampling event.

MW-7, exhibited a PCE concentration of 120 μg/l during the October 1992 sampling event. PCE was not detected in the sample from the December 2000 or current sampling events.

No previous sampling data from 1992 was available for MW-8. No detectable concentration of PCE was found in this upgradient well during the December 2000 or current sampling events.

No previous sampling data from 1992 was available for MW-9. PCE concentrations of 1,000 μg/l and 470 μg/l were detected during the December 2000 and January 2001 sampling events, respectively. A PCE concentration of 770 μg/l was detected during the current sampling event.

MW-10, exhibited a PCE concentration of 57 μg/l during the September 1992 sampling event. PCE was not detected during the December 2000, January 2001, or the current sampling events.

MW-11, did not have any previous sampling data prior to the current sampling event due poor recovery from this well. A PCE concentration of 740 μg/l was detected during the current sampling event.

MW-12, exhibited a PCE concentration of 140 μg/l during the September 1992 sampling event. No PCE was detected during the December 2000 sampling event. A PCE concentration of 2 μg/l was detected during the current sampling event.

MW-13, exhibited PCE concentrations of 130 μg/l and 2,900 μg/l during the September 1992 and November 1992 sampling events, respectively. PCE concentrations of 180 μg/l and 140 μg/l were detected during the December 2000 and January 2001 sampling events, respectively. A PCE concentration of 87 μg/l was detected during the current sampling event.

MW-14, exhibited PCE concentrations of 12 μg/l and 140 μg/l during the September 1992 and November 1992 sampling events, respectively. No detectable concentrations of PCE were detected during the December 2000 sampling. A PCE concentration of 6 μg/l was detected during the January 2001 sampling event. No PCE concentrations were detected during the current sampling event.

MW-16, exhibited a PCE concentration of 2,400 μg/l during the September 1992 sampling event. PCE concentrations of 7,000 μg/l and 6,200 μg/l were detected during the December 2000 and January 2001 sampling events, respectively. A PCE concentration of 2,300 μg/l was detected during the current sampling event.

3.0 Laboratory Results and Data Summary

3.1 General Comments

Laboratory analysis of the current sampling event indicates a significant reduction of PCE concentrations in the majority of wells sampled since the 1992 sampling event. Significant overall reductions of PCE are also evident in all the wells sampled since the 2000/2001 sampling event with the exception of January 2001, confirmatory samples from wells MW-3, MW-6, MW-9, and MW-202. The current sampling event indicates marginal increases of PCE concentrations relative to the confirmatory samples taken from these wells.

3.2 Data Validation

The Interim Groundwater Remediation Workplan specifies that 20 percent of the data package will be submitted to an independent validator for review and assembly of a Data Validation Report. The data validation procedure was completed by subcontractor Renee Cohen of Premier Environmental Group (see Appendix F). Data for groundwater samples from 19 monitoring wells were sent for validation with respect to analyses conducted by York Analytical Laboratories, Inc. for USEPA method 8060B for halogenated volatile organic compounds. The report's overall assessment stated: "Analytical QC criteria was met for these analyses. The data reported agrees with the raw data provided in the final report. The laboratory provided complete data packages and reported all data using acceptable protocols and laboratory qualifiers as defined in the report package. All data provided for this data set is acceptable for use, with noted data qualifiers." Qualifiers represent minor details related to laboratory analysis and do not indicate differences in compound concentrations.

3.3 Laboratory Analyses of Monitoring Well Groundwater Samples (December 2002/ January 2003 Data)

For the purpose of organization and clarity, the reference and discussion of laboratory data is segregated into three distinct categories to more accurately classify the extent of PCE in groundwater obtained from selected wells during the current groundwater sampling event. All laboratory data reports are included in Appendix C. Groundwater samples are categorized as those with concentrations less than 50 μg/l, those with concentrations between 50 μg/l and 500 μg/l, and those with concentrations greater than 500 μg/l. All data is summarized in the Analytical Data Tables included as Appendix B of this Report. Color-coded maps depicting contaminant concentration distribution and direction of groundwater flow are included in Appendix A of this Report.

Concentrations of PCE less than 50 μg/l

Low concentrations of PCE were detected in MW-6 (25 μg/l), MW-12 (7 μg/l), and MW-207 (1 μg/l). MW-6 and MW-12 are shallow wells located, respectively, downgradient and upgradient of the General Switch Building. MW-207 is a deep bedrock well located southwest and downgradient of the General Switch building.

No concentrations of PCE above laboratory minimum detection levels were detected in MW-1, MW-2, MW-7, MW-8, MW-10, and MW-14 during the current sampling event. These shallow wells are located upgradient from groundwater flow and document the absence of PCE in the northwestern perimeter at shallow depths.

Concentrations of PCE Between 50 and 500 μg/l

MW-13, located west and upgradient of the General Switch building, exhibited a PCE concentration of 87 μg/l.

MW-202-F-1 (the fracture point of MW-202), located west and upgradient of the General Switch building, exhibited a PCE concentration of 450 μg/l.

Concentrations of PCE Greater than 500 μg/l

Wells MW-3, MW-4, MW-5, MW-9, MW-11, MW-16, MW-202, MW-203, MW-203-F-1, and MW-204, generally located south and downgradient of the General Switch building, exhibiting elevated PCE concentrations as follows:

MW-3, located southeast and downgradient of the General Switch building, exhibited a PCE concentration of 4,300 μg/l.

MW-4, located south and downgradient of the General Switch building, exhibited a PCE concentration of 1,600 μg/l.

MW-5, located south and downgradient of the General Switch building, exhibited a PCE concentration of 9,800 μg/l.

MW-9, located south and downgradient of the General Switch building, exhibited a PCE concentration of 770 μg/l.

MW-11, located southeast and downgradient of the General Switch building, exhibited a PCE concentration of 740 μg/l.

MW-16, located southeast and downgradient of the General Switch building, exhibited a PCE concentration of 2,300 μg/l.

MW-202, located west and upgradient of the General Switch building, exhibited a PCE concentration of 720 μg/l.

MW-203, located southeast and downgradient of the General Switch building, exhibited a PCE concentration of 2,100 μg/l. Its fracture point, MW-203-F-1, exhibited a PCE concentration of 5,700 μg/l.

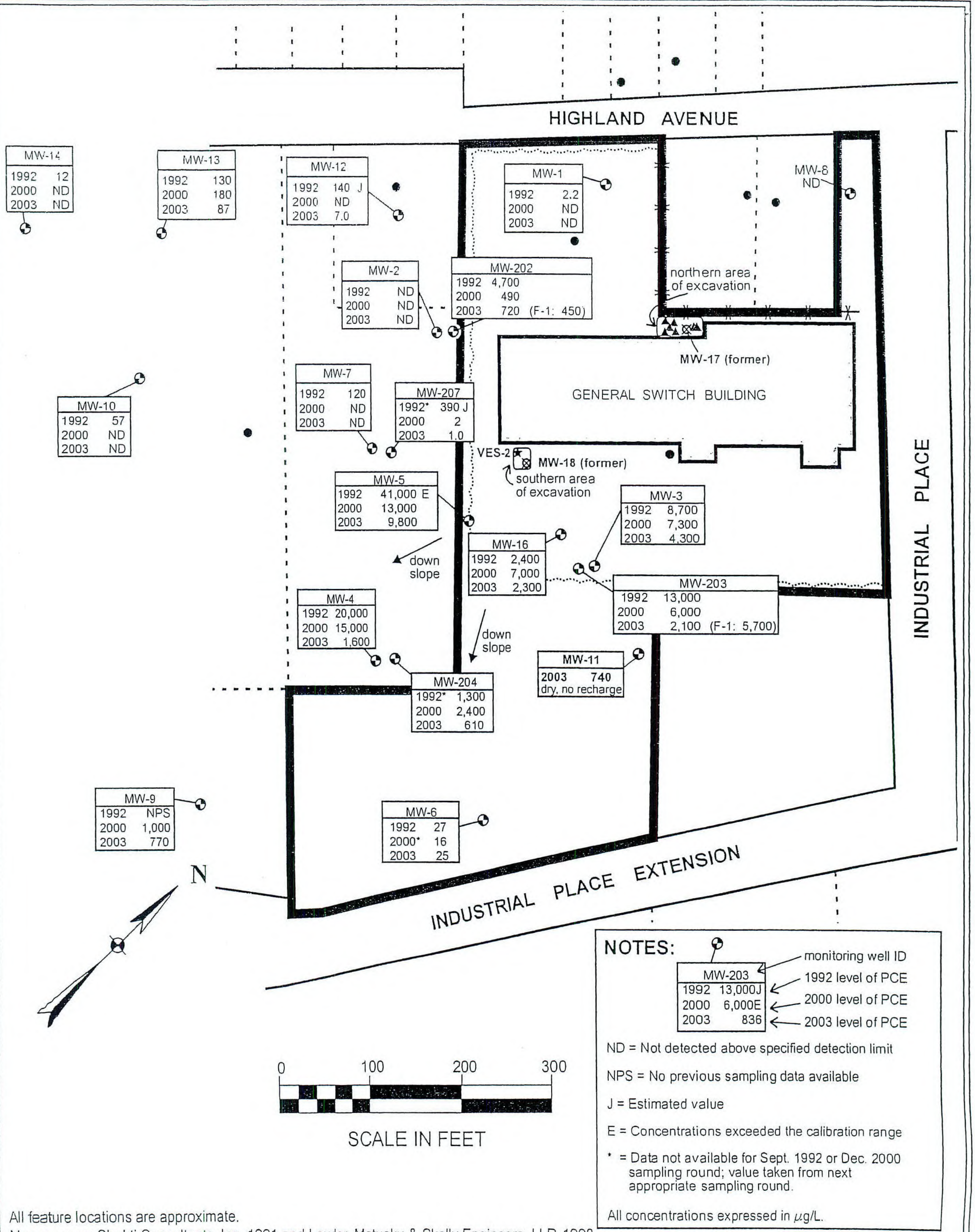
MW-204, located southwest and downgradient of the General Switch building, exhibited a PCE concentration of 610 μg/l.

3.4 Comparison of Data

The following is a comparison of data from Sampling Events of 1992, December 2000 ("round 1"), January 2001 ("round 2", confirmatory sampling), and December 2002/ January 2003 (current sampling event). Analytical Data Tables are included as Appendix B of this Report.

MW-1, located northwest and upgradient of the General Switch building, exhibited a PCE concentration of 2.2 μg/l in 1992. No detectable concentrations of PCE were identified during the December 2000 or current sampling events.

MW-2, located west and upgradient of the General Switch building, exhibited a PCE concentration of 8 μg/l in 1992. No detectable concentrations of PCE were identified during the December 2000 or current sampling events.



NOTES:

ND = Not detected above specified detection limit

NPS = No previous sampling data available

J = Estimated value

E = Concentrations exceeded the calibration range

* = Data not available for Sept. 1992 or Dec. 2000 sampling round; value taken from next appropriate sampling round.

All concentrations expressed in μg/L.

All feature locations are approximate.
Map sources: Shakti Consultants, Inc. 1991 and Lawler, Matusky & Skelly Engineers, LLP, 1998.

Comparative PCE Concentrations 1992, 2000 and 2003

General Switch Site
City of Middletown
Orange County, New York

Legend:
- subject property border ▬
- monitoring well ⊕
- other well ●
- previous sample locations ★ ▲

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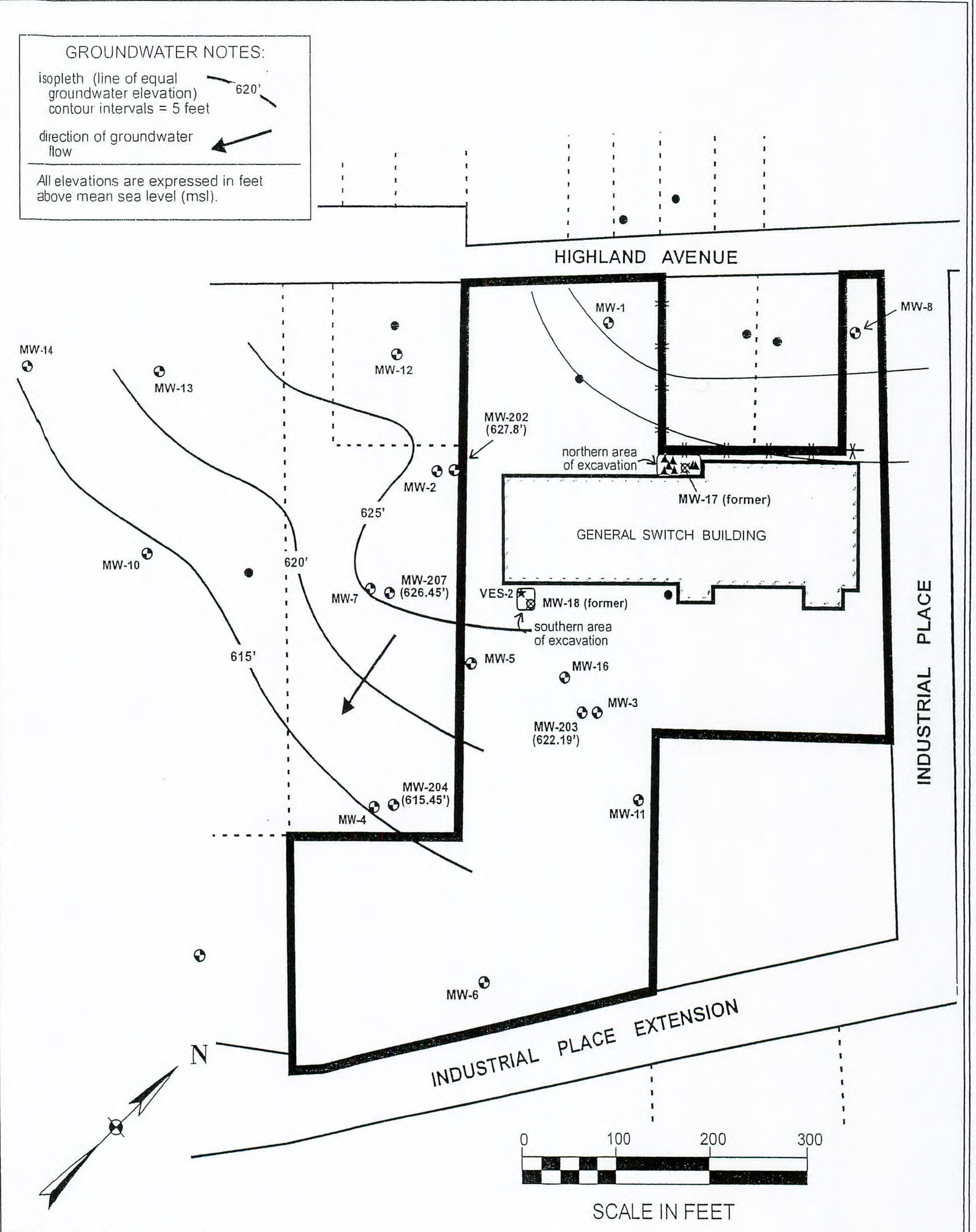
Appendix A



All feature locations are approximate.
Map sources: Shakti Consultants, Inc. 1991 and Lawler, Matusky & Skelly Engineers, LLP, 1998.

Groundwater Elevation Contour Map of Deep Bedrock Wells (January 7, 2003 Water Levels)

General Switch Site
City of Middletown
Orange County, New York

Legend:

monitoring well ⊕
previous sample locations ★ ▲
other well ●
subject property border ▬

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Appendix A

After sample collection, the sample containers were placed in a cooler prior to transport to the laboratory. The water samples were transported within 24 hours via courier to York Analytical Laboratories, Inc., a New York State Department of Health Environmental Laboratory Approval Program (ELAP) certified laboratory (ELAP Certification Number 10854) for chemical analyses. Appropriate chain of custody procedures were followed.

2.3.2 Sample Identification

Sample identification included the monitoring well number and date of sampling. The sample identification protocol used during this sampling event followed USEPA approved procedures as specified in the Workplan.

2.3.3 Laboratory Analysis

All water samples were submitted to the laboratory and analyzed for the halogenated fraction of VOCs utilizing USEPA Method 8260B. This method offers a detection limit of one microgram per liter (μg/l). All trip blanks, equipment blanks, and field blanks collected for quality assurance purposes were also analyzed using USEPA Method 8260B.

2.3.4 Field Measurements of Biodegradation Indicator Parameters

To obtain data and provide evidence for the assessment of anaerobic biodegradation of the PCE release, two types of measurements were planned as part of the on-site groundwater sampling tasks. The sampling plan proposed to use a Horiba field instrument for measuring water quality parameters during the low flow purging of each monitoring well, including pH, conductivity, turbidity, dissolved oxygen, temperature, and ORP. Copies of the field notebook (see Appendix E) include those water quality measurements, and information on pump depth and static water level. Horiba measurements, water levels, volume and rate of purge were recorded at time intervals during low flow well purging. An additional Horiba instrument outfitted with specific sensors was proposed to monitor nitrate and chloride ion content during purging. At the time of mobilization for the sampling event, our Horiba supplier informed ESI that they no longer provide the special sensors. An attempt to locate an alternate supplier for the sensors was unsuccessful. On site chemical analyses tests were also proposed to measure additional biodegradation indicators such as carbon dioxide, sulfide, ferrous iron, total iron, nitrate, and chloride. To compensate for the reduced Horiba capability, two Hach tests were added to the field tasks to analyze for nitrate and chloride. Additional laboratory analyses were ordered for dissolved ethene, ethane, and methane gases in addition to manganese and total organic carbon (see section 3.6, below).

The current occupant of the General Switch building provided a location to conduct the field chemical analysis program indoors. Field data sheets with results of onsite analytical testing are provided in Appendix D. The Hach methods are colorimetric tests using a DR/2010 spectrophotometer. The carbon dioxide test is a Chemmetrics titration test. A lab "placemat" was designed to organize the samples and blanks in their various 10 ml glass cells and 25 ml plastic cells, and accu-vac vials. A new "placemat" was used for each monitoring well to keep the analytical space clean and organized. Immediately after the groundwater samples were taken from each monitoring well, they were taken back to the temporary indoor lab space and analyzed.

For each sample, the tests were conducted in the following order as required by urgency and mixing times: carbon dioxide, sulfide, ferrous iron, total iron, sulfate, nitrate, nitrite, manganese, chloride, calcium, and magnesium. Enough sample cells were purchased so that the only ones that had to be used again during the same day were two 10 ml glass cells used in a test provided with the rental spectrophotometer. Between tests, the glass cells were decontaminated with alconox and distilled water. At the end of each day, the sample cells and graduate cylinders were cleaned with alconox and distilled water. Spent accu-vac vials, reagents, and titration tubes were disposed of with the purge water and decontamination fluids.

Low Flow pump with dedicated Teflon-lined tubing attached. A USEPA approved low flow purge protocol was used to reduce the volume of contaminated water requiring disposal. All well purge-water was placed in an on-site 275-gallon AST and steel 55-gallon drums for collection and eventual off-site disposal.

Field indicator parameters (temperature, pH, specific conductance, dissolved oxygen, turbidity, and oxidation reduction potential [ORP]) were measured during well purging using a Horiba U-22 field instrument. Well purging was considered adequate when the field-measured parameter readings stabilized, as outlined on Page 7 of the USEPA Region 2 Groundwater Sampling Procedures, included in Appendix G of the Interim Groundwater Remediation Workplan. All instrument measurements and field observations (e.g., turbidity, odor, presence of a sheen, etc) were recorded in a bound field notebook (see Appendix E of this Report).

After low flow purging for 15 minutes, groundwater samples were collected using dedicated Teflon-lined tubing (see the Shallow and Bedrock Contaminant Concentration Distribution Maps and Groundwater Flow Maps in Appendix A for monitoring well locations).

Sampling pumps and the Horiba U-22 were decontaminated in accordance with the procedures outlined in the USEPA Region 2 Groundwater Sampling Procedures, included in Appendix G of the Workplan. Other re-usable sampling equipment was decontaminated in the following manner:

1. Pressure washed with water and a designated brush to remove any visible dirt;
2. Washed and scrubbed in a mild detergent (e.g., Alconox) and de-ionized water using a designated brush;
3. Rinsed with de-ionized water;
4. Rinsed with 10% Nitric Acid solution;
5. Rinsed with de-ionized water;
6. Rinsed with methanol;
7. Rinsed with de-ionized water; and,
8. Allowed to air dry and used immediately or wrapped in aluminum foil (shiny side out).

2.2.4 Field Logs

An assessment of groundwater characteristics, including the presence of foreign materials, field indications of contamination (e.g., unusual coloration or odors), and instrument indications of contamination (i.e., PID readings) was made by ESI personnel during the groundwater sampling event. ESI personnel maintained field logs documenting the physical characteristics of the encountered groundwater, PID readings, and any field indications of contamination for all encountered material.

2.3 Sample Collection

2.3.1 Sample Collection Procedures

At each sample location a sufficient volume of groundwater was collected for the known required analyses (and for any potential additional analyses) and notations were made regarding the sampled materials' physical characteristics. As specified in the Workplan, one (1) trip blank, one (1) field blank, and one (1) equipment blank were utilized for each day of sampling during the current sampling event.

All groundwater samples were collected in a manner consistent with USEPA and NYSDEC sample collection protocols (See Section 2.2.3 above). Samples were collected directly into laboratory-cleaned, 40-milliliter vials containing hydrochloric acid as a preservative for VOCs (Protocol B). Two, one liter amber glass containers of water were collected for on-site field analysis of biodegradation indicator parameters (see section 2.3.4 below). Field measurements of biodegradation indicator parameters are included as Appendix D of this Report.

2.0 Fieldwork

2.1 Specified Objectives

ESI conducted groundwater sampling events at all on- and off-site wells located on and adjacent to the subject property (hereafter referred to as the current sampling event), as outlined in the Workplan, on December 16 through 20, 2002, and on January 2 and 6, 2003. A site property map depicting the location of all associated monitoring wells is provided in appendix A. The work described in this Report was conducted:

- To document and evaluate current groundwater conditions including: water levels; concentrations of Volatile Organic Compounds (VOCs); and indications of biodegradation; and,
- To assess the need for the installation of additional monitoring wells.

Fieldwork conducted to achieve these objectives included the development and sampling of monitoring wells located both on and adjacent to the site, as is described in detail in Section 2.2, below.

This Report was prepared to document all fieldwork activities and resulting analytical data and to provide conclusions pertaining to the groundwater sampling conducted during the current sampling event.

2.2 Groundwater Sampling

2.2.1 Notifications

Access to Properties

Access to nearby properties, as required for well sampling, was obtained prior to the commencement of fieldwork activities. No access to property or wells was denied by any of the private property owners with wells located on their property.

Agency Notification/ Oversight Mandate

The USEPA was notified in writing at least two weeks prior to the initiation of the December 2002 fieldwork. Sreenivas Kota Ph.D., P.E. from Malcolm Pirnie was present on-site for the commencement of groundwater sampling (December 16, 2002) and provided oversight of fieldwork activities (as mandated by the USEPA). The USEPA recommended one day of oversight for this groundwater sampling event.

2.2.2 Field Screening for Organic Vapors in Monitoring Wells

Prior to sampling, wells were screened using a photo-ionization detector (PID) calibrated to 100 parts per million calibration gas equivalents (ppm-cge) isobutylene in air. The wells were opened and screened, and where applicable the inner well cover was opened and screened. Screening results were utilized in determining the presence or absence of elevated concentrations of PCE vapors in the work area. The results were recorded in ESI Field Logs (see Section 2.2.4, below).

2.2.3 Fieldwork Methodology

Prior to sampling, the 19 groundwater monitoring wells were purged. All well purging was conducted to restore the natural hydraulic connection between the well screen and water table, to reduce turbidity, and to remove fines and drilling/well installation fluids or materials. Each well was purged using a 1.5-inch diameter, properly decontaminated, stainless steel submersible Grundfoss groundwater conditions in light of historical groundwater quality and to assess the potential for the installation of additional wells and/or a groundwater remedial system. (The fieldwork summarized in this Report was performed to address the specified sampling requirements of the Workplan).

On April 27, 2001, ESI prepared an Interim Summary Data Report of Groundwater Sampling (April 2001 Groundwater Report), documenting fieldwork and resulting analytical data from December 2000 and January 2001 groundwater sampling events. PCE was found at concentrations exceeding NYSDEC guidance levels in groundwater samples collected from both on-site and off-site wells; contaminant concentrations, however, were detected at lower levels relative to PCE concentrations documented in sampling events in 1992 (peak PCE concentrations were reduced and there was a reduction in the number of wells indicating high PCE concentrations). Laboratory evidence indicated that high levels of PCE still existed in monitoring wells located southeast of the General Switch building (in the immediate vicinity of the former southern hot spot). The April 2001 Groundwater Report noted that the removal of a significant amount of contaminated soil from the northern and southern hot spots may be directly responsible for the decrease in the extent and severity of groundwater contamination.

Recommendations provided in the April 2001 Groundwater Report were as follows: shallow aquifer wells should be sampled on a regular basis to document improvements in groundwater quality; the shallow aquifer wells should be sampled for chlorinated hydrocarbons on a semi-annual basis; two (2) wells should be installed in the vicinity of MW-11 due to its poor recharge rate and insufficient sampling; the deep bedrock aquifer wells should be sampled twice yearly during the scheduled sampling regimen; and, active groundwater remediation should be implemented using an extraction well in the immediate vicinity of MW-4 and MW-5, with the objective of reducing on-site PCE concentrations in groundwater.

According to Jacobs and Shakti, a layer of orange-brown glacial till is located near the top of the soil profile. Beneath this glacial till is a layer of gray clay (characterized by fractured shale fragments) located over fractured shale bedrock. Jacobs and Shakti state that the till acts as a confining layer and that no true water-table aquifer is present in the shallow till soils at the site. Established permeability ranges for these soils are from 1.3 x 10^{-7} cm/sec to 6.4 x 10^{-7} cm/sec. Falling head and constant head permeability tests were performed. Additionally, bedrock and shale studies were conducted.

ESI conducted on-site soil removal activities on various dates in 1998 and 1999. During this remedial activity, fractured shale was encountered at depths of 11 to 12 feet below surface grade (bsg).

1.3.2 Site Topography

Information on the subject property's topography was obtained from the review of the United States Geological Survey (USGS) Topographic Map of the Middletown, New York Quadrangle (dated 1969 and photorevised in 1976) and field observations made by this office. A copy of the USGS Topographic Map with the subject property indicated is included in Appendix A of this Report.

According to the above-referenced topographic map, the topography of the area in which the subject property is located has a gentle downward slope to the east, toward Silver Lake and the subject property has surface elevations ranging from approximately 600 to 620 feet above mean sea level (msl).

According to observations made during fieldwork activities, the topography of the subject property is sloped downward from the northwest (Highland Avenue) to the southeast (Industrial Place). Fill soils are likely to have been imported to level the property prior to construction of the on-site building. The lowest property elevation is near the southern property edge, adjacent to the northwestern side of Industrial Place Extension. A five- to fifteen-foot difference in elevation is apparent between the highest and lowest elevations on-site.

1.4 Previous Environmental Reports

According to available information, chlorinated solvents, including PCE and trichloroethylene (TCE), were used at the General Switch property during the production of electrical components. Prior investigations indicated the presence of PCE in soil and groundwater as a result of historical on-site discharges. A summary of information obtained from previously conducted environmental investigations, which pertains to the work summarized in this Report, is provided below.

In 1983 PCE and TCE were identified in groundwater samples collected from adjoining and surrounding properties. As the result of this release, an investigation (including hydrogeologic studies) was conducted by Jacobs and Shakti in March 1993. Jacobs and Shakti identified PCE, and trace concentrations of TCE and trichloroethane, in on-site soils and groundwater. Two areas of significant soil contamination, designated as the northern and southern "hot spots", were found in the vicinity of the General Switch building (removal of soil from these contaminated areas is documented in a Summary Report of Soil Remediation Activities prepared by ESI on September 23, 1999).

After review of available documents and consultation with the property owner, an Interim Groundwater Remediation Workplan (Workplan) dated July 23, 1998 (subsequently revised and approved by the USEPA in 2000) was prepared by ESI. Documents reviewed during the preparation of the Workplan included (but are not limited to): the Characterization Report by Jacobs and Shakti; a Groundwater Remedial Design Work Plan by Lawler, Matusky & Skelly Engineers, LLP; USEPA records; and, a Consent Decree issued by the United States District Court for the Southern District of New York. The Workplan was developed to evaluate current

1.0 INTRODUCTION

1.1 Purpose

This Interim Summary Data Report of Groundwater Sampling (Report) summarizes all fieldwork and resulting analytical data from the December 2002/January 2003 groundwater sampling event performed by Ecosystems Strategies, Inc. (ESI) on the property known as the "General Switch Site" (Site), located at the intersection of Highland Avenue and Industrial Place in the City of Middletown, Orange County, New York.

The work summarized in this Report was performed to address the presence of tetrachloroethylene (PCE) in wells located on the Site and in the surrounding area. Fieldwork objectives are identified in the Groundwater Remediation Workplan for General Switch Site (Workplan) prepared by ESI, dated July 23, 1998 and later revised on May 5, 2000. Specific objectives are outlined in Section 2.1, below.

The purpose of this Report is to document all investigative activities performed on specified portions of the Site. This Report describes all fieldwork methodology and groundwater sampling procedures, includes discussions of the resulting analytical data from collected water samples, and provides conclusions and recommendations drawn from the fieldwork and analytical data.

1.2 Limitations

This written analysis is a summary of fieldwork activities conducted on specified portions of the General Switch property (including several off-site areas), located at 20 Industrial Place in the City of Middletown, Orange County, New York and is not relevant to other portions of this property or any other property. It is a representation of those portions of the property and adjacent properties analyzed as of the respective dates of fieldwork. This Report cannot be held accountable for activities or events resulting in contamination after the dates of fieldwork.

Services summarized in this Report were performed in accordance with generally accepted practices and protocols established by the New York State Department of Environmental Conservation (NYSDEC) and United States Environmental Protection Agency (USEPA). Unless specifically noted, the findings and conclusions contained herein must be considered not as scientific certainties, but as probabilities based on professional judgement.

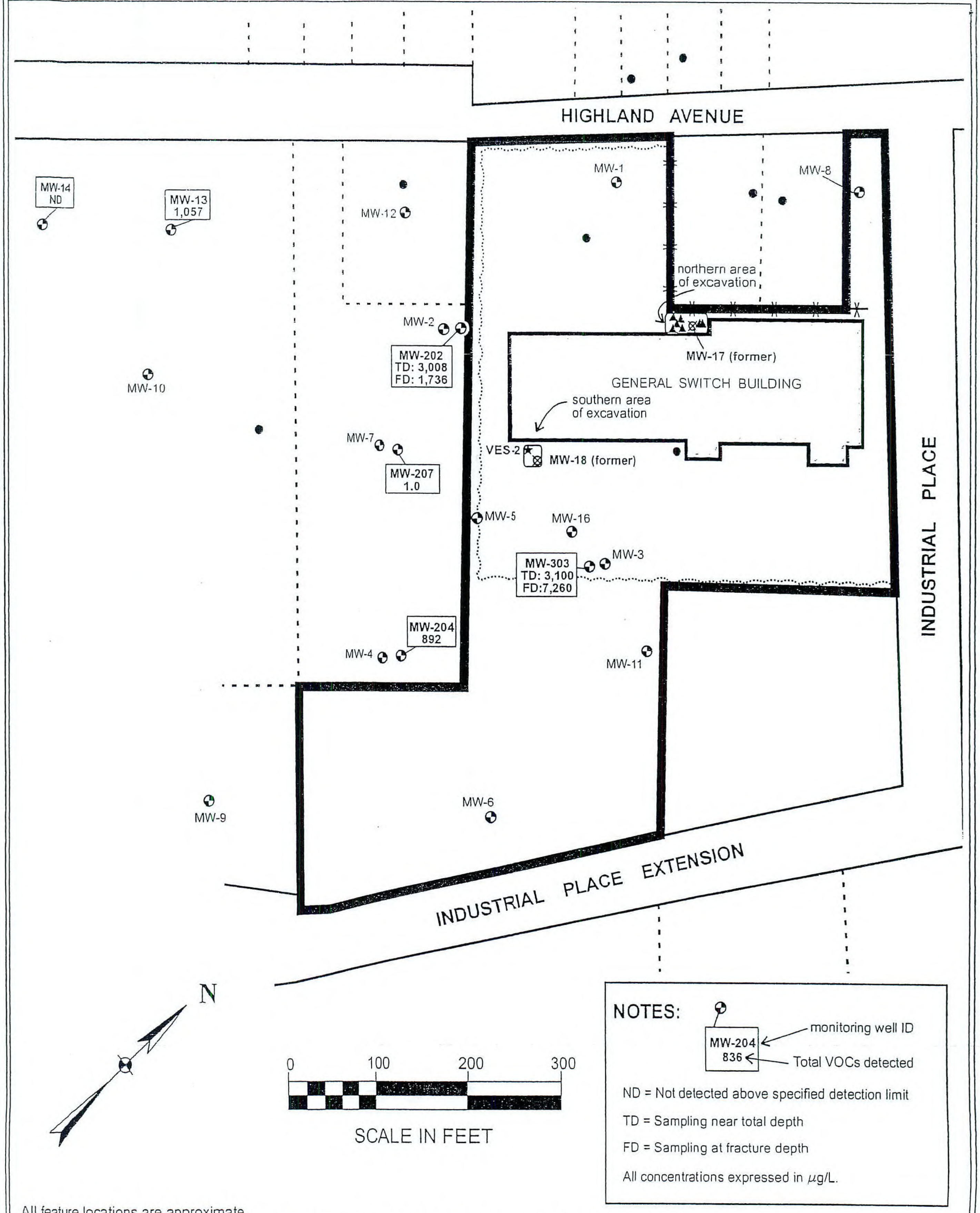
1.3 Site Location and Description

The subject property is an irregularly-shaped, approximately 5-acre parcel known as the General Switch Site, located on the southern side of Industrial Place. The portions of the property referenced as the Site are located on the property (and on adjacent properties) in the vicinity of the approximately 40,000-square-foot General Switch building, located at the intersection of Highland Avenue and Industrial Place in the City of Middletown, Orange County, New York.

The groundwater monitoring wells addressed in this report include monitoring wells located both on and off the subject property. These wells include MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12, MW-13, MW-14, MW-16, MW-202 (as well as its fracture MW-202-F-1), MW-203 (as well as its fracture MW-203-F-1), MW-204, and MW-207. A site location map illustrating the locations of these wells as well as relevant site features is provided in Appendix A of this Report.

1.3.1 Site Geology and Hydrogeology

A site-specific investigation of hydrogeology and soil types was conducted by Jacobs Environmental, Inc. (Jacobs), and Shakti Consultants, Inc. (Shakti), and reported in their Draft Partial Site Characterization Report (Characterization Report) dated March 29, 1993.



ND = Not detected above specified detection limit
TD = Sampling near total depth
FD = Sampling at fracture depth
All concentrations expressed in µg/L.

All feature locations are approximate.
Map sources: Shakti Consultants, Inc. 1991 and Lawler, Matusky & Skelly Engineers, LLP, 1998.

Total VOCs in Deep Bedrock Monitoring Wells (Sampled Dec. 2002 - Jan. 2003)

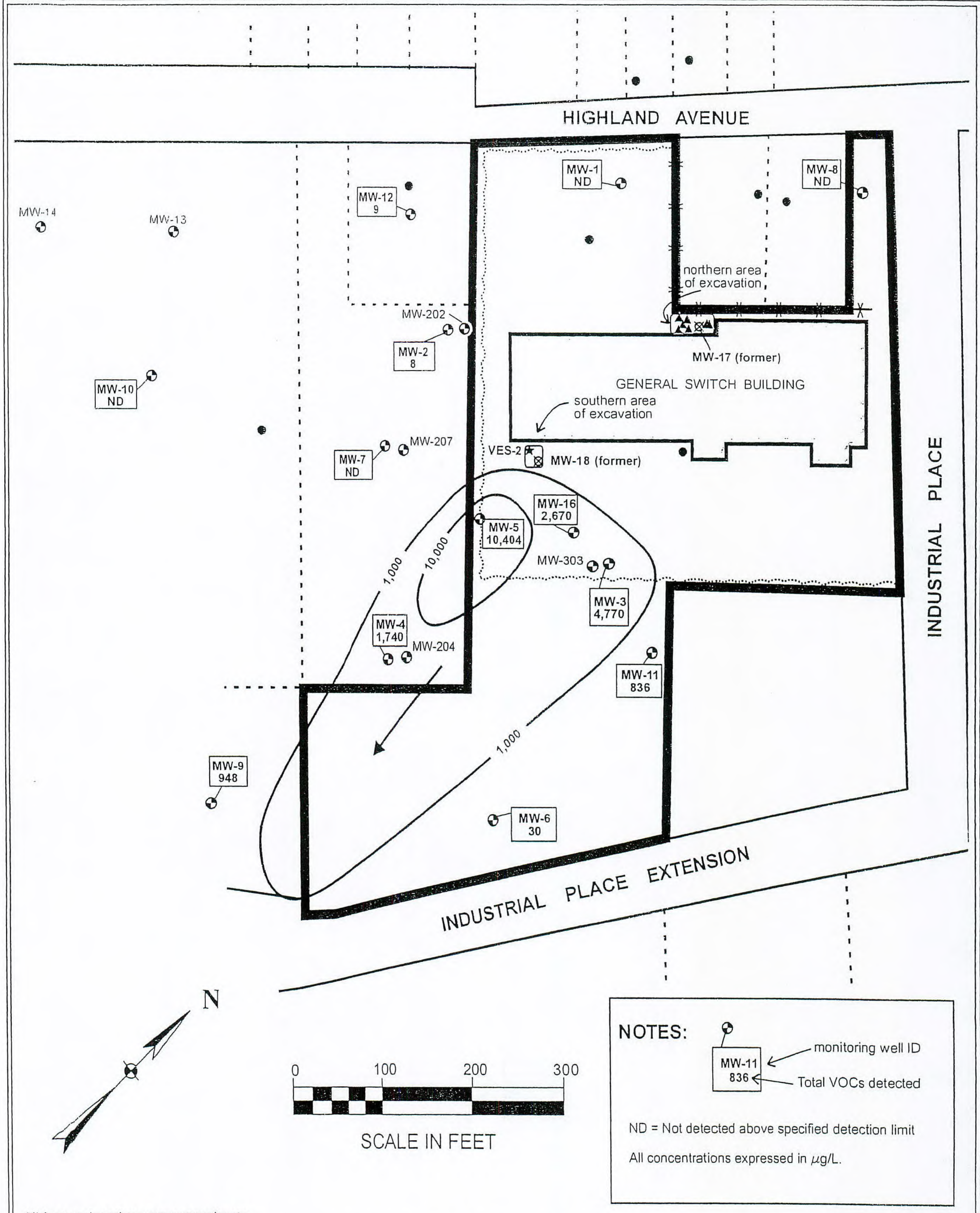
General Switch Site
City of Middletown
Orange County, New York

Legend:
subject property border ▬
monitoring well ⊕
other well ●
previous sample locations ★▲

ESI File: LM97145.40

May 2003

Appendix A



ND = Not detected above specified detection limit

All concentrations expressed in µg/L.

All feature locations are approximate.
Map sources: Shakti Consultants, Inc. 1991 and Lawler, Matusky & Skelly Engineers, LLP, 1998.

Total VOCs in Shallow Overburden Monitoring Wells (Sampled Dec. 2002 - Jan. 2003)

General Switch Site
City of Middletown
Orange County, New York

Legend:
subject property border ▬
monitoring well ⊕
other well ●
previous sample locations ★ ▲

ESI File: LM97145.40

May 2003

Appendix A

APPENDIX B

Analytical Data Tables

Table 1: Summary of Detected VOCs in Monitoring Wells

All concentrations are expressed in μg/L (parts per billion, ppb)

Detected VOC Compounds	MW-1					MW-2					MW-3				
	9/92	10/92	12/00	1/01	12/02 - 1/03	10/92	10/92	12/00	1/01	12/02 - 1/03	9/92	10/92	12/00	1/01	12/02 - 1/03
Acetone	ND	ND	ND	No Sample Collected	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
sec-Butylbenzene	ND	ND	ND		NA	ND	ND	19	ND	NA	ND	ND	ND	ND	NA
Carbon Disulfide	ND	ND	ND		NA	86	ND	ND	ND	NA	ND	ND	ND	ND	NA
Chloroform	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 Dichloroethylene	ND	ND	ND		ND	ND	ND	ND	ND	ND	880J	3.0J	3.0	2.0	ND
1,2 Dichloroethylene (total)	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	840E	14 (t), 12 (c)	2.0(t), 420 (c)	310 (cis)
1,2 Dichloroethane	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND		NA	ND	ND	14	ND	NA	ND	ND	ND	ND	NA
Methylene Chloride	1.1	ND	ND		ND	ND	ND	ND	ND	8.0B	ND	ND	ND	ND	ND
Tetrachloroethylene	2.2	ND	ND		ND	8.0J	ND	ND	ND	ND	8,700	2,500	7,300	2,900	4,300
Trichloroethylene	0.5	ND	ND		ND	5.0J	4.5	ND	ND	ND	1,000	1,000E	820	550	160
Toluene	ND	ND	ND		NA	ND	ND	160	ND	NA	ND	ND	ND	ND	NA
1,1,1-Trichloroethane	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	11	5.0	4.0	ND
1,2,4 Trimethylbenzene	ND	ND	ND		NA	ND	ND	19	ND	NA	ND	ND	ND	ND	NA
Vinyl chloride	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	2.0	1.0	ND
o-xylene	ND	ND	ND		NA	ND	ND	90	ND	NA	ND	ND	ND	ND	NA
p- and m-xylenes	ND	ND	ND		NA	ND	ND	81	ND	NA	ND	ND	ND	ND	NA

Notes:

ND	- Not detected above specified detection limit
NS	- No sample collected
J	- Estimated Value
B	- Laboratory Background Levels in method blank
E	- Concentrations exceeded the calibration range
NA	- Not analyzed

Table 1(Continued): **Summary of Detected VOCs in Monitoring Wells**
All concentrations are expressed in μg/L (parts per billion, ppb)

Detected VOC Compounds	MW - 4					MW-5					MW-6			
	9/92	10/92	12/00	1/01	12/02-1/03	6/92	9/92	12/00	1/01	12/02-1/03	9/92	12/00	1/01	12/02 – 1/03
Acetone	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	Well could not be located	ND	NA
sec-Butylbenzene	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND		ND	NA
Carbon Disulfide	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND		ND	NA
Chloroform	ND	ND	ND	ND	ND	2.0 J	ND	ND	ND	ND	ND		ND	ND
1,1 Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND
1,2 Dichloroethylene (total)	420J	ND	560 (cis)	150 (cis)	140 (cis)	ND	820J	350 (cis)	1,100 (cis)	350 (cis)	39		ND	ND
1,2 Dichloroethane	ND	ND	ND	ND	ND	12	ND	ND	ND	ND	ND		ND	ND
Ethylbenzene	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND		ND	NA
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	94B	ND		ND	ND
Tetrachloroethylene	20,000	15,000	15,000	10,000	1,600	ND	41,000E	13,000	28,000	9,800	27		16	25
Trichloroethylene	210J	330J	320	120	ND	ND	210J	220	300	160	10		3.0	5.0
Toluene	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND		ND	NA
1,1,1 Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND
1,2,4 Trimethylbenzene	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND		ND	NA
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND
o-xylene	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND		ND	NA
p- and m-xylenes	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND		ND	NA

Notes:
ND - Compound was analyzed for but was not detected
NS - No sample collected
J - Estimated value
B - Laboratory Background Levels in method blank
E - Concentrations exceeded the calibration range
NA - Not analyzed

Table 1(Continued): **Summary of Detected VOCs in Monitoring Wells**
All concentrations are expressed in μg/L (parts per billion, ppb)

Detected VOC Compounds	MW-7					MW-8				MW-9			
	10/92	10/92	12/00	1/01	12/02 – 1/03		12/00	1/01	12/02 – 1/03		12/00	1/01	12/02 – 1/03
Acetone	ND	ND	ND	No Sample Collected	NA	No Previous Sampling Data Available	ND	No Sample Collected	NA	No Previous Sampling Data Available	ND	ND	NA
sec-Butylbenzene	ND	ND	ND		NA		ND		NA		ND	ND	NA
Carbon Disulfide	ND	ND	ND		NA		ND		NA		ND	ND	NA
Chloroform	ND	ND	ND		ND		ND		ND		ND	ND	ND
1,1 Dichloroethylene	ND	ND	ND		ND		ND		ND		ND	ND	ND
1,2 Dichloroethylene (total)	ND	ND	ND		ND		ND		ND		120 (cis)	320 (c), 2 (t)	85 (cis)
1,2 Dichloroethane	ND	ND	ND		ND		ND		ND		ND	ND	ND
Ethylbenzene	ND	ND	ND		NA		ND		NA		ND	ND	NA
Methylene Chloride	ND	ND	ND		ND		ND		ND		ND	ND	20 B
Tetrachloroethylene	10	120	ND		ND		ND		ND		1,000	470	770
Trichloroethylene	ND	ND	ND		ND		ND		ND		85	100	73
Toluene	ND	ND	ND		NA		ND		NA		ND	ND	NA
1,1,1- Trichloroethane	ND	ND	ND		ND		ND		ND		ND	ND	ND
1,2,4 Trimethylbenzene	ND	ND	ND		NA		ND		NA		ND	ND	NA
Vinyl chloride	ND	ND	ND		ND		ND		ND		ND	ND	ND
o-xylene	ND	ND	ND		NA		ND		NA		ND	ND	NA
p- and m-xylenes	ND	ND	ND		NA		ND		NA		ND	ND	NA

Notes:

ND	-	Compound was analyzed for but was not detected
NS	-	No sample collected
J	-	Estimated value
B	-	Laboratory Background Levels in method blank
E	-	Concentrations exceeded the calibration range
NA	-	Not analyzed

Table 1(Continued): Summary of Detected VOCs in Monitoring Wells

All concentrations are expressed in µg/L (parts per billion, ppb)

Detected VOC Compounds	MW-10					MW-11				MW - 12			
	9/92	11/92	12/00	1/01	12/02 – 1/03		12/00	1/01	12/02 - 1/03	9/92	12/00	1/01	12/02 – 1/03
Acetone	ND	ND	ND	No Sample Collected	NA	No Previous Sampling Data Available	Well dry - no sample collected	Well dry - no sample collected	NA	ND	ND	No sample Collected	NA
sec-Butylbenzene	ND	ND	ND		NA				NA	ND	ND		NA
Carbon Disulfide	ND	ND	ND		NA				NA	ND	ND		NA
Chloroform	1.0	ND	ND		ND				ND	ND	ND		ND
1,1 Dichloroethylene	ND	ND	ND		ND				ND	ND	ND		ND
1,2 Dichloroethylene (total)	ND	ND	ND		ND				40	ND	ND		ND
1,2 Dichloroethane	ND	ND	ND		ND				ND	ND	ND		ND
Ethylbenzene	ND	ND	ND		NA				NA	ND	ND		NA
Methylene Chloride	ND	ND	ND		ND				ND	ND	ND		ND
Tetrachloroethylene	57	ND	ND		ND				740	140J	ND		7.0
Trichloroethylene	ND	ND	ND		ND				56	ND	ND		2.0
Toluene	ND	ND	ND		NA				NA	ND	5.0		NA
1,1,1- Trichloroethane	ND	ND	ND		ND				ND	ND	ND		ND
1,2,4 Trimethylbenzene	ND	ND	ND		NA				NA	ND	ND		NA
Vinyl chloride	ND	ND	ND		ND				ND	ND	ND		ND
o-xylene	ND	ND	ND		NA				NA	ND	ND		NA
p- and m-xylenes	ND	ND	ND		NA				NA	ND	ND		NA

Notes:

ND - Compound was analyzed for but was not detected
NS - No sample collected
J - Estimated value
B - Laboratory Background Levels in method blank
NA - Not Analyzed

Table 1(Continued): **Summary of Detected VOCs in Monitoring Wells**
All concentrations are expressed in μg/L (parts per billion, ppb)

Detected VOC Compounds	MW-13					MW-14					MW-16			
	9/92	11/92	12/00	1/01	12/02 - 1/03	9/92	11/92	12/00	1/01	12/02 – 1/03	9/92	12/00	1/01	12/02 – 1/03
Acetone	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	NA
sec-Butylbenzene	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	NA
Carbon Disulfide	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	NA
Chloroform	ND	ND	ND	ND	ND	1.0J	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	2.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 Dichloroethylene	ND	ND	22 (cis)	1.0	ND	ND	ND	ND	ND	ND	4.0J	ND	ND	ND
1,2 Dichloroethylene (total)	ND	ND	ND	1.0 (t), 24 (c)	780 (cis)	ND	ND	ND	ND	ND	870E	580 (cis)	360 (cis)	210(cis)
1,2 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	NA
Methylene Chloride	26J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	130	2,900	180	140	87	12	140	ND	6.0	ND	2,400E	7,000	6,200	2,300
Trichloroethylene	ND	ND	960	610	190	ND	2.0	ND	2.0	ND	960E	810	410	160
Toluene	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	NA
1,1,1- Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14	ND	ND	ND
1,2,4 Trimethylbenzene	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	NA
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.0J	ND	ND	ND
o-xylene	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	NA
p- and m-xylenes	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	NA

Notes:
ND - Compound was analyzed for but was not detected
NS - No sample collected
J - Estimated value
E - Concentrations exceeded the calibration range
B - Laboratory Background Levels in method blank
NA - Not Analyzed

Table 1(Continued): **Summary of Detected VOCs in Monitoring Wells**
All concentrations are expressed in μg/L (parts per billion, ppb)

Detected VOC Compounds	MW-202						MW-203					MW-204				
	9/92	9/92	11/92	12/00	1/01	12/02 - 1/03	9/92	11/92	12/00	1/01	12/02 - 1/03	10/92	10/92	12/00	1/01	12/02 - 1/03
Acetone	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
sec-Butylbenzene	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
Carbon Disulfide	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.0	ND	11.6	ND	ND	2.0	ND
1,2 Dichloroethylene (total)	ND	ND	ND	280 (c), 32(t)	440 (c), 29(t)	48(t) 440(c)	1,000	ND	450 (cis)	3 (t), 510 (c)	280 (cis)	ND	ND	200 (cis)	180 (cis)	98 (cis)
1,2 Dichloroethane	ND	ND	ND	2.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	600B	ND	3.38	ND	ND	120B
Tetrachloroethylene	4,700	240EJ	9,600E	490	730	720	13,000	1,100	6,000	3,100	2,100	204.4E	1,300EJ	2,400	1,600	610
Trichloroethylene	ND	16J	300	1,800	2,500	1,800	1,200	ND	500	580	120	20	ND	160	150	64
Toluene	ND	1.0J	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
1,1,1-Trichloroethane	ND	ND	ND	2.0	ND	ND	ND	ND	ND	4.0	ND	ND	ND	ND	ND	ND
1,2,4 Trimethylbenzene	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.0	ND	ND	ND	ND	1.0	ND
o-xylene	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA
p- and m-xylenes	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA

Notes:

ND	- Compound was analyzed for but was not detected
NS	- No sample collected
J	- Estimated value
B	- Laboratory Background Levels in method blank
E	- Concentrations exceeded the calibration range
NA	- Not Analyzed

Table 1(Continued): **Summary of Detected VOCs in Monitoring Wells**
All concentrations are expressed in µg/L (parts per billion, ppb)

Detected VOC Compounds	MW-202-F-1	MW-203-F-1	MW-207			
	12/02 – 1/03	12/02 – 1/03	11/92	12/00	1/01	12/02 – 1/03
Acetone	NA	NA	ND	ND	No sample collected	NA
sec-Butylbenzene	NA	NA	ND	ND		NA
Carbon Disulfide	NA	NA	ND	ND		NA
Chloroform	ND	ND	ND	ND		ND
1,1 Dichloroethylene	ND	ND	ND	ND		ND
1,2 Dichloroethylene (total)	230 (cis)	590 (cis)	ND	ND		ND
1,2 Dichloroethane	ND	ND	ND	ND		ND
Ethylbenzene	NA	NA	ND	ND		NA
Methylene Chloride	56B	670B	ND	ND		ND
Tetrachloroethylene	450	5,700	390J	2.0		1.0
Trichloroethylene	1,000	300	ND	2.0		ND
Toluene	NA	NA	ND	ND		NA
1,1,1-Trichloroethane	ND	ND	ND	ND		ND
1,2,4 Trimethylbenzene	NA	NA	ND	ND		NA
Vinyl chloride	ND	ND	ND	ND		ND
o-xylene	NA	NA	ND	ND		NA
p- and m-xylenes	NA	NA	ND	ND		NA

Notes:

ND	- Compound was analyzed for but was not detected
NS	- No sample collected
J	- Estimated value
B	- Laboratory Background Levels in method blank
NA	- Not Analyzed

Table 2: Target Gases, Manganese, and Total Organic Carbon in Monitoring Wells

All concentrations are expressed in µg/L or parts per billion (ppb)

Monitoring Well	Compound Analyzed					
	Ethane MDL = 10.0 µg/L	Ethylene MDL = 10.0 µg/L	Methane MDL = 10.0 µg/L	Manganese MDL = 0.005 mg/L	Total Organic Carbon MDL = 1.0 mg/L	Alkalinity-Total MDL = 4.0 mg/L
MW-1	ND	ND	ND	NA	ND	124
MW-2	ND	ND	ND	NA	ND	210*
MW-3	ND	ND	ND	NA	1.8	180*
MW-4	ND	ND	ND	0.013	25	NA
MW-5	ND	ND	ND	0.027	4.3	NA
MW-6	ND	ND	ND	0.080	1.0	NA
MW-7	ND	ND	ND	NA	ND	200*
MW-8	ND	ND	ND	NA	ND	240
MW-9	ND	ND	ND	0.043	3.0	NA
MW-10	ND	ND	ND	0.063	1.0	NA
MW-11	ND	ND	ND	0.050	1.2	NA
MW-12	ND	ND	ND	0.271	1.2	NA
MW-13	ND	ND	ND	0.172	NA	NA
MW-14	ND	ND	ND	0.097	NA	NA
MW-16	ND	ND	ND	NA	2.5	140
MW-202	ND	ND	70.6	0.164	NA	NA
MW-202-F-1	ND	ND	59.3	0.136	ND	NA
MW-203	ND	ND	ND	0.049	2.2	NA
MW-203-F-1	ND	ND	ND	0.083	2.1	NA
MW-204	ND	ND	ND	0.242	1.5	NA
MW-207	ND	ND	ND	0.294	2.3	NA

Notes:

MDL - Minimum Detectable Limit

ND - Not Detected

NA - Not Analyzed

MDL = 10.0

Table 3: Summary of Detected VOCs in Trip, Field, and Equipment Blanks (December 2002)

All concentrations are expressed in µg/L (parts per billion, ppb)

Detected VOC Compounds	December 16, 2002			December 17, 2002			December 18, 2002			December 19, 2002		
	Trip Blank	Field Blank	Equipment Blank	Trip Blank	Field Blank	Equipment Blank	Trip Blank	Field Blank	Equipment Blank	Trip Blank	Field Blank	Equipment Blank
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sec-Butylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	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
1,1 Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2 Dichloroethylene (total)	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
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	4B	ND	ND	ND	ND	ND	3B	ND	ND	ND	ND	ND
Tetrachloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	5	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4 Trimethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-xylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p- and m-xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
ND - Compound was analyzed for but was not detected
B - Laboratory Background Levels detected in the method blank

Table 3 (continued): **Summary of Detected VOCs in Trip, Field, and Equipment Blanks (December 2002 and January 2003)**
All concentrations are expressed in μg/L (parts per billion, ppb)

Detected VOC Compounds	December 20, 2002			December 30, 2002			January 2, 2003			January 6, 2003		
	Trip Blank	Field Blank	Equipment Blank	Trip Blank	Field Blank	Equipment Blank	Trip Blank	Field Blank	Equipment Blank	Trip Blank	Field Blank	Equipment Blank
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sec-Butylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	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
1,1 Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2 Dichloroethylene (total)	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
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	8	ND	ND	ND
Trichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4 Trimethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-xylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p- and m-xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
ND - Compound was analyzed for but was not detected
B - Laboratory Background Levels detected in the method blank

Table 4
Water Levels and Elevations Measured During December 16, 2002 to January 7, 2003 Sampling Event

Monitoring Well	Total Depth (feet)	Elevation of Measuring Point	Depth to Water Sampling	Depth to Water 1/7/2003	Water Elevation Sampling	Water Elevation 1/7/2003
MW-1	18.6	652.08	6.41	6.51	645.67	645.57
MW-2	38.4	639.07	10.41	9.995	628.66	629.075
MW-3	13.17	626.22	3.71	3.91	622.51	622.31
MW-4	10.92	619.35	3.78	3.89	615.57	615.46
MW-5	13.17	627.87	3.78	4.52	624.09	623.35
MW-6	6.84	612.3	1.18	1.18	611.12	611.12
MW-7	19.92	628.68	2.96	2.58	625.72	626.1
MW-8	14.15	655.12	7.92	7.56	647.2	647.56
MW-9	14.56	612.83	4.18	4.18	608.65	608.65
MW-10	31.71	626.98	3.91	3.06	623.07	623.92
MW-11	11.08	624.73	5.46	4.17	619.27	620.56
MW-12	65.3	646.62	19.02	18.54	627.6	628.08
MW-13	88.9	638.12	15.96	15.09	622.16	623.03
MW-14	80.17	635.81	20.29	21.73	615.52	614.08
MW-15	N/A	637.08	N/A	N/A	N/A	N/A
MW-16	10.92	625.7	3.27	4.17	622.43	621.53
MW-202	143*	640.11	13.68	12.31	626.43	627.8
MW-203	110+?	625	2.91	2.81	622.09	622.19
MW-204	100	618.9	3.59	3.45	615.31	615.45
MW-207	131*	629.18	3.25	2.73	625.93	626.45
W-33	180	634.31	N/A	N/A	613.14	N/A

Notes:

* new data obtained this sampling event

N/A = not available

Table 5

Monitoring Well Site Measurments prior to Groundwater Sampling
December 16, 2002 to January 7, 2003 Sampling Event

Sample ID >		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10
Date >		12/16/2002	12/16/2002	12/17/2002	12/19/2002	1/2/2003	1/6/2003	12/17/2002	12/16/2002	1/2/2003	12/20/2002
Parameter	**Units**										
PID	ppm	0.0	0.0	89.1	44.4	58.3	n/a	0.1	0.1	0.0	rain
Pump Depth	feet	18	38	13	10	13	6.8	19	14	14	31
pH	0-14	6.37	8.92	5.28	4.9	5.19	6.85	7.37	5.53	4.63	5.17
Conductivity	S/m	0.522	0.423	0.41	0.244	0.242	0.571	0.397	0.899	0.086	0.504
Turbidity	ntu	8.3	526	62.2	30.7	185	62.5	999	17.9	111	999
Dissolved Oxygen	mg/L	2.05	1.58	3.68	5.57	5	2.01	2.69	2.88	12.2	8.3
Temperature	degree C	8.88	10.85	11.04	9.03	6.99	8.08	8	13.95	8.95	11.33
ORP	mV	55	-128	131	152	131	39	-6	97	166	142

Sample ID >	MW-11	MW-12	MW-13	MW-14	MW-16	MW-202	MW-202F	MW-203	MW-203F	MW-204	MW-207
Date >	1/6/2003	12/19/2001	12/30/2002	12/30/2002	12/7/2002	12/30/2002	1/2/2003	12/18/2001	12/18/2002	12/18/2002	12/19/2002
Parameter											
PID	n/a	0.1	0.0	0.0	60.0	0.0	open	open	18.1	23.3	0.1
Pump Depth	11	11	87	80	10	141	54	110	18	91.5	126
pH	4.45	8.66	9.7	8.1	5.22	9.42	9.65	5.45	5.92	8.72	8.66
Conductivity	0.081	0.592	0.766	0.472	0.353	0.591	0.611	0.375	0.367	0.632	0.8
Turbidity	226	282	87.8	139	40.2	112	33.6	176	185	34.5	134
Dissolved Oxygen	9.29	2.99	1.21	5.06	6.31	3.49	3.48	4.12	3.11	3.59	5.53
Temperature	8.53	12.55	10.02	9.64	10.55	10.03	8.69	10.51	8.18	8.6	9.85
ORP	163	-95	-153	-47	138	-137	-148	120	81	-94	-92

Notes:

n/a =	not measured
rain =	PID not used because of malfunction of instrument in rain.
open =	well open for prior sampling event, therefore no PID measurement.

MW-202F and MW-203F were groundwater samples from fracture depths in MW-202 and MW-203 respectively

Table 6

Field Chemistry Analysis of Groundwater Samples for Indicator Parameters
as Evidence of Anaerobic Biodegradation (Reductive Dechlorination) of Chlorinated Solvents (PCE Release)
December 16, 2002 to January 7, 2003 Sampling Event

Sample ID >		MW-1	MW-2	MW-16	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10
Date >		12/16/2002	12/16/2002	12/7/2002	12/19/2002	1/2/2003	1/6/2003	12/17/2002	12/16/2002	1/2/2003	12/20/2002
Analyte	Method										
CarbonDioxide	titration	N/A	N/A	70	45	25	<10	14	N/A	14	22
Sulfide	8131	0.274	OR>0.6	0.024	0.019	0.068	0.054	0.356	0.021	0.031	0.005
Ferrous Iron	8146	UR	2.56	0.01	0.03	0.01	UR	0.24	UR	0.01	0.03
Total Iron	8008	0.04	OR>3.0	0.11	2.08	2.26	0.22	OR>3	0.04	0.42	0.01
Sulfate	8051	30	19	34	23	14	26	36	57	14	51
Nitrate											
NO3--N	8039	1.1	1.3	3.6	1.5	UR	UR	2.3	1.1	UR	0.9
NO3	8039			15.9	6.8	UR	UR	10.4		UR	3.8
Nitrite											
NaNO2	8507	UR	UR	UR	0.031	UR	0.008	0.064	UR	0.022	UR
NO2--N	8507	UR	UR	UR	0.006	UR	0.002	0.013	UR	0.004	UR
NO2--N	8507	UR	UR	UR	0.021	UR	0.005	0.042	UR	0.015	UR
Manganese											
KMnO4	8034	N/A	N/A	UR	0.4	UR	0	0	N/A	UR	UR
Mn	8034	N/A	N/A	UR	0.2	UR	0	0	N/A	UR	UR
MnO4-	8034	N/A	N/A	UR	0.3	UR	0	0	N/A	UR	UR
Hardness											
Mg as CaCO3	8030	UR	0.12	UR	0.61	UR	0.55	UR	0.02	1.37	UR
Ca as CaCO3	3030	UR	0.42	0.11	0.1	0.01	UR	UR	UR	UR	UR
Ca	8030	UR	0.17	0.04	0.04	0	UR	UR	UR	UR	UR
Chloride	8113	OR>20	OR>20	17.6	14.6	17.5	OR>20	OR>20	UR	10.9	OR>20

Sample ID >	MW-11	MW-12	MW-13	MW-14	MW-16	MW-202	MW-202F	MW-203	MW-203F	MW-204	MW-207
Date >	1/6/2003	12/19/2001	12/30/2002	12/30/2002	12/7/2002	12/30/2002	1/2/2003	12/18/2001	12/18/2002	12/18/2002	12/19/2002
Analyte											
CarbonDioxide	30	14	10.5	10.2	70	18	11	60	40	30	25
Sulfide	0.13	0.202	0.098	0.081	0.024	0.031	0.052	0.03	0.044	0.021	OR>0.6
Ferrous Iron	0.21	1.76	0.32	0.07	0.01	0	1.69	UR	0.78	2.13	2.98
Total Iron	1.93	OR>3	1.07	1.45	0.11	0.31	2.87	OR>3	OR>3	OR>3	OR>3
Sulfate	11	27	26	30	34	11	31	34	30	40	27
Nitrate											
NO3--N	0.3	UR	UR	UR	3.6	UR	UR	2.1	4.2	UR	UR
NO3	1.2	UR	UR	UR	15.9	UR	UR	9.2	18.5	UR	UR
Nitrite											
NaNO2	UR	UR	UR	UR	UR	UR	UR	UR	0.009	UR	UR
NO2--N	UR	UR	UR	UR	UR	UR	UR	UR	0.002	UR	UR
NO2--N	UR	UR	UR	UR	UR	UR	UR	UR	0.006	UR	UR
Manganese											
KMnO4	UR	UR	UR	0.9	UR	2.7	0.1	0.4	0.5	2.1	0.9
Mn	UR	UR	UR	0.3	UR	1	0	0.2	0.2	0.7	0.3
MnO4-	UR	UR	UR	0.7	UR	2.1	0.1	0.3	0.4	1.6	0.7
Hardness											
Mg as CaCO3	2.67	0.08	0.2	UR	UR	UR	UR	UR	0.04	UR	0.16
Ca as CaCO3	UR	0.14	UR	UR	0.11	UR	UR	0.35	UR	0.57	UR
Ca	UR	0.05	UR	UR	0.04	UR	UR	0.14	UR	0.23	UR
Chloride	19.6	OR>20	n/a	n/a	17.6	OR>20	OR>20	OR>20	23.5	OR>20	OR>20

Notes:

Field measurements made with Hach methods as specified, except for Carbon Dioxide which is a Chemmetrics Titration method.

N/A = not analyzed, UR = under test range, OR = over test range

Table 7A

Overburden Monitoring Well Scoring providing Evidence of Anaerobic Biodegradation (Reductive Dechlorination) of Chlorinated Solvents (PCE Release)

December 16, 2002 to January 7, 2003 Sampling Event

	Near Source Wells								Downgradient			
Sample ID >	MW-5		MW-16		MW-3		MW-11		MW-4		MW-9	
Date >	1/2/2003		12/17/2002		12/17/2002		1/6/2003		12/19/2002		1/2/2003	
Parameter	Mmt	Points	Mmt	Points	Mmt	Points	Mmt	Points	Mmt	Points	Mmt	Points
PID	58.3		60.0		89.1		n/a		44.4		0.0	
Pump Depth	13		10		13		11		10		14	
pH	5.19	0	5.22	0	5.28	0	4.45	-2	4.9	-2	4.63	-2
Conductivity	0.242		0.353		0.41		0.081		0.244		0.086	
Turbidily	185		40.2		62.2		226		30.7		111	
Dissolved Oxygen	5	0	6.31	-3	3.68	0	9.29	-3	5.57	-3	12.2	-3
Temperalure	6.99	0	10.55	0	11.04	0	8.53	0	9.03	0	8.95	0
ORP	131	0	138	0	131	0	163	0	152	0	166	0
CarbonDioxide	25	1	70	1	70	1	30	1	45	1	14	0
Sulfide	0.068	0	0.024	0	0.027	0	0.13	0	0.019	0	0.031	0
Ferrous Iron	0.01	0	0.01	0	0	0	0.21	0	0.03	0	0.01	0
Total Iron	2.26		0.11		OR>3		1.93		2.08		0.42	
Sulfate	14	2	34	0	34	0	11	2	23	0	14	2
Nitrate												
NO3--N	UR	2	3.6	0	4.2		0.3	0	1.5	2	UR	2
NO3	UR		15.9		18.7		1.2		6.8		UR	
Nitrite												
NaNO2	UR		UR		UR		UR		0.031		0.022	
NO2--N	UR		UR		UR		UR		0.006		0.004	
NO2--N	UR		UR		UR		UR		0.021		0.015	
Manganese												
KMnO4	UR		UR		0.2		UR		0.4		UR	
Mn	UR		UR		0.1		UR		0.2		UR	
MnO4-	UR		UR		0.1		UR		0.3		UR	
Hardness												
Mg as CaCO3	UR		UR		UR		2.67		0.61		1.37	
Ca as CaCO3	0.01		0.11		UR		UR		0.1		UR	
Ca	0		0.04		UR		UR		0.04		UR	
Chloride	17.5	2	17.6	2	23.2	2	19.6	2	14.6	2	10.9	2
Ethane	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0
Ethene	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0
Methane	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0
Alkaline	n/a		140	0	180	1	n/a		n/a		n/a	
Tot Org Carbon	4.3	0	2.5	0	1.8	0	1.2	0	25	2	3	0
PCE	9800	0	2300	0	4300	0	740	0	1600	0	770	0
TCE	160	2	160	2	160	2	56	2	ND	2	73	2
DCE(cis)	350	2	210	2	310	2	40	2	140	2	85	2
VC	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0
methylene chloride	94B	2	ND	0	ND	0	ND	0	ND	0	ND	0
Total Points =		13		4		8		4		6		5

Notes:

Each well is represented by two columns, one with field and laboratory measurements and the other with points based on the first column.

"Mmt" is the heading for the well measurement columns.

"Points" is the column heading for the awarded points for the evidentiary score assessing likelihood of anaerobic biodegradation..

MW-202 and MW-202F represent two samples from the same well; the first sample was taken at the fracture depth, for the second sample the well cover was already

MW-203 and MW203F also represent two samples from the same well; the first sample was taken from near the bottom of the well, for the second sample from the fra

n/a = not analyzed

ND = not detected

B = indicates a background level of analyte detected in blank

Table 7B

Bedrock Monitoring Well Scoring providing Evidence of Anaerobic Biodegradation (Reductive Dechlorination) of Chlorinated Solvents (PCE Release)

December 16, 2002 to January 7, 2003 Sampling Event

	Near Source Well				Upgradient Wells						Downgradient	
Sample ID >	MW-203		MW-203F		MW-202		MW-202F		MW-13		MW-204	
Date >	12/18/2001		12/18/2002		12/30/2002		1/2/2003		12/30/2002		12/18/2002	
Parameter	Mmt	Points	Mmt	Points	Mmt	Points	Mmt	Points	Mmt	Points	Mmt	Points
PID	open		18.1		0.0		open		0.0		23.3	
Pump Depth	110		18		141		54		87		91.5	
pH	5.45	0	5.92	0	9.42	-2	9.65	-2	9.7	-2	8.72	0
Conductivity	0.375		0.367		0.591		0.611		0.766		0.632	
Turbidity	176		185		112		33.6		87.8		34.5	
Dissolved Oxygen	4.12	0	3.11	0	3.49	0	3.48	0	1.21	0	3.59	0
Temperature	10.51	0	8.18	0	10.03	0	8.69	0	10.02	0	8.6	0
ORP	120	0	81	0	-137	2	-148	2	-153	2	-94	1
CarbonDioxide	60	1	40	1	18	1	11	0	10.5	0	30	1
Sulfide	0.03	0	0.044	0	0.031	0	0.052	0	0.098	0	0.021	0
Ferrous Iron	UR	0	0.78	0	0	0	1.69	3	0.32	0	2.13	3
Total Iron	OR>3		OR>3		0.31		2.87		1.07		OR>3	
Sulfate	34	0	30	0	11	2	31	0	26	0	40	0
Nitrate												
NO3--N	2.1	0	4.2	0	UR	2	UR	2	UR	2	UR	2
NO3	9.2		18.5		UR		UR		UR		UR	
Nitrite												
NaNO2	UR		0.009		UR		UR		UR		UR	
NO2--N	UR		0.002		UR		UR		UR		UR	
NO2--N	UR		0.006		UR		UR		UR		UR	
Manganese												
KMnO4	0.4		0.5		2.7		0.1		UR		2.1	
Mn	0.2		0.2		1		0		UR		0.7	
MnO4-	0.3		0.4		2.1		0.1		UR		1.6	
Hardness												
Mg as CaCO3	UR		0.04		UR		UR		0.2		UR	
Ca as CaCO3	0.35		UR		UR		UR		UR		0.57	
Ca	0.14		UR		UR		UR		UR		0.23	
Chloride	OR>20	2	23.5	2	OR>20	2	OR>20	2	OR>20	2	OR>20	2
Ethane	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0
Ethene	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0
Methane	ND	0	ND	0	70.6	3	59.3	3	ND	0	ND	0
Alkaline	n/a		n/a		n/a		n/a		n/a		n/a	
Tot Org Carbon	2.2	0	2.1	0	n/a		ND	0	n/a		1.5	0
PCE	2100	0	5700	0	720	0	450	0	87	0	610	0
TCE	120	2	300	2	1800	2	1000	2	190	2	64	2
DCE(cis)	280	2	590	2	440	2	230	2	780	2	98	2
VC	ND	0	ND	0	ND	0	ND	0	ND	0	ND	0
methylene chloride	600B	2	670B	2	ND	0	56B	2	ND	0	120B	2
Total Points =		9		9		14		16		8		15

Notes: Each well is represented by two columns, one with field and laboratory measurements and the other with points based on the first column.
"Mmt" is the heading for the well measurement columns.
"Points" is the column heading for the awarded points for the evidentiary score assessing likelihood of anaerobic biodegradation..
MW-202 and MW-202F represent two samples from the same well; the first sample was taken at the fracture depth, for the second sample the well cover was
MW-203 and MW203F also represent two samples from the same well; the first sample was taken from near the bottom of the well, for the second sample fro
n/a = not analyzed
ND = not detected
B = indicates a background level of analyte detected in blank

APPENDIX C

Laboratory Data Packages

APPENDIX F

Data Validation Report

Premier Environmental Services.

DATA VALIDATION REPORT
OF THE
WALLKILL WELL FIELDS (GENERAL SWITCH)

ORGANIC ANALYSES
IN AQUEOUS SAMPLES

YORK LABORATORIES, INC.
STAMFORD, CT

REPORT NUMBERS:
03010123, 02120517
03010083, 02120492R

April, 2003

Prepared for
Ecosystem Strategies, Inc.
Poughkeepsie, New York

Prepared by
Premier Environmental Services
2815 Covered Bridge Road
Merrick, New York 11566
(516)223-9761

DATA VALIDATION FOR:	Volatile Organic Compounds (VOC's)
SITE:	Wallkill Well Fields (General Switch)
CONTRACT LAB:	York Analytical Laboratories, Inc. Stamford, CT
REVIEWER:	Renee Cohen
DATE REVIEW COMPLETED:	April, 2003
MATRIX:	Aqueous

The data validation was performed according to the guidelines in the USEPA National Functional Guidelines for Organic Data Review. In addition, method and QC criteria specified in the NYSDEC ASP documents were cited. All data are considered valid and acceptable except those analytes which have been deemed unusable "R" (unreliable). Due to various QC problems some analytes may have been qualified with a "J" (estimated), "N" (presumptive evidence for the presence of the material, "U" (non-detect), or "JN" (presumptive evidence for the presence of the material at an estimated value) flag. All actions are detailed on the attached sheets.

Table 1 of this report includes a cross reference between the field sample ID and laboratory sample ID used to perform data validation. Copies of the data qualifiers that may be used in this report are located in Appendix A of this report. Qualified data result pages are located in Appendix B of this report. Copies of the Chain of Custody (COC) documents are located in Appendix C of this report.

A total of nineteen (19) wells and associated QC were collected at this site. Twenty percent (20%) of the samples were validated. This data assessment is for the review of four (4) aqueous samples, three (3) Trip Blank sample, three (3) Field Blank samples and three (3) Equipment Blank samples. Samples were collected December 18, 2002, January 2, 2003 and January 6, 2003 and shipped to York Analytical Laboratories, Inc. located in Stamford, CT. Method of shipment was not noted on the COC documents. The samples that were validated were received at the laboratory on December 19, 2002, January 6, 2003 and January 7, 2003.

The COC documents indicated that the samples were to be analyzed for EPA Method 8021B Halogenated compounds. The laboratory analyzed all samples via USEPA Method 8260B and reported the Halogenated Volatile Organic Compound list.

ORGANIC DATA ASSESSMENT

1. OVERVIEW:

Samples associated with this data set were analyzed for Volatile Organic Analytes (VOA's). All analyses were performed in accordance with the NYSDC ASP methodologies. Data validation will utilize the validation guidelines listed above, however, QA/QC requirements of SW846 will supersede CLP requirements in terms of calibration (where applicable) and holding time. The COC documents indicated that the aqueous samples associated with this data set were to be analyzed and reported for Volatile Organics analytes via SW846-Method 8021B. York Analytical Laboratories, Inc. analyzed the samples in this data set via USEPA Method 8260B. The laboratory reported the halogenated volatile organic analytes.

York Analytical Laboratories generated a stand-alone report for each fraction in compliance with the NYS DEC ASP Category B deliverables. A summary of the applicable QC will be discussed at each section of the report.

2. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. The NYS DEC ASP criteria specifies holding times for aqueous samples. These holding times are based on Validated Time of Sample Receipt (VTSR).

Proper preservation of an aqueous sample is refrigeration at 4 degrees C until analysis. The holding time criteria for volatile organic samples is that properly aqueous samples are to be analyzed within ten (10) days of VTSR.

Sample Date – December 18, 2002 - The aqueous samples associated with this data set were collected on December 18, 2002 and received at the laboratory on December 19, 2002. The samples were analyzed December 31, 2002. Samples were analyzed outside the NYS DEC ASP holding times, however all analyses were completed within the method holding time. No action was taken based on this outlier.

Sample Date – January 2, 2003 - The aqueous samples associated with this data set were collected on January 2, 2003 and received at the laboratory on January 6, 2003. The samples were analyzed on January 10, 2003. All samples were analyzed within the method holding time.

Sample Date – January 6, 2002 - The aqueous samples associated with this data set were collected on January 6, 2003 and received at the laboratory on January 7, 2003. The samples were analyzed on between January 10, 2003 and January 17, 2003. All samples were analyzed within the method holding time.

ORGANIC DATA ASSESSMENT

3. SURROGATES:

Samples to be analyzed for Volatile Organic Analytes (VOA) are fortified with three (3) method recommended surrogate compounds. These include 1,2-Dichloroethane-d4, Toluene d8 and Bromofluorobenzene prior to analysis to evaluate the overall laboratory performance and the efficiency of the analytical technique.

Sample Date – December 18, 2002 - The laboratory reported in house limits for each of the surrogate recoveries. The surrogate recoveries met QC criteria in all field samples and QC samples associated with this data set.

Sample Date – January 2, 2003 – The laboratory reported in house limits for each of the surrogate recoveries. The surrogate recoveries met QC criteria in all field samples and QC samples associated with this data set.

Sample Date – January 6, 2003 - The laboratory reported in house limits for each of the surrogate recoveries. The surrogate recoveries met QC criteria in all field samples and QC samples associated with this data set.

4. MATRIX SPIKE/SPIKE DUPLICATE, MS/MSD:

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data.

York Analytical Laboratories, Inc. did not perform site- specific MS/MSD analyses on the aqueous samples in this data set.

The laboratory prepared and analyzed a blank matrix spike/matrix spike duplicate with each batch of samples. All recoveries and RPD's met QC criteria in each blank MS/MSD sample set.

ORGANIC DATA ASSESSMENT

5. BLANK CONTAMINATION:

Quality assurance (QA) blanks, such as the method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. Samples were only qualified with those QC samples associated with the particular blank.

A) Method Blank contamination

Sample Date – December 18, 2002 – One (1) method blank is associated with this data set. It was free from contamination of all target analytes with the exception of Methylene Chloride (1.43 ug/L). The laboratory did not provide spectra for this positive analyte for review. When detected in associated field samples it was qualified.

Sample Date – Janaury 2, 2003 - One (1) method blank is associated with this data set. It was free from contamination of all target analytes with the exception of Bromomethane (1.30 ug/L). The laboratory did not provide spectra for this positive analyte for review. Bromomethane was not detected in the validated samples, therefore, no action was taken.

Sample Date – January 6, 2003 – Four (4) method blanks are associated with this data set. Each was free from contamination of target analytes with the exception of VBLK (1/10/03) Bromomethane 1.30 ugL. This method blank is associated with the Field Blank sample. Bromomethane was not detected in the Field Blank samples, therefore, no action was taken. VBLK (1/17/03) contained low levels of Methylene Chloride (1.26 ug/L). This VBLK is associated with validated sample, MW-11. Methylene Chloride was not detected in this samples, therefore, no action was taken. VBLK (1/15/03) and VBLK (1/26/03) were free from all target analyte contamination.

Qualified data result pages are located in Appendix B of this report.

B) Field or Equipment Rinse Blank (ERB) contamination

Sample Date – December 18, 2002 - The F-Blank 12-18-02 was free from contamination of all target analytes.

Sample Date – January 2, 2003 – The F-Blank 1-2-03 was free from contamination of all target analytes.

Sample Date – January 6, 2003 - The F-Blank 1-6-03 was free from contamination of all target analytes.

ORGANIC DATA ASSESSMENT

5. BLANK CONTAMINATION (cont'd):

C) Trip Blank contamination

Sample Date – December 18, 2002 – The Trip Blank 12-18-02 was free from contamination of all target analytes with the exception of Methylene Chloride (3 ug/L). This analyte was also detected in the method blank and was qualified in the validated field sample.

Sample Date – January 2, 2003 - The Trip Blank 1-2-03 was free from contamination of all target analytes.

Sample Date – January 6, 2003 – The Trip Blank 1-6-03 was free from contamination of all target analytes.

D) Equipment Blank contamination

Sample Date – December 18, 2002 – The E-Blank-12-18-02 was free from contamination of all target analytes with the exception of Tetrachloroethene (5.0 ug/L).

Sample Date – Janaury 2, 2003 - The E-Blank-1-2-03 was free from contamination of all target analytes with the exception of Tetrachloroethene (8.0 ug/L).

Sample Date – January 6, 2003 - The E-Blank 1-6-03 was free from contamination of all target analytes.

ORGANIC DATA ASSESSMENT

6. GC/MS CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

A) RESPONSE FACTOR

The response factor measures the instrument's response to specific chemical compounds. USEPA data review requires that the response factor of all analytes be greater than or equal to 0.05 in both initial and continuing calibration analyses. A value less than 0.05 indicates a serious detection and quantitation problem (poor sensitivity). The USEPA data validation criteria states that if the minimum RRF criteria is not met in an initial calibration the positive results are qualified "J". Non detect results in the initial calibration with a RRF <0.05 are qualified "R", unusable. If RRF criteria is not met in the continuing calibration curve analysis, effected positive analytes will be qualified "J" estimated. Those analytes not detected are not qualified. The SW-846 Methods cite specific analytes known as System Performance Check Compounds (SPCC). Minimum response criteria is set for these analytes. If the minimum criteria is not met, analyses must stop and the source of problems must be found and corrected. Data associated with this set has been reviewed for the criteria in the cited in the EPA Method and the USEPA review criteria.

Sample Date – December 18, 2002 – One (1) initial calibration curve analysis is associated with these sample analyses. The laboratory performed an initial multilevel calibration on December 30, 2002 for the VOA analytes. All response factor criteria was met in this initial calibration curve analysis.

One (1) continuing standard calibration analyses are associated with this data set. All response factor criteria was met in each of the continuing calibration standard analyses.

Sample Date - January 2, 2003 – One (1) initial calibration curve analysis is associated with these sample analyses. The laboratory performed an initial multilevel calibration on January 10, 2003 for the VOA analytes. All response factor criteria was met in this initial calibration curve analysis.

One (1) continuing standard calibration analyses are associated with this data set. All response factor criteria was met in each of the continuing calibration standard analyses.

Sample Date - January 6, 2003 – One (1) initial calibration curve analysis is associated with these sample analyses. The laboratory performed an initial multilevel calibration on January 10, 2003 for the VOA analytes. All response factor criteria was met in this initial calibration curve analysis.

Four (4) continuing standard calibration analyses are associated with this data set. All response factor criteria was met in each of the continuing calibration standard analyses.

ORGANIC DATA ASSESSMENT

6. GC/MS CALIBRATION (cont'd):

B) PERCENT RELATIVE STANDARD DEVIATION (RSD) AND PERCENT DIFFERENCE (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the compounds in the continuing calibration standard to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. USEPA data validation criteria states that the percent RSD of the initial calibration curve must be less than or equal to 30%. The %D must be <25% in the continuing calibration standard. This criteria has been applied to all target analytes. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects may be flagged "UJ", based on professional judgement. If %RSD and %D grossly exceed QC criteria (>90%), non-detects data may be qualified "R", unuseable. Data associated with this set has been reviewed for the criteria in the cited in the USEPA Data Validation Guidelines.

Sample Date – December 18, 2002 – One (1) initial calibration curve analysis is associated with these sample analyses. The laboratory performed an initial multilevel calibration on December 30, 2002 for the VOA analytes. All %RSD criteria was met for the target analytes in this data set.

One (1) continuing calibration standard analysis is associated with this data set. The % Difference of all compounds was met in the continuing calibration standard analyses with the exception of those listed below:

Instrument	Date	Analyte	%Difference
VOA No. 1	12/31/02	Dichlorodidluoromethane	33.7
		Trichlorofluoromethane	33.6

Thses analytes have been qualified "UJ/J" estimated in the associated aqueous samples in this data set.

Qualified data result pages are located in Appendix B of this report.

Sample Date - January 2, 2003 – One (1) initial calibration curve analysis is associated with these sample analyses. The laboratory performed an initial multilevel calibration on January 10, 2003 for the VOA analytes. All %RSD criteria was met for the target analytes in this data set.

One (1) continuing calibration standard analysis is associated with this data set. The % Difference of all compounds was met in the continuing calibration standard analyses with the exception of those listed below:

Instrument	Date	Analyte	%Difference
VOA No. 1	1/10/03	Dichlorodidluoromethane	33.7

Thses analytes have been qualified "UJ/J" estimated in the associated aqueous samples in this data set.

Qualified data result pages are located in Appendix B of this report.

ORGANIC DATA ASSESSMENT

6. GC/MS CALIBRATION (cont'd):

B) PERCENT RELATIVE STANDARD DEVIATION (RSD) AND PERCENT DIFFERENCE (%D) (cont'd):

Sample Date - January 6, 2003 – One (1) initial calibration curve analysis is associated with these sample analyses. The laboratory performed an initial multilevel calibration on January 10, 2003 for the VOA analytes. All %RSD criteria was met for the target analytes in this data set.

Four (4) continuing calibration standard analyses are associated with this data set. The % Difference of all compounds was met in the continuing calibration standard analyses with the exception of those listed below:

Instrument	**Date**	**Analyte**	**%Difference**
VOA No. 1	1/10/03	Dichlorodidluoromethane	33.7
VOA No. 1	1/15/03	Dichlorodifluoromethane	33.6
		Chloromethane	31.6
		Bromomethane	26.9
		Trichlorofluoromethane	28.1
VOA No. 1	1/16/03	Dichlorodifluoromethane	29.8
		Chloromethane	26.9
		Vinyl Chloride	29.5
		Bromomethane	27.3

Thses analytes have been qualified "UJ/J" estimated in the associated aqueous samples in this data set.

Qualified data result pages are located in Appendix B of this report.

ORGANIC DATA ASSESSMENT

7. GC/MS INTERNAL STANDARDS PERFORMANCE:

Internal standard (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every run. The method recommends that the internal standard area count must not vary by more than a factor of 2 (-50%to +100%) from the associated continuing calibration standard. The method recommends that the retention time of the internal standard must not vary more than ±30 seconds from the associated continuing calibration standard. The EPA CLP validation guidelines state that if the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified estimated, "J", and all non-detects below 50% are qualified "UJ", non detects above 100% should not be qualified or "R" if there is a severe loss of sensitivity. The internal standard evaluation criteria is applied to all field and QC samples.

Sample Date – December 18, 2002 - All samples were spiked with the internal standards Fluorobenzene, Chlorobenzene-d5 and 1,4-Dichlorobenzene-d4 prior to analysis. The area counts and retention time of each internal standard met QC criteria in all field and QC samples in this data set.

Sample Date – January 2, 2003 - All samples were spiked with the internal standards Fluorobenzene, Chlorobenzene-d5 and 1,4-Dichlorobenzene-d4 prior to analysis. The area counts and retention time of each internal standard met QC criteria in all field and QC samples in this data set.

Sample Date – January 6, 2003- All samples were spiked with the internal standards Fluorobenzene, Chlorobenzene-d5 and 1,4-Dichlorobenzene-d4 prior to analysis. The area counts and retention time of each internal standard met QC criteria in all field and QC samples in this data set.

8. GC/MS MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds, and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is Bromofluorobenzene (BFB). If the mass calibration is in error, or missing, all associated data will be classified as unusable, "R".

Sample Date - December 18, 2002 - All BFB Tunes associated with the samples in this data set met QC criteria.

Sample Date – January 2, 2003 - All BFB Tunes associated with the samples in this data set met QC criteria.

Sample Date – January 6, 2003 – All BFB Tunes associated with the samples in this data set met QC criteria.

ORGANIC DATA ASSESSMENT

9. COMPOUND IDENTIFICATION:

Target compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound, and have an ion spectra which has a ratio of the primary and secondary ion intensities with 20% of that in the standard compound. Concentration is quantitated from the initial calibration curve. The following comments regarding sample concentration and dilution are only made for the validated sample points.

Sample MW-203F-1 (02120517-02) was reported from a dilution of 100 due to the concentration of 1,2-Dichloroethene (590 ug/L), Tetrachloroethene (5700 ug/L) and Trichloroethene (300 ug/L) detected in the sample.

Sample MW-202-1F (03010083-01) was reported from a dilution of 25 due to the concentration of 1,2-Dichloroethene (230 ug/L), Tetrachloroethene (450 ug/L) and Trichloroethene (1000 ug/L) detected in the sample.

Sample MW-5-1 (03010083-03) was reported from a dilution of 50 due to the concentration of 1,2-Dichloroethene (350 ug/L), Tetrachloroethene (9800 ug/L) and Trichloroethene (160 ug/L) detected in the sample.

10. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

Analytical QC criteria was met for these analyses. The data reported agrees with the raw data provided in the final report. The laboratory provided a complete data package and reported all data using acceptable protocols and laboratory qualifiers as defined in the report package.

All data provided for this data set is acceptable for use, with noted data qualifiers. The qualified data result pages are located in Appendix B of this report.

Premier Environmental Services.

TABLE 1

2815 COVERED BRIDGE ROAD, MERRICK, NEW YORK 11566
(516) 223-9761 • FAX (516) 223-0983

Premier Environmental Services.

FIELD SAMPLE ID	LABORATORY ID
MW-203F-1	02120517-02
Trip Blank 12-18	02120517-04
F-Blank 12-18-02	02120517-05
E-Blank 12-18-02	02120517-06
MW-5-1	03010083-03
Trip Blank 1/2/03	03010083-04
F-Blank 1/2/03	03010083-05
E-Blank 1/2/03	03010083-06
MW-11	03010123-02
Trip Blank 1/6/03	03010123-03
F-Blank 1/6/03	03010123-04
E-Blank 1/6/03	03010123-05

APPENDIX A

DATA QUALIFIER DEFINITIONS

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identiifed" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are unreliable. The presence or absence of the analyte cannot be verified.

K – The analyte is present. The reported value may be biased high. The actual value is expected to be lower than reported.

L - The analyte is present. The reported value may be biased low. The actual value is expected to be higher than reported.

UL – The analyte was not detected, and the reported quantitation limit is probably higher than reported.

APPENDIX B

YORK
Analytical Laboratories, Inc.

Form 1
Volatile Organics Analysis Data Sheet-8021HW

Client Sample ID
MW-203F-1

Sample Amount: Soil=1.0g/Water=5.0ml
Matrix: WATER
Dilution Factor: 100
GC Column: DB-624, 50 m, 0.32mm id
Date Collected: 12/18/02
Date Received: 12/19/02
Date Analyzed: 12/31/02
Level: LOW
SDG: 02120517
Lab ID: 02120517-02
Lab File ID: VO9124.D

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
MW-203F-1	02120517-02	Benzyl chloride	1000 U
MW-203F-1	02120517-02	Bis(2-chloroethoxy)methane	1000 U
MW-203F-1	02120517-02	Bis(2-chloroisopropyl)ether	1000 U
MW-203F-1	02120517-02	Bromobenzene	100 U
MW-203F-1	02120517-02	Bromodichloromethane	100 U
MW-203F-1	02120517-02	Bromoform	100 U
MW-203F-1	02120517-02	Bromomethane	1000 U
MW-203F-1	02120517-02	Carbon tetrachloride	100 U
MW-203F-1	02120517-02	Chloroacetaldehyde	1000 U
MW-203F-1	02120517-02	Chlorobenzene	100 U
MW-203F-1	02120517-02	Chloroethane	1000 U
MW-203F-1	02120517-02	Chloroform	100 U
MW-203F-1	02120517-02	1-Chlorohexane	100 U
MW-203F-1	02120517-02	2-Chloroethylvinyl ether	100 U
MW-203F-1	02120517-02	Chloromethane	1000 U
MW-203F-1	02120517-02	Chloromethyl methyl ether	100 U
MW-203F-1	02120517-02	2-Chlorotoluene	100 U
MW-203F-1	02120517-02	4-Chlorotoluene	100 U
MW-203F-1	02120517-02	Dibromochloromethane	100 U
MW-203F-1	02120517-02	Dibromomethane	100 U
MW-203F-1	02120517-02	1,2-Dichlorobenzene	100 U
MW-203F-1	02120517-02	1,3-Dichlorobenzene	100 U
MW-203F-1	02120517-02	1,4-Dichlorobenzene	100 U
MW-203F-1	02120517-02	Dichlorodifluoromethane	100 U UJ
MW-203F-1	02120517-02	1,1-Dichloroethane	100 U
MW-203F-1	02120517-02	1,2-Dichloroethane	100 U
MW-203F-1	02120517-02	1,1-Dichloroethylene	100 U
MW-203F-1	02120517-02	1,2-Dichloroethylene (Total)	590(cis-)
MW-203F-1	02120517-02	1,2-Dichloropropane	100 U
MW-203F-1	02120517-02	cis-1,3-Dichloropropylene	100 U
MW-203F-1	02120517-02	trans-1,3-Dichloropropylene	100 U
MW-203F-1	02120517-02	Methylene chloride	670 ~~B~~ U
MW-203F-1	02120517-02	1,1,1,2-Tetrachloroethane	100 U

Form 1
Volatile Organics Analysis Data Sheet-8260

Client Sample ID
MW-203F-1

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
MW-203F-1	02120517-02	1,1,2,2-Tetrachloroethane	100 U
MW-203F-1	02120517-02	Tetrachloroethylene	5700
MW-203F-1	02120517-02	1,1,1-Trichloroethane	100 U
MW-203F-1	02120517-02	1,1,2-Trichloroethane	100 U
MW-203F-1	02120517-02	Trichloroethylene	300
MW-203F-1	02120517-02	Trichlorofluoromethane	100 U
MW-203F-1	02120517-02	Trichloropropane	100 U
MW-203F-1	02120517-02	Vinyl chloride	1000 U

UJ

YORK
Analytical Laboratories, Inc.

Form 1
Volatile Organics Analysis Data Sheet-8021HW

Client Sample ID
Trip Blank-12-18

Sample Amount: Soil=1.0g/Water=5.0ml
Matrix: WATER
Dilution Factor: 1
GC Column: DB-624, 50 m, 0.32mm id
Date Collected: 12/18/02
Date Received: 12/19/02
Date Analyzed: 12/31/02
Level: LOW
SDG: 02120517
Lab ID: 02120517-04
Lab File ID: VO9126.D

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
Trip Blank-12-18-02	02120517-04	Benzyl chloride	10 U
Trip Blank-12-18-02	02120517-04	Bis(2-chloroethoxy)methane	10 U
Trip Blank-12-18-02	02120517-04	Bis(2-chloroisopropyl)ether	10 U
Trip Blank-12-18-02	02120517-04	Bromobenzene	1 U
Trip Blank-12-18-02	02120517-04	Bromodichloromethane	1 U
Trip Blank-12-18-02	02120517-04	Bromoform	1 U
Trip Blank-12-18-02	02120517-04	Bromomethane	10 U
Trip Blank-12-18-02	02120517-04	Carbon tetrachloride	1 U
Trip Blank-12-18-02	02120517-04	Chloroacetaldehyde	10 U
Trip Blank-12-18-02	02120517-04	Chlorobenzene	1 U
Trip Blank-12-18-02	02120517-04	Chloroethane	10 U
Trip Blank-12-18-02	02120517-04	Chloroform	1 U
Trip Blank-12-18-02	02120517-04	1-Chlorohexane	1 U
Trip Blank-12-18-02	02120517-04	2-Chloroethylvinyl ether	1 U
Trip Blank-12-18-02	02120517-04	Chloromethane	10 U
Trip Blank-12-18-02	02120517-04	Chloromethyl methyl ether	1 U
Trip Blank-12-18-02	02120517-04	2-Chlorotoluene	1 U
Trip Blank-12-18-02	02120517-04	4-Chlorotoluene	1 U
Trip Blank-12-18-02	02120517-04	Dibromochloromethane	1 U
Trip Blank-12-18-02	02120517-04	Dibromomethane	1 U
Trip Blank-12-18-02	02120517-04	1,2-Dichlorobenzene	1 U
Trip Blank-12-18-02	02120517-04	1,3-Dichlorobenzene	1 U
Trip Blank-12-18-02	02120517-04	1,4-Dichlorobenzene	1 U
Trip Blank-12-18-02	02120517-04	Dichlorodifluoromethane	1 U UJ
Trip Blank-12-18-02	02120517-04	1,1-Dichloroethane	1 U
Trip Blank-12-18-02	02120517-04	1,2-Dichloroethane	1 U
Trip Blank-12-18-02	02120517-04	1,1-Dichloroethylene	1 U
Trip Blank-12-18-02	02120517-04	1,2-Dichloroethylene (Total)	1 U
Trip Blank-12-18-02	02120517-04	1,2-Dichloropropane	1 U
Trip Blank-12-18-02	02120517-04	cis-1,3-Dichloropropylene	1 U
Trip Blank-12-18-02	02120517-04	trans-1,3-Dichloropropylene	1 U
Trip Blank-12-18-02	02120517-04	Methylene chloride	3 ~~B~~ U
Trip Blank-12-18-02	02120517-04	1,1,1,2-Tetrachloroethane	1 U

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Analytical Laboratories, Inc.

Form 1
Volatile Organics Analysis Data Sheet-8260

Client Sample ID
Trip Blank-12-18

CONCENTRATION
UNITS ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
Trip Blank-12-18-02	02120517-04	1,1,2,2-Tetrachloroethane	1 U
Trip Blank-12-18-02	02120517-04	Tetrachloroethylene	1 U
Trip Blank-12-18-02	02120517-04	1,1,1-Trichloroethane	1 U
Trip Blank-12-18-02	02120517-04	1,1,2-Trichloroethane	1 U
Trip Blank-12-18-02	02120517-04	Trichloroethylene	1 U
Trip Blank-12-18-02	02120517-04	Trichlorofluoromethane	1 U UJ
Trip Blank-12-18-02	02120517-04	Trichloropropane	1 U
Trip Blank-12-18-02	02120517-04	Vinyl chloride	10 U

YORK
Analytical Laboratories, Inc.

Form 1
Volatile Organics Analysis Data Sheet-8021HW

Client Sample ID
F-Blank-12-18-02

Sample Amount: Soil=1.0g/Water=5.0ml
Matrix: WATER
Dilution Factor: 1
GC Column: DB-624, 50 m, 0.32mm id
Date Collected: 12/18/02
Date Received: 12/19/02
Date Analyzed: 12/31/02
Level: LOW
SDG: 02120517
Lab ID: 02120517-05
Lab File ID: VO9127.D
CONCENTRATION UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
F-Blank-12-18-02	02120517-05	Benzyl chloride	10 U
F-Blank-12-18-02	02120517-05	Bis(2-chloroethoxy)methane	10 U
F-Blank-12-18-02	02120517-05	Bis(2-chloroisopropyl)ether	10 U
F-Blank-12-18-02	02120517-05	Bromobenzene	1 U
F-Blank-12-18-02	02120517-05	Bromodichloromethane	1 U
F-Blank-12-18-02	02120517-05	Bromoform	1 U
F-Blank-12-18-02	02120517-05	Bromomethane	10 U
F-Blank-12-18-02	02120517-05	Carbon tetrachloride	1 U
F-Blank-12-18-02	02120517-05	Chloroacetaldehyde	10 U
F-Blank-12-18-02	02120517-05	Chlorobenzene	1 U
F-Blank-12-18-02	02120517-05	Chloroethane	10 U
F-Blank-12-18-02	02120517-05	Chloroform	1 U
F-Blank-12-18-02	02120517-05	1-Chlorohexane	1 U
F-Blank-12-18-02	02120517-05	2-Chloroethylvinyl ether	1 U
F-Blank-12-18-02	02120517-05	Chloromethane	10 U
F-Blank-12-18-02	02120517-05	Chloromethyl methyl ether	1 U
F-Blank-12-18-02	02120517-05	2-Chlorotoluene	1 U
F-Blank-12-18-02	02120517-05	4-Chlorotoluene	1 U
F-Blank-12-18-02	02120517-05	Dibromochloromethane	1 U
F-Blank-12-18-02	02120517-05	Dibromomethane	1 U
F-Blank-12-18-02	02120517-05	1,2-Dichlorobenzene	1 U
F-Blank-12-18-02	02120517-05	1,3-Dichlorobenzene	1 U
F-Blank-12-18-02	02120517-05	1,4-Dichlorobenzene	1 U
F-Blank-12-18-02	02120517-05	Dichlorodifluoromethane	1 U UJ
F-Blank-12-18-02	02120517-05	1,1-Dichloroethane	1 U
F-Blank-12-18-02	02120517-05	1,2-Dichloroethane	1 U
F-Blank-12-18-02	02120517-05	1,1-Dichloroethylene	1 U
F-Blank-12-18-02	02120517-05	1,2-Dichloroethylene (Total)	1 U
F-Blank-12-18-02	02120517-05	1,2-Dichloropropane	1 U
F-Blank-12-18-02	02120517-05	cis-1,3-Dichloropropylene	1 U
F-Blank-12-18-02	02120517-05	trans-1,3-Dichloropropylene	1 U
F-Blank-12-18-02	02120517-05	Methylene chloride	1 U
F-Blank-12-18-02	02120517-05	1,1,1,2-Tetrachloroethane	1 U

Form 1
Volatile Organics Analysis Data Sheet-8260

Client Sample ID
F-Blank-12-18-02

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier	
F-Blank-12-18-02	02120517-05	1,1,2,2-Tetrachloroethane	1 U	
F-Blank-12-18-02	02120517-05	Tetrachloroethylene	1 U	
F-Blank-12-18-02	02120517-05	1,1,1-Trichloroethane	1 U	
F-Blank-12-18-02	02120517-05	1,1,2-Trichloroethane	1 U	
F-Blank-12-18-02	02120517-05	Trichloroethylene	1 U	
F-Blank-12-18-02	02120517-05	Trichlorofluoromethane	1 U	UJ
F-Blank-12-18-02	02120517-05	Trichloropropane	1 U	
F-Blank-12-18-02	02120517-05	Vinyl chloride	10 U	

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Analytical Laboratories, Inc.

Form 1
Volatile Organics Analysis Data Sheet-8021HW

Client Sample ID
E-Blank-12-18-02

Sample Amount: Soil=1.0g/Water=5.0ml
Matrix: WATER
Dilution Factor: 1
GC Column: DB-624, 50 m, 0.32mm id

Date Collected: 12/18/02
Date Received: 12/19/02
Date Analyzed: 12/31/02
Level: LOW

SDG: 02120517
Lab ID: 02120517-06
Lab File ID: VO9128.D

CONCENTRATION UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
E-Blank-12-18-02	02120517-06	Benzyl chloride	10 U
E-Blank-12-18-02	02120517-06	Bis(2-chloroethoxy)methane	10 U
E-Blank-12-18-02	02120517-06	Bis(2-chloroisopropyl)ether	10 U
E-Blank-12-18-02	02120517-06	Bromobenzene	1 U
E-Blank-12-18-02	02120517-06	Bromodichloromethane	1 U
E-Blank-12-18-02	02120517-06	Bromoform	1 U
E-Blank-12-18-02	02120517-06	Bromomethane	10 U
E-Blank-12-18-02	02120517-06	Carbon tetrachloride	1 U
E-Blank-12-18-02	02120517-06	Chloroacetaldehyde	10 U
E-Blank-12-18-02	02120517-06	Chlorobenzene	1 U
E-Blank-12-18-02	02120517-06	Chloroethane	10 U
E-Blank-12-18-02	02120517-06	Chloroform	1 U
E-Blank-12-18-02	02120517-06	1-Chlorohexane	1 U
E-Blank-12-18-02	02120517-06	2-Chloroethylvinyl ether	1 U
E-Blank-12-18-02	02120517-06	Chloromethane	10 U
E-Blank-12-18-02	02120517-06	Chloromethyl methyl ether	1 U
E-Blank-12-18-02	02120517-06	2-Chlorotoluene	1 U
E-Blank-12-18-02	02120517-06	4-Chlorotoluene	1 U
E-Blank-12-18-02	02120517-06	Dibromochloromethane	1 U
E-Blank-12-18-02	02120517-06	Dibromomethane	1 U
E-Blank-12-18-02	02120517-06	1,2-Dichlorobenzene	1 U
E-Blank-12-18-02	02120517-06	1,3-Dichlorobenzene	1 U
E-Blank-12-18-02	02120517-06	1,4-Dichlorobenzene	1 U
E-Blank-12-18-02	02120517-06	Dichlorodifluoromethane	1 U UJ
E-Blank-12-18-02	02120517-06	1,1-Dichloroethane	1 U
E-Blank-12-18-02	02120517-06	1,2-Dichloroethane	1 U
E-Blank-12-18-02	02120517-06	1,1-Dichloroethylene	1 U
E-Blank-12-18-02	02120517-06	1,2-Dichloroethylene (Total)	1 U
E-Blank-12-18-02	02120517-06	1,2-Dichloropropane	1 U
E-Blank-12-18-02	02120517-06	cis-1,3-Dichloropropylene	1 U
E-Blank-12-18-02	02120517-06	trans-1,3-Dichloropropylene	1 U
E-Blank-12-18-02	02120517-06	Methylene chloride	1 U
E-Blank-12-18-02	02120517-06	1,1,1,2-Tetrachloroethane	1 U

Form 1
Volatile Organics Analysis Data Sheet-8260

Client Sample ID
E-Blank-12-18-02

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
E-Blank-12-18-02	02120517-06	1,1,2,2-Tetrachloroethane	1 U
E-Blank-12-18-02	02120517-06	Tetrachloroethylene	5
E-Blank-12-18-02	02120517-06	1,1,1-Trichloroethane	1 U
E-Blank-12-18-02	02120517-06	1,1,2-Trichloroethane	1 U
E-Blank-12-18-02	02120517-06	Trichloroethylene	1 U
E-Blank-12-18-02	02120517-06	Trichlorofluoromethane	1 U UJ
E-Blank-12-18-02	02120517-06	Trichloropropane	1 U
E-Blank-12-18-02	02120517-06	Vinyl chloride	10 U

YORK
Analytical Laboratories, Inc.

Form 1
Volatile Organics Analysis Data Sheet-8021HW

Client Sample ID
MW-202-1F

Sample Amount: Soil=1.0g/Water=5.0ml
Matrix: WATER
Dilution Factor: 25
GC Column: DB-624, 50 m, 0.32mm id
Date Collected: 01/02/03
Date Received: 01/06/03
Date Analyzed: 01/10/03
Level: LOW
SDG: 03010083
Lab ID: 03010083-01
Lab File ID: VO9406.D

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
MW-202-1F	03010083-01	Benzyl chloride	250 U
MW-202-1F	03010083-01	Bis(2-chloroethoxy)methane	250 U
MW-202-1F	03010083-01	Bis(2-chloroisopropyl)ether	250 U
MW-202-1F	03010083-01	Bromobenzene	25 U
MW-202-1F	03010083-01	Bromodichloromethane	25 U
MW-202-1F	03010083-01	Bromoform	25 U
MW-202-1F	03010083-01	Bromomethane	250 U
MW-202-1F	03010083-01	Carbon tetrachloride	25 U
MW-202-1F	03010083-01	Chloroacetaldehyde	250 U
MW-202-1F	03010083-01	Chlorobenzene	25 U
MW-202-1F	03010083-01	Chloroethane	250 U
MW-202-1F	03010083-01	Chloroform	25 U
MW-202-1F	03010083-01	1-Chlorohexane	25 U
MW-202-1F	03010083-01	2-Chloroethylvinyl ether	25 U
MW-202-1F	03010083-01	Chloromethane	250 U
MW-202-1F	03010083-01	Chloromethyl methyl ether	25 U
MW-202-1F	03010083-01	2-Chlorotoluene	25 U
MW-202-1F	03010083-01	4-Chlorotoluene	25 U
MW-202-1F	03010083-01	Dibromochloromethane	25 U
MW-202-1F	03010083-01	Dibromomethane	25 U
MW-202-1F	03010083-01	1,2-Dichlorobenzene	25 U
MW-202-1F	03010083-01	1,3-Dichlorobenzene	25 U
MW-202-1F	03010083-01	1,4-Dichlorobenzene	25 U
MW-202-1F	03010083-01	Dichlorodifluoromethane	25 U UJ
MW-202-1F	03010083-01	1,1-Dichloroethane	25 U
MW-202-1F	03010083-01	1,2-Dichloroethane	25 U
MW-202-1F	03010083-01	1,1-Dichloroethylene	25 U
MW-202-1F	03010083-01	1,2-Dichloroethylene (Total)	230(cis-)
MW-202-1F	03010083-01	1,2-Dichloropropane	25 U
MW-202-1F	03010083-01	cis-1,3-Dichloropropylene	25 U
MW-202-1F	03010083-01	trans-1,3-Dichloropropylene	25 U
MW-202-1F	03010083-01	Methylene chloride	56 ~~B~~ U
MW-202-1F	03010083-01	1,1,1,2-Tetrachloroethane	25 U

YORK
Analytical Laboratories, Inc.

Form 1
Volatile Organics Analysis Data Sheet-8260

Client Sample ID
MW-202-1F

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
MW-202-1F	03010083-01	1,1,2,2-Tetrachloroethane	25 U
MW-202-1F	03010083-01	Tetrachloroethylene	450
MW-202-1F	03010083-01	1,1,1-Trichloroethane	25 U
MW-202-1F	03010083-01	1,1,2-Trichloroethane	25 U
MW-202-1F	03010083-01	Trichloroethylene	1000
MW-202-1F	03010083-01	Trichlorofluoromethane	25 U
MW-202-1F	03010083-01	Trichloropropane	25 U
MW-202-1F	03010083-01	Vinyl chloride	250 U

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Analytical Laboratories, Inc.

Form 1
Volatile Organics Analysis Data Sheet-8021HW

Client Sample ID
MW-5-1

Sample Amount: Soil=1.0g/Water=5.0ml
Matrix: WATER
Dilution Factor: 50
GC Column: DB-624, 50 m, 0.32mm id
Date Collected: 01/02/03
Date Received: 01/06/03
Date Analyzed: 01/11/03
Level: LOW
SDG: 03010083
Lab ID: 03010083-03
Lab File ID: VO9408.D

CONCENTRATION UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
MW-5-1	03010083-03	Benzyl chloride	500 U
MW-5-1	03010083-03	Bis(2-chloroethoxy)methane	500 U
MW-5-1	03010083-03	Bis(2-chloroisopropyl)ether	500 U
MW-5-1	03010083-03	Bromobenzene	50 U
MW-5-1	03010083-03	Bromodichloromethane	50 U
MW-5-1	03010083-03	Bromoform	50 U
MW-5-1	03010083-03	Bromomethane	500 U
MW-5-1	03010083-03	Carbon tetrachloride	50 U
MW-5-1	03010083-03	Chloroacetaldehyde	500 U
MW-5-1	03010083-03	Chlorobenzene	50 U
MW-5-1	03010083-03	Chloroethane	500 U
MW-5-1	03010083-03	Chloroform	50 U
MW-5-1	03010083-03	1-Chlorohexane	50 U
MW-5-1	03010083-03	2-Chloroethylvinyl ether	50 U
MW-5-1	03010083-03	Chloromethane	500 U
MW-5-1	03010083-03	Chloromethyl methyl ether	50 U
MW-5-1	03010083-03	2-Chlorotoluene	50 U
MW-5-1	03010083-03	4-Chlorotoluene	50 U
MW-5-1	03010083-03	Dibromochloromethane	50 U
MW-5-1	03010083-03	Dibromomethane	50 U
MW-5-1	03010083-03	1,2-Dichlorobenzene	50 U
MW-5-1	03010083-03	1,3-Dichlorobenzene	50 U
MW-5-1	03010083-03	1,4-Dichlorobenzene	50 U
MW-5-1	03010083-03	Dichlorodifluoromethane	50 U UJ
MW-5-1	03010083-03	1,1-Dichloroethane	50 U
MW-5-1	03010083-03	1,2-Dichloroethane	50 U
MW-5-1	03010083-03	1,1-Dichloroethylene	50 U
MW-5-1	03010083-03	1,2-Dichloroethylene (Total)	350(cis-)
MW-5-1	03010083-03	1,2-Dichloropropane	50 U
MW-5-1	03010083-03	cis-1,3-Dichloropropylene	50 U
MW-5-1	03010083-03	trans-1,3-Dichloropropylene	50 U
MW-5-1	03010083-03	Methylene chloride	94 ~~B~~ U
MW-5-1	03010083-03	1,1,1,2-Tetrachloroethane	50 U

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Analytical Laboratories, Inc.

Form 1
Volatile Organics Analysis Data Sheet-8260

Client Sample ID
MW-5-1

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
MW-5-1	03010083-03	1,1,2,2-Tetrachloroethane	50 U
MW-5-1	03010083-03	Tetrachloroethylene	9800
MW-5-1	03010083-03	1,1,1-Trichloroethane	50 U
MW-5-1	03010083-03	1,1,2-Trichloroethane	50 U
MW-5-1	03010083-03	Trichloroethylene	160
MW-5-1	03010083-03	Trichlorofluoromethane	50 U
MW-5-1	03010083-03	Trichloropropane	50 U
MW-5-1	03010083-03	Vinyl chloride	500 U

Form 1
Volatile Organics Analysis Data Sheet-8021HW

Client Sample ID
Trip Blank 1-2-03

Sample Amount: Soil=1.0g/Water=5.0ml
Matrix: WATER
Dilution Factor: 1
GC Column: DB-624, 50 m, 0.32mm id
Date Collected: 01/02/03
Date Received: 01/06/03
Date Analyzed: 01/11/03
Level: LOW
SDG: 03010083
Lab ID: 03010083-04
Lab File ID: VO9409.D

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
Trip Blank 1-2-03	03010083-04	Benzyl chloride	10 U
Trip Blank 1-2-03	03010083-04	Bis(2-chloroethoxy)methane	10 U
Trip Blank 1-2-03	03010083-04	Bis(2-chloroisopropyl)ether	10 U
Trip Blank 1-2-03	03010083-04	Bromobenzene	1 U
Trip Blank 1-2-03	03010083-04	Bromodichloromethane	1 U
Trip Blank 1-2-03	03010083-04	Bromoform	1 U
Trip Blank 1-2-03	03010083-04	Bromomethane	10 U
Trip Blank 1-2-03	03010083-04	Carbon tetrachloride	1 U
Trip Blank 1-2-03	03010083-04	Chloroacetaldehyde	10 U
Trip Blank 1-2-03	03010083-04	Chlorobenzene	1 U
Trip Blank 1-2-03	03010083-04	Chloroethane	10 U
Trip Blank 1-2-03	03010083-04	Chloroform	1 U
Trip Blank 1-2-03	03010083-04	1-Chlorohexane	1 U
Trip Blank 1-2-03	03010083-04	2-Chloroethylvinyl ether	1 U
Trip Blank 1-2-03	03010083-04	Chloromethane	10 U
Trip Blank 1-2-03	03010083-04	Chloromethyl methyl ether	1 U
Trip Blank 1-2-03	03010083-04	2-Chlorotoluene	1 U
Trip Blank 1-2-03	03010083-04	4-Chlorotoluene	1 U
Trip Blank 1-2-03	03010083-04	Dibromochloromethane	1 U
Trip Blank 1-2-03	03010083-04	Dibromomethane	1 U
Trip Blank 1-2-03	03010083-04	1,2-Dichlorobenzene	1 U
Trip Blank 1-2-03	03010083-04	1,3-Dichlorobenzene	1 U
Trip Blank 1-2-03	03010083-04	1,4-Dichlorobenzene	1 U
Trip Blank 1-2-03	03010083-04	Dichlorodifluoromethane	1 U UJ
Trip Blank 1-2-03	03010083-04	1,1-Dichloroethane	1 U
Trip Blank 1-2-03	03010083-04	1,2-Dichloroethane	1 U
Trip Blank 1-2-03	03010083-04	1,1-Dichloroethylene	1 U
Trip Blank 1-2-03	03010083-04	1,2-Dichloroethylene (Total)	1 U
Trip Blank 1-2-03	03010083-04	1,2-Dichloropropane	1 U
Trip Blank 1-2-03	03010083-04	cis-1,3-Dichloropropylene	1 U
Trip Blank 1-2-03	03010083-04	trans-1,3-Dichloropropylene	1 U
Trip Blank 1-2-03	03010083-04	Methylene chloride	1 U
Trip Blank 1-2-03	03010083-04	1,1,1,2-Tetrachloroethane	1 U

Form 1
Volatile Organics Analysis Data Sheet-8260

Client Sample ID

Trip Blank 1-2-03

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
Trip Blank 1-2-03	03010083-04	1,1,2,2-Tetrachloroethane	1 U
Trip Blank 1-2-03	03010083-04	Tetrachloroethylene	1 U
Trip Blank 1-2-03	03010083-04	1,1,1-Trichloroethane	1 U
Trip Blank 1-2-03	03010083-04	1,1,2-Trichloroethane	1 U
Trip Blank 1-2-03	03010083-04	Trichloroethylene	1 U
Trip Blank 1-2-03	03010083-04	Trichlorofluoromethane	1 U
Trip Blank 1-2-03	03010083-04	Trichloropropane	1 U
Trip Blank 1-2-03	03010083-04	Vinyl chloride	10 U

YORK
Analytical Laboratories, Inc.

Form 1
Volatile Organics Analysis Data Sheet-8021HW

Client Sample ID
F-Blank 1-2-03

Sample Amount:	Soil=1.0g/Water=5.0ml	Date Collected:	01/02/03		
Matrix:	WATER	Date Received:	01/06/03	SDG:	03010083
Dilution Factor:	1	Date Analyzed:	01/11/03	Lab ID:	03010083-05
GC Column:	DB-624, 50 m, 0.32mm id	Level:	LOW	Lab File ID:	VO9410.D

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier	
F-Blank 1-2-03	03010083-05	Benzyl chloride	10 U	
F-Blank 1-2-03	03010083-05	Bis(2-chloroethoxy)methane	10 U	
F-Blank 1-2-03	03010083-05	Bis(2-chloroisopropyl)ether	10 U	
F-Blank 1-2-03	03010083-05	Bromobenzene	1 U	
F-Blank 1-2-03	03010083-05	Bromodichloromethane	1 U	
F-Blank 1-2-03	03010083-05	Bromoform	1 U	
F-Blank 1-2-03	03010083-05	Bromomethane	10 U	
F-Blank 1-2-03	03010083-05	Carbon tetrachloride	1 U	
F-Blank 1-2-03	03010083-05	Chloroacetaldehyde	10 U	
F-Blank 1-2-03	03010083-05	Chlorobenzene	1 U	
F-Blank 1-2-03	03010083-05	Chloroethane	10 U	
F-Blank 1-2-03	03010083-05	Chloroform	1 U	
F-Blank 1-2-03	03010083-05	1-Chlorohexane	1 U	
F-Blank 1-2-03	03010083-05	2-Chloroethylvinyl ether	1 U	
F-Blank 1-2-03	03010083-05	Chloromethane	10 U	
F-Blank 1-2-03	03010083-05	Chloromethyl methyl ether	1 U	
F-Blank 1-2-03	03010083-05	2-Chlorotoluene	1 U	
F-Blank 1-2-03	03010083-05	4-Chlorotoluene	1 U	
F-Blank 1-2-03	03010083-05	Dibromochloromethane	1 U	
F-Blank 1-2-03	03010083-05	Dibromomethane	1 U	
F-Blank 1-2-03	03010083-05	1,2-Dichlorobenzene	1 U	
F-Blank 1-2-03	03010083-05	1,3-Dichlorobenzene	1 U	
F-Blank 1-2-03	03010083-05	1,4-Dichlorobenzene	1 U	
F-Blank 1-2-03	03010083-05	Dichlorodifluoromethane	1 U	UJ
F-Blank 1-2-03	03010083-05	1,1-Dichloroethane	1 U	
F-Blank 1-2-03	03010083-05	1,2-Dichloroethane	1 U	
F-Blank 1-2-03	03010083-05	1,1-Dichloroethylene	1 U	
F-Blank 1-2-03	03010083-05	1,2-Dichloroethylene (Total)	1 U	
F-Blank 1-2-03	03010083-05	1,2-Dichloropropane	1 U	
F-Blank 1-2-03	03010083-05	cis-1,3-Dichloropropylene	1 U	
F-Blank 1-2-03	03010083-05	trans-1,3-Dichloropropylene	1 U	
F-Blank 1-2-03	03010083-05	Methylene chloride	1 U	
F-Blank 1-2-03	03010083-05	1,1,1,2-Tetrachloroethane	1 U	

Form 1
Volatile Organics Analysis Data Sheet-8260

Client Sample ID

F-Blank 1-2-03

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
F-Blank 1-2-03	03010083-05	1,1,2,2-Tetrachloroethane	1 U
F-Blank 1-2-03	03010083-05	Tetrachloroethylene	1 U
F-Blank 1-2-03	03010083-05	1,1,1-Trichloroethane	1 U
F-Blank 1-2-03	03010083-05	1,1,2-Trichloroethane	1 U
F-Blank 1-2-03	03010083-05	Trichloroethylene	1 U
F-Blank 1-2-03	03010083-05	Trichlorofluoromethane	1 U
F-Blank 1-2-03	03010083-05	Trichloropropane	1 U
F-Blank 1-2-03	03010083-05	Vinyl chloride	10 U

YORK
Analytical Laboratories, Inc.

Form 1
Volatile Organics Analysis Data Sheet-8021HW

Client Sample ID
E-Blank 1-2-03

Sample Amount: Soil=1.0g/Water=5.0ml
Matrix: WATER
Dilution Factor: 1
GC Column: DB-624, 50 m, 0.32mm id
Date Collected: 01/02/03
Date Received: 01/06/03
Date Analyzed: 01/11/03
Level: LOW
SDG: 03010083
Lab ID: 03010083-06
Lab File ID: VO9411.D

CONCENTRATION UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
E-Blank 1-2-03	03010083-06	Benzyl chloride	10 U
E-Blank 1-2-03	03010083-06	Bis(2-chloroethoxy)methane	10 U
E-Blank 1-2-03	03010083-06	Bis(2-chloroisopropyl)ether	10 U
E-Blank 1-2-03	03010083-06	Bromobenzene	1 U
E-Blank 1-2-03	03010083-06	Bromodichloromethane	1 U
E-Blank 1-2-03	03010083-06	Bromoform	1 U
E-Blank 1-2-03	03010083-06	Bromomethane	10 U
E-Blank 1-2-03	03010083-06	Carbon tetrachloride	1 U
E-Blank 1-2-03	03010083-06	Chloroacetaldehyde	10 U
E-Blank 1-2-03	03010083-06	Chlorobenzene	1 U
E-Blank 1-2-03	03010083-06	Chloroethane	10 U
E-Blank 1-2-03	03010083-06	Chloroform	1 U
E-Blank 1-2-03	03010083-06	1-Chlorohexane	1 U
E-Blank 1-2-03	03010083-06	2-Chloroethylvinyl ether	1 U
E-Blank 1-2-03	03010083-06	Chloromethane	10 U
E-Blank 1-2-03	03010083-06	Chloromethyl methyl ether	1 U
E-Blank 1-2-03	03010083-06	2-Chlorotoluene	1 U
E-Blank 1-2-03	03010083-06	4-Chlorotoluene	1 U
E-Blank 1-2-03	03010083-06	Dibromochloromethane	1 U
E-Blank 1-2-03	03010083-06	Dibromomethane	1 U
E-Blank 1-2-03	03010083-06	1,2-Dichlorobenzene	1 U
E-Blank 1-2-03	03010083-06	1,3-Dichlorobenzene	1 U
E-Blank 1-2-03	03010083-06	1,4-Dichlorobenzene	1 U
E-Blank 1-2-03	03010083-06	Dichlorodifluoromethane	1 U UJ
E-Blank 1-2-03	03010083-06	1,1-Dichloroethane	1 U
E-Blank 1-2-03	03010083-06	1,2-Dichloroethane	1 U
E-Blank 1-2-03	03010083-06	1,1-Dichloroethylene	1 U
E-Blank 1-2-03	03010083-06	1,2-Dichloroethylene (Total)	1 U
E-Blank 1-2-03	03010083-06	1,2-Dichloropropane	1 U
E-Blank 1-2-03	03010083-06	cis-1,3-Dichloropropylene	1 U
E-Blank 1-2-03	03010083-06	trans-1,3-Dichloropropylene	1 U
E-Blank 1-2-03	03010083-06	Methylene chloride	1 U
E-Blank 1-2-03	03010083-06	1,1,1,2-Tetrachloroethane	1 U

Form 1
Volatile Organics Analysis Data Sheet-8260

Client Sample ID
E-Blank 1-2-03

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
E-Blank 1-2-03	03010083-06	1,1,2,2-Tetrachloroethane	1 U
E-Blank 1-2-03	03010083-06	Tetrachloroethylene	8
E-Blank 1-2-03	03010083-06	1,1,1-Trichloroethane	1 U
E-Blank 1-2-03	03010083-06	1,1,2-Trichloroethane	1 U
E-Blank 1-2-03	03010083-06	Trichloroethylene	1 U
E-Blank 1-2-03	03010083-06	Trichlorofluoromethane	1 U
E-Blank 1-2-03	03010083-06	Trichloropropane	1 U
E-Blank 1-2-03	03010083-06	Vinyl chloride	10 U

YORK
Analytical Laboratories, Inc.

Form 1
Volatile Organics Analysis Data Sheet-8021HW

Client Sample ID
Trip Blank 1-6-03

Sample Amount: Soil=1.0g/Water=5.0ml
Matrix: WATER
Dilution Factor: 1
GC Column: DB-624, 50 m, 0.32mm id

Date Collected: 01/06/03
Date Received: 01/07/03
Date Analyzed: 01/15/03
Level: LOW

SDG: 03010123
Lab ID: 03010123-03
Lab File ID: VO9509.D

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
Trip Blank 1-6-03	03010123-03	Benzyl chloride	10 U
Trip Blank 1-6-03	03010123-03	Bis(2-chloroethoxy)methane	10 U
Trip Blank 1-6-03	03010123-03	Bis(2-chloroisopropyl)ether	10 U
Trip Blank 1-6-03	03010123-03	Bromobenzene	1 U
Trip Blank 1-6-03	03010123-03	Bromodichloromethane	1 U
Trip Blank 1-6-03	03010123-03	Bromoform	1 U
Trip Blank 1-6-03	03010123-03	Bromomethane	10 U UJ
Trip Blank 1-6-03	03010123-03	Carbon tetrachloride	1 U
Trip Blank 1-6-03	03010123-03	Chloroacetaldehyde	10 U
Trip Blank 1-6-03	03010123-03	Chlorobenzene	1 U
Trip Blank 1-6-03	03010123-03	Chloroethane	10 U
Trip Blank 1-6-03	03010123-03	Chloroform	1 U
Trip Blank 1-6-03	03010123-03	1-Chlorohexane	1 U
Trip Blank 1-6-03	03010123-03	2-Chloroethylvinyl ether	1 U
Trip Blank 1-6-03	03010123-03	Chloromethane	10 U UJ
Trip Blank 1-6-03	03010123-03	Chloromethyl methyl ether	1 U
Trip Blank 1-6-03	03010123-03	2-Chlorotoluene	1 U
Trip Blank 1-6-03	03010123-03	4-Chlorotoluene	1 U
Trip Blank 1-6-03	03010123-03	Dibromochloromethane	1 U
Trip Blank 1-6-03	03010123-03	Dibromomethane	1 U
Trip Blank 1-6-03	03010123-03	1,2-Dichlorobenzene	1 U
Trip Blank 1-6-03	03010123-03	1,3-Dichlorobenzene	1 U
Trip Blank 1-6-03	03010123-03	1,4-Dichlorobenzene	1 U
Trip Blank 1-6-03	03010123-03	Dichlorodifluoromethane	1 U UJ
Trip Blank 1-6-03	03010123-03	1,1-Dichloroethane	1 U
Trip Blank 1-6-03	03010123-03	1,2-Dichloroethane	1 U
Trip Blank 1-6-03	03010123-03	1,1-Dichloroethylene	1 U
Trip Blank 1-6-03	03010123-03	1,2-Dichloroethylene (Total)	1 U
Trip Blank 1-6-03	03010123-03	1,2-Dichloropropane	1 U
Trip Blank 1-6-03	03010123-03	cis-1,3-Dichloropropylene	1 U
Trip Blank 1-6-03	03010123-03	trans-1,3-Dichloropropylene	1 U
Trip Blank 1-6-03	03010123-03	Methylene chloride	1 U
Trip Blank 1-6-03	03010123-03	1,1,1,2-Tetrachloroethane	1 U

Form 1
Volatile Organics Analysis Data Sheet-8260

Client Sample ID
Trip Blank 1-6-0

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
Trip Blank 1-6-03	03010123-03	1,1,2,2-Tetrachloroethane	1 U
Trip Blank 1-6-03	03010123-03	Tetrachloroethylene	1 U
Trip Blank 1-6-03	03010123-03	1,1,1-Trichloroethane	1 U
Trip Blank 1-6-03	03010123-03	1,1,2-Trichloroethane	1 U
Trip Blank 1-6-03	03010123-03	Trichloroethylene	1 U
Trip Blank 1-6-03	03010123-03	Trichlorofluoromethane	1 U UJ
Trip Blank 1-6-03	03010123-03	Trichloropropane	1 U
Trip Blank 1-6-03	03010123-03	Vinyl chloride	10 U

YORK
Analytical Laboratories, Inc.

Form 1
Volatile Organics Analysis Data Sheet-8021HW

Client Sample ID
F-Blank 1-6-03

Sample Amount: Soil=1.0g/Water=5.0ml
Matrix: WATER
Dilution Factor: 1
GC Column: DB-624, 50 m, 0.32mm id
Date Collected: 01/06/03
Date Received: 01/07/03
Date Analyzed: 01/11/03
Level: LOW
SDG: 03010123
Lab ID: 03010123-04
Lab File ID: VO9415.D
CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
F-Blank 1-6-03	03010123-04	Benzyl chloride	10 U
F-Blank 1-6-03	03010123-04	Bis(2-chloroethoxy)methane	10 U
F-Blank 1-6-03	03010123-04	Bis(2-chloroisopropyl)ether	10 U
F-Blank 1-6-03	03010123-04	Bromobenzene	1 U
F-Blank 1-6-03	03010123-04	Bromodichloromethane	1 U
F-Blank 1-6-03	03010123-04	Bromoform	1 U
F-Blank 1-6-03	03010123-04	Bromomethane	10 U
F-Blank 1-6-03	03010123-04	Carbon tetrachloride	1 U
F-Blank 1-6-03	03010123-04	Chloroacetaldehyde	10 U
F-Blank 1-6-03	03010123-04	Chlorobenzene	1 U
F-Blank 1-6-03	03010123-04	Chloroethane	10 U
F-Blank 1-6-03	03010123-04	Chloroform	1 U
F-Blank 1-6-03	03010123-04	1-Chlorohexane	1 U
F-Blank 1-6-03	03010123-04	2-Chloroethylvinyl ether	1 U
F-Blank 1-6-03	03010123-04	Chloromethane	10 U
F-Blank 1-6-03	03010123-04	Chloromethyl methyl ether	1 U
F-Blank 1-6-03	03010123-04	2-Chlorotoluene	1 U
F-Blank 1-6-03	03010123-04	4-Chlorotoluene	1 U
F-Blank 1-6-03	03010123-04	Dibromochloromethane	1 U
F-Blank 1-6-03	03010123-04	Dibromomethane	1 U
F-Blank 1-6-03	03010123-04	1,2-Dichlorobenzene	1 U
F-Blank 1-6-03	03010123-04	1,3-Dichlorobenzene	1 U
F-Blank 1-6-03	03010123-04	1,4-Dichlorobenzene	1 U
F-Blank 1-6-03	03010123-04	Dichlorodifluoromethane	1 U UJ
F-Blank 1-6-03	03010123-04	1,1-Dichloroethane	1 U
F-Blank 1-6-03	03010123-04	1,2-Dichloroethane	1 U
F-Blank 1-6-03	03010123-04	1,1-Dichloroethylene	1 U
F-Blank 1-6-03	03010123-04	1,2-Dichloroethylene (Total)	1 U
F-Blank 1-6-03	03010123-04	1,2-Dichloropropane	1 U
F-Blank 1-6-03	03010123-04	cis-1,3-Dichloropropylene	1 U
F-Blank 1-6-03	03010123-04	trans-1,3-Dichloropropylene	1 U
F-Blank 1-6-03	03010123-04	Methylene chloride	1 U
F-Blank 1-6-03	03010123-04	1,1,1,2-Tetrachloroethane	1 U

Form 1
Volatile Organics Analysis Data Sheet-8260

Client Sample ID
F-Blank 1-6-03

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
F-Blank 1-6-03	03010123-04	1,1,2,2-Tetrachloroethane	1 U
F-Blank 1-6-03	03010123-04	Tetrachloroethylene	1 U
F-Blank 1-6-03	03010123-04	1,1,1-Trichloroethane	1 U
F-Blank 1-6-03	03010123-04	1,1,2-Trichloroethane	1 U
F-Blank 1-6-03	03010123-04	Trichloroethylene	1 U
F-Blank 1-6-03	03010123-04	Trichlorofluoromethane	1 U
F-Blank 1-6-03	03010123-04	Trichloropropane	1 U
F-Blank 1-6-03	03010123-04	Vinyl chloride	10 U

YORK
Analytical Laboratories, Inc.

Form 1
Volatile Organics Analysis Data Sheet-8021HW

Client Sample ID
E-Blank 1-6-03

Sample Amount:	Soil=1.0g/Water=5.0ml	Date Collected:	01/06/03		
Matrix:	WATER	Date Received:	01/07/03	SDG:	03010123
Dilution Factor:	1	Date Analyzed:	01/15/03	Lab ID:	03010123-05
GC Column:	DB-624, 50 m, 0.32mm id	Level:	LOW	Lab File ID:	VO9510.D

CONCENTRATION
UNITS: ug/L

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
E-Blank 1-6-03	03010123-05	Benzyl chloride	10 U
E-Blank 1-6-03	03010123-05	Bis(2-chloroethoxy)methane	10 U
E-Blank 1-6-03	03010123-05	Bis(2-chloroisopropyl)ether	10 U
E-Blank 1-6-03	03010123-05	Bromobenzene	1 U
E-Blank 1-6-03	03010123-05	Bromodichloromethane	1 U
E-Blank 1-6-03	03010123-05	Bromoform	1 U
E-Blank 1-6-03	03010123-05	Bromomethane	10 U UJ
E-Blank 1-6-03	03010123-05	Carbon tetrachloride	1 U
E-Blank 1-6-03	03010123-05	Chloroacetaldehyde	10 U
E-Blank 1-6-03	03010123-05	Chlorobenzene	1 U
E-Blank 1-6-03	03010123-05	Chloroethane	10 U
E-Blank 1-6-03	03010123-05	Chloroform	1 U
E-Blank 1-6-03	03010123-05	1-Chlorohexane	1 U
E-Blank 1-6-03	03010123-05	2-Chloroethylvinyl ether	1 U
E-Blank 1-6-03	03010123-05	Chloromethane	10 U UJ
E-Blank 1-6-03	03010123-05	Chloromethyl methyl ether	1 U
E-Blank 1-6-03	03010123-05	2-Chlorotoluene	1 U
E-Blank 1-6-03	03010123-05	4-Chlorotoluene	1 U
E-Blank 1-6-03	03010123-05	Dibromochloromethane	1 U
E-Blank 1-6-03	03010123-05	Dibromomethane	1 U
E-Blank 1-6-03	03010123-05	1,2-Dichlorobenzene	1 U
E-Blank 1-6-03	03010123-05	1,3-Dichlorobenzene	1 U
E-Blank 1-6-03	03010123-05	1,4-Dichlorobenzene	1 U
E-Blank 1-6-03	03010123-05	Dichlorodifluoromethane	1 U UJ
E-Blank 1-6-03	03010123-05	1,1-Dichloroethane	1 U
E-Blank 1-6-03	03010123-05	1,2-Dichloroethane	1 U
E-Blank 1-6-03	03010123-05	1,1-Dichloroethylene	1 U
E-Blank 1-6-03	03010123-05	1,2-Dichloroethylene (Total)	1 U
E-Blank 1-6-03	03010123-05	1,2-Dichloropropane	1 U
E-Blank 1-6-03	03010123-05	cis-1,3-Dichloropropylene	1 U
E-Blank 1-6-03	03010123-05	trans-1,3-Dichloropropylene	1 U
E-Blank 1-6-03	03010123-05	Methylene chloride	1 U
E-Blank 1-6-03	03010123-05	1,1,1,2-Tetrachloroethane	1 U

Form 1
Volatile Organics Analysis Data Sheet-8260

Client Sample ID

E-Blank 1-6-03

CONCENTRATION
UNITS: **ug/L**

Client Sample ID	Lab Sample ID	Compound	Results/Qualifier
E-Blank 1-6-03	03010123-05	1,1,2,2-Tetrachloroethane	1 U
E-Blank 1-6-03	03010123-05	Tetrachloroethylene	1 U
E-Blank 1-6-03	03010123-05	1,1,1-Trichloroethane	1 U
E-Blank 1-6-03	03010123-05	1,1,2-Trichloroethane	1 U
E-Blank 1-6-03	03010123-05	Trichloroethylene	1 U
E-Blank 1-6-03	03010123-05	Trichlorofluoromethane	1 U UJ
E-Blank 1-6-03	03010123-05	Trichloropropane	1 U
E-Blank 1-6-03	03010123-05	Vinyl chloride	10 U

Premier Environmental Services.

APPENDIX C

2815 COVERED BRIDGE ROAD, MERRICK, NEW YORK 11566
(516) 223-9761 • FAX (516) 223-0983

APPENDIX G

Workplan for Installation of Additional Monitoring Wells

Workplan

For

Installation of Additional Monitoring Wells

"General Switch" Property

located at
20 Industrial Place
City of Middletown
Orange County, New York

May 2003

Prepared By:

ECOSYSTEMS STRATEGIES, INC.
24 DAVIS AVENUE
POUGHKEEPSIE, NEW YORK 12603
(845) 452-1658

ESI File: LM97145.41

TABLE OF CONTENTS

1.0 Introduction

As previously proposed, Ecosystems Strategies, Inc. is planning to install additional monitoring wells in four locations with the following identification numbers based on existing wells (see Figure 1, Appendix A):

MW-206	Bedrock well near overburden well MW-6
MW-209	Bedrock well near overburden well MW-9
MW-219	Bedrock well farther downgradient than MW-209
MW-19	Overburden well farther downgradient than MW-9
MW-211	Bedrock well near overburden well MW-11

The bedrock well next to MW-11 is added to the list after the last round of sampling when MW-11 contained sufficient water for sampling and over 800 ug/L total chlorinated VOCs were detected (January 2003).

The plan is to install the bedrock wells first and remobilize with a soils rig to install the overburden well. Compared to the overburden well installation, the bedrock coring. drilling, testing, and well installation program is much more complicated and is the focus of this workplan.

This plan proposes to omit the borehole geophysical logging and replace it with borehole video recording for existing wells and the new wells. The video method is far superior and is less expensive than the borehole geophysics. It will be cost effective to have a camera on site throughout the tedious drilling operations. The video recording will give much more specific information about the fractures because it is a remote means of observation.
The geophysical borehole logging is a remote means of measuring discrete geophysical properties at a series of depths without specific fracture characterization. The only information about fractures derived from logging is the depth of fracture from the caliper log.

2.0 Objectives of Monitoring Well Drilling and Installation Program

2.1 Outline of Procedures

- Update Health and Safety Plan and conduct field meetings.

- The existing deep bedrock wells are open hole, the shallow bedrock wells are not. Record video tape of each of the four existing deep bedrock monitoring wells from top to bottom and reverse to observe if the fractures are single or multiple cut, horizontal or vertical, planar or curved, parallel or oblique to any observable bedding structure. This procedure will provide specific information about the geology that can not be obtained with borehole geophysics and will be helpful in guiding the installation of new bedrock wells.

- Isolate the overburden from the bedrock by seating and grouting steel surface casing at least 5 feet into the bedrock.

- Core bedrock at 20-foot intervals. Preserve the core in core boxes. Describe the core and photograph.

- After each 20-feet of drilling, sample the borehole fluid and send to lab for Chlorinated VOC testing by EPA method 8060. Obtain results overnight to expedite well installation.

- Identify and characterize zones with fractures in the bedrock during drilling and prior to well installation with borehole video recording and packer tests.

- Conduct packer tests in selected depth intervals exhibiting fractures in the bedrock to identify zones of groundwater inflow, outflow and up or down vertical gradient.

- Using the contaminant, bedrock, fracture, and hydraulic information obtained during coring and testing, install wells to monitor specific depth intervals. Use either steel casing to seal of the upper bedrock interval or PVC/sand pack well construction with bentonite or grout seals depending on cost and drill rig capability.

- Collect all well and decon water on site and filter through activated carbon units, store onsite and release to storm sewer or municipal sewer with appropriate testing and permits.

- Develop the bedrock wells during drilling. Remove all fines with air pressure after coring and reaming each 20-foot depth interval.

- Decontaminate all equipment on site in designated decon area with standard procedures.

- Aquifer testing to determine hydraulic conductivity of bedrock in vicinity of wells.

- Installation of Overburden Monitoring Well

2.2 DESCRIPTION OF TASKS

The above listing of tasks provide an outline of the procedures necessary to accomplish the workplan objectives. The following sections describe each task in greater detail for EPA review.

3.0 Health and Safety Preparations and Meetings

Prior to each state of the investigation, an appropriate decon pad will be prepared and containers for decon water storage placed in the area. The work zones will be established to restrict access to authorized persons and limit spread of contamination.

Prior to each stage of the investigation, the new subcontractors shall receive a copy of the Health and Safety Plan. Prior to the first day of field activity, the subcontractor and ESI personnel shall have a brief onsite Health and Safety Meeting to make sure everyone has reviewed the characteristics of chemicals of concern at the site and levels previously encountered in field work at the site. The route to the nearest hospital and emergency phone numbers and procedures will be reviewed. The decontamination area and limited access danger zones will be reviewed with all personnel. Other relevant site features will be toured or pointed out. Copies of Health and Safety training certificates will be collected for each individual and placed in the health and safety records file. Each participant will sign an affidavit confirming review of the Health and Safety Plan.

3.1 Video Taping Borehole Features in Existing Wells

As mentioned above, this step would be unnecessary if the bedrock monitoring wells were not constructed with open wellbores. The Shatki "Characterization Report" (February 1994) shows the "Typical Deep Bedrock Monitoring Well Construction" (Figure 2-21 as open hole with steel casing seated and grouted 5 feet into competent bedrock. Consequently, this step of video taping the open bedrock walls of the wells will be most instructive for the drilling and installing the additional monitoring wells. Therefore, immediately prior to start of drilling, the downhole video camera will be procured in order to proceed with video tape recording. A video tape of each of the existing bedrock monitoring wells will be recorded from top to bottom and reverse to observe if the fractures are single or multiple cut, horizontal or vertical, planar or curved, parallel or oblique to any observable bedding structure. Notes will be made of the observations at different depths and still photos downloaded from the tape for documentation of borehole conditions if deemed appropriate. This procedure will provide specific information about the geology that can not be obtained with borehole geophysics and will be helpful in guiding the installation of new bedrock wells.

The video camera equipment will be decontaminated prior to and after usage at each monitoring well.

3.2 Isolate Overburden by Grouting Steel Casing into Bedrock

Prior to drilling a drill rig decon pad will be constructed in the General Switch parking lot near the old Shatki trailer. The pad will be constructed to collect all decon water and pump into storage tanks for disposal.

In the previous drilling and installation of bedrock monitoring wells, the Shatki "Site Characterization Report" (February 1994) indicated that the top of bedrock beneath overburden was highly weathered. To keep shallow groundwater from the overburden from seeping through the weathered bedrock in to the deep well, a steel surface casing was seated and grouted at least 5 feet into competent bedrock. This same procedure will be used in drilling and installation of the new additional bedrock monitoring wells.

Drilling shall be accomplished using air rotary and/or air percussion drilling techniques. The drilling contractor shall be required to arrive at the site with all equipment decontaminated form prior jobs. Another decontamination procedure will be conducted onsite prior to commencement of drilling to remove road dirt from the drilling equipment. During drilling of the borehole through the overburden, the annulus will be monitored for Volatile Organic Compounds (VOCs) using a PhotoIonization Detector (PID). When bedrock is reached, a 10-inch diameter socket will be drilled into the bedrock observing the condition of cuttings, when the cutttings indicate a nonweathered condition, the socket will be drilled an additional 5 or more feet into bedrock. An 8-inch steel surface casing will be driven into the casing and grout installed between the formation and the steel casing. The grout will be allowed to set for 24 hours before, coring and drilling commences. Any grout that enters and sets up inside the steel casing will be drilled through with subsequent operations.

3.3 Core Bedrock at 20-foot Intervals

A core barrel will be used to obtain 20 feet of 2-inch diameter or greater core. The core will be wrapped in plastic, placed in wooden core boxes, and transported to the decon area. If any PID readings were detected during the coring procedure, the core will be steam cleaned. If no contamination is detected, it will be washed down at the decon area, prior to handling and study. The core lengths will be described and photographic. Indications of fractures will be noted with depth of occurrence and orientation.

Consideration was given to, obtaining a groundwater sample of the borehole fluid after each 20-feet of drilling and sending it to lab for overnight Chlorinated VOC testing by EPA method 8060. However, by using air rotary drilling, the air will most likely strip the volatile compoundss from the groundwater in and near the well, so the sample results would not be reliable. Hence, it is concluded that during drilling, our best indicator of the presence of chlorinated VOCs will be readings on the PID.

3.4 Video Tape New Borehole Top to Temporary Total Depth

After each 20-feet of coring and drilling, the borehole video camera will be used to record images of the open bedrock borehole walls with depth. In this manner, by progressing in 20-foot intervals, the fracture characteristics of the bedrock can be identified from core and video. The identified fracture zones will then be the target of packer tests. The downhole video camera apparatus and wireline will be decontaminated between uses to avoid introduction of contamination from one level to another or from one well to another.

4.0 Packer Testing

Packer tests will be conducted over selected 10-foot depth intervals exhibiting fractures in the bedrock. The packer tests will identify zones of groundwater inflow, outflow and up or down vertical gradient. The packer tests will be conducted with a 10-foot length of Schedule 40 PVC screen containing a 2-inch diameter Grundfos Redi-flo 2 pump and pressure transducer. The screen apparatus is suspended between the upper and lower inflatable packers. This method was used in the Shakti investigations as shown in Figure 2-10 from the "Site Characterization Report" (February 1994). Pumping of the fluids from the interval will be conducted and water levels above the upper packer recorded. A second transducer will be placed above the packer to monitor water levels in that zone during pumping below the packer.

Shakti's results of this form of packer testing indicated that the bedrock is frequently fractured in a fine pervasive pattern and hydraulic connection was interpreted from above and below the packers either by packer leakage or fractures within the formation. See Shakti conclusions and recommendations relative to packer tests from pages 4-38 and 4-39 (1994, Site Characterization Report) included here as Appendix A.

The packer test downhole equipment will be decontaminated between uses to avoid introduction of contamination from one level to another or from one well to another.

4.1 Repeat Coring, Video Taping, and Packer Testing

For consecutive 20-foot intervals, the interval will be cored, video taped and packer tested. The entire openhole bedrock interval will be video taped so that the last tapes per boring will have the complete hole. PID readings will indicate the first observed zone of contamination as coring proceeds downward. However,, PID readings may not be capable of identifying the downward vertical extent of contamination because groundwater from different fractures may be mixed in the borehole. However, indications and calculations of vertical gradients will at least indicate whether groundwater is moving upward or downward and thereby, the direction of movement of dissolved chlorinated VOCs will be determined. A method employed in a USGS study (Senior and Goode, 1999) will be used to measure the vertical component of groundwater flow over 10 foot intervals as indicated on their diagrams (Appendix B). If no PID readings are recorded above background and the well reaches a depth of 140 feet, drilling will stop and a monitoring well will be designed and installed. If the well reaches 100 feet and thereafter if coring does not show any fractures for an interval of 40 feet, drilling will end and a monitoring well designed and installed. If PID readings are above background and fractures are observed to a depth of 160 feet, drilling will stop and a monitoring well will be designed and installed.

4.2 Design and Install Monitoring Well

Using the contaminant, bedrock, fracture, and hydraulic information obtained during rock coring, video taping, and packer testing, wells will be designed to monitor specific depth intervals. Use either steel casing to seal of the upper bedrock interval or PVC/sand pack well construction with bentonite or grout seals depending on cost and drill rig capability. Open borehole completion is the preferred method because it allows access to a large diameter wellbore for future use. Prior to well installation, the bottom of the well will be tested for dnapl with a product interface meter. Any dnapl will be pumped out and containerized with the decon water on site. If the boring has to be plugged back, grout will be used to seal the bottom interval. Bottom grout will be pumped into place using a long tremie tube to reach the desired depth. Well construction diagrams from Shatki (1994) are shown for typical shallow and deep bedrock monitoring wells in Appendix A (Figures 2-20 and 2-21). All wells are in locations where "stickup" construction is appropriate.

All well construction tools will be decontaminated prior after each day's use and prior to use on another monitoring well location.

4.3 Treatment and Discharge of Purge and Decon Water

All well and decon water will be collected onsite and filter through activated carbon units, stored on-site and release to storm sewer or municipal sewer with appropriate testing and permits.

4.4 Well Development

The bedrock wells will be developed during drilling using the air pressure on the drilling rig to clean out the borehole after coring and drilling each 20 foot section of borehole and before each of the borehole video taping and packer test procedures. This method is far more effective than any post drilling method.

4.5 Decontamination Procedures

Decontamination of all equipment on site in designated decon area will be performed in the following manner: All drilling equipment in contact with soils will be steam cleaned at the beginning of each day and between wells. Sampling pumps will be decontaminated in accordance with the procedures outlined in the USEPA Region 2 Groundwater Sampling Procedures, including in Appendix G of the ESI Interim Workplan for previous work. Other reusable sampling or testing equipment will be decontaminated in the following manner:

- Pressure wash with water and a designated brush to remove any visible dirt.
- Wash and scrub in a mild detergent (e.g. Alconox) and de-ionized water using a designated brush.
- Rinse with de-ionized water.
- Rinse with 10% Nitric Acid solution.
- Rinse with de-ionized water.
- Rinse with methanol.
- Rinse with de-ionized water.
- Allow to air dry and use immediately or wrap in aluminum foil (Shiny side out).

4.6 Aquifer Testing

Aquifer testing to determine hydraulic conductivity, transmissivity, and storativity of bedrock in vicinity of wells. Step drawdown tests will be conducted in each of the new deep bedrock monitoring wells. During the test, water levels will be monitored in the pumping well with a pressure transducer and data logger and in nearby monitoring wells with a water level indicator. A Grundfos Redi-flo pump will be used with a controller to regulate the flow and increase the pumping rate in regular steps to identify the maximum pumping capacity of the well. Recovery data will be collected from all of the wells for hydraulic calculations. Additional aquifer hydraulic data will incorporated from the packer tests. Hydraulic parameters from this testing program will be used in analytical computer program models to plan and predict pumping rates and capture zones for remedial action.

5.0 Installation of Overburden Monitoring Well

A soils rig will be mobilized and deconed for the drilling and installation of shallow overburden monitoring well MW-19. Split spoon and hollow stem auger will be used to reach the top of bedrock. Split spoon samples will be taken at 5-foot intervals. During drilling activities, the annulus will be monitored for VOCs with a PID. If PID readings are above background, the soil samples placed in laboratory containers, packed in cooler with ice and sent under chain of custody to a certified lab for VOC analysis.

The Shakti "Site Characterization Report" (1994) is unclear about them materials used in previous overburden monitoring well construction. On page 2-18 (Appendix A), a statement is made: "The wells were constructed of galvanized steel riser pipes with stainless steel screens." However, Figure 2-18 (Appendix A) shows PVC riser and screen. The diameter of riser and screen is recorded as 4-inch. If EPA requests steel construction, it will be used; otherwise, PVC will be used. The well will be constructed with "stickup" and 6-inch outer steel casing and locking cap.

The overburden well will be developed with surging and pumping with the soils rig. Prior to development, the bottom of the well will be tested for dnapl with a product interface meter. Drilling fluid will be evacuated form the well and containerized onsite with decon water. Development will proceed until the water exhibits turbidity of less than 200 ntu or the water is clear .

After well completion and development, slug tests will be conducted to estimate the hydraulic conductivity of the overburden materials surrounding the new monitoring well.

6.0 Final Report of Drilling, Installation and Testing of Additional Monitoring Wells

A report will be prepared documenting the above described activites. The conclusions and recommendations of the report will focus on relevance of the investigation activities to remedial action.

7.0 References

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APPENDIX A

Figure 1 – Proposed Locations of Additional Monitoring Wells

Figure 1 - Proposed Locations of Additional Monitoring Wells
Source Map: Original Topographic Map 2-1 (1994)
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ECOSYSTEMS STRATEGIES, INC.