INTERIM

SUMMARY DATA REPORT

OF GROUNDWATER SAMPLING

Performed on the

"General Switch" Property

located at

20 Industrial Place

City of Middletown

Orange County, New York

May 2003

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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.

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President

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APPENDICES

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.

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 1.3×10^{-7} cm/sec to 6.4×10^{-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

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.

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

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.

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.

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.

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.

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.

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."

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

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 200 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.

APPENDIX A

Maps

Source: DeLorme USA Atlas 2001

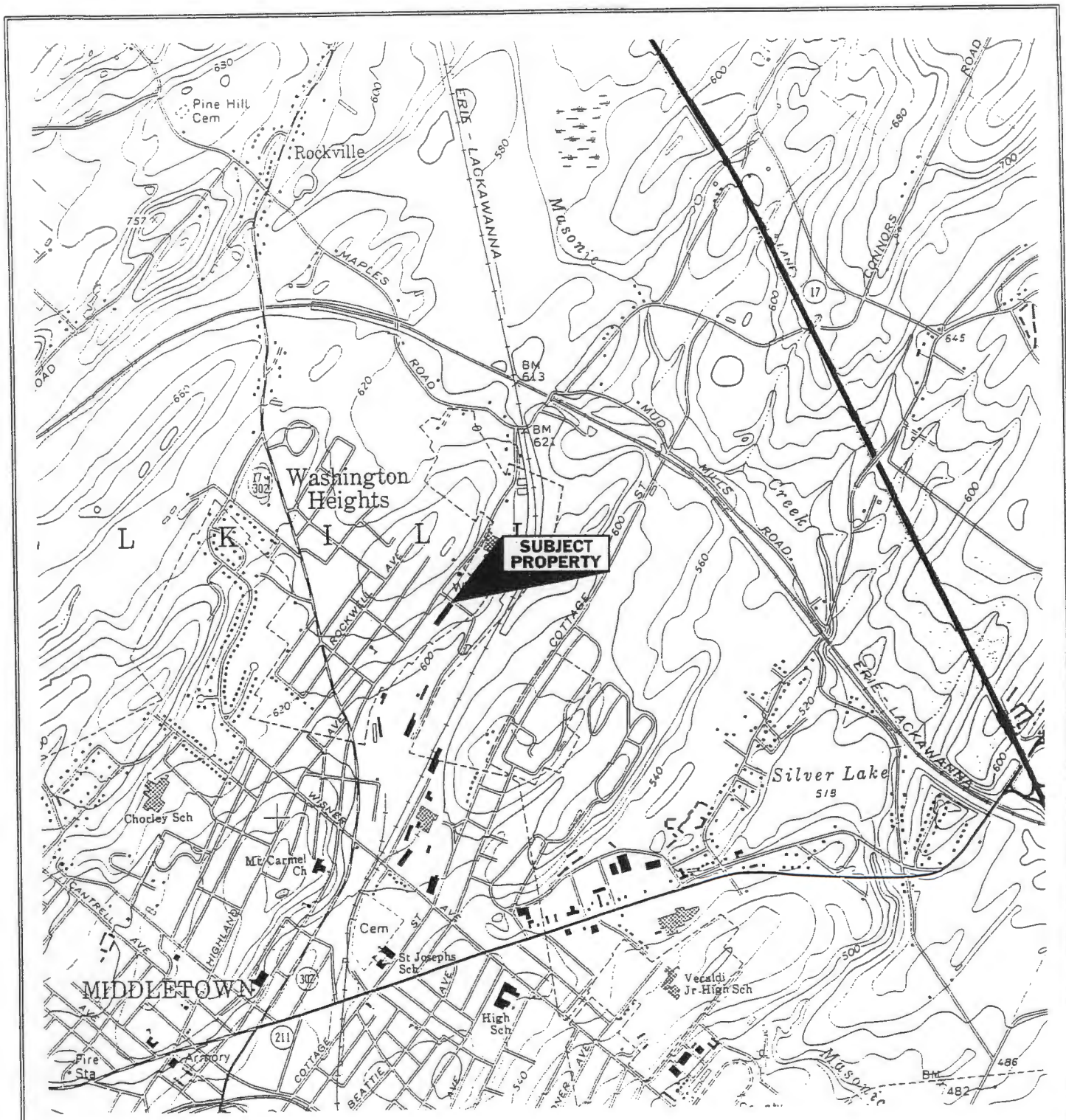
Site Location Map
General Switch Property
20 Industrial Place
City of Middletown
Orange County, New York

N

ESI File: LM97145.40

Date: May 2003

Appendix A



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

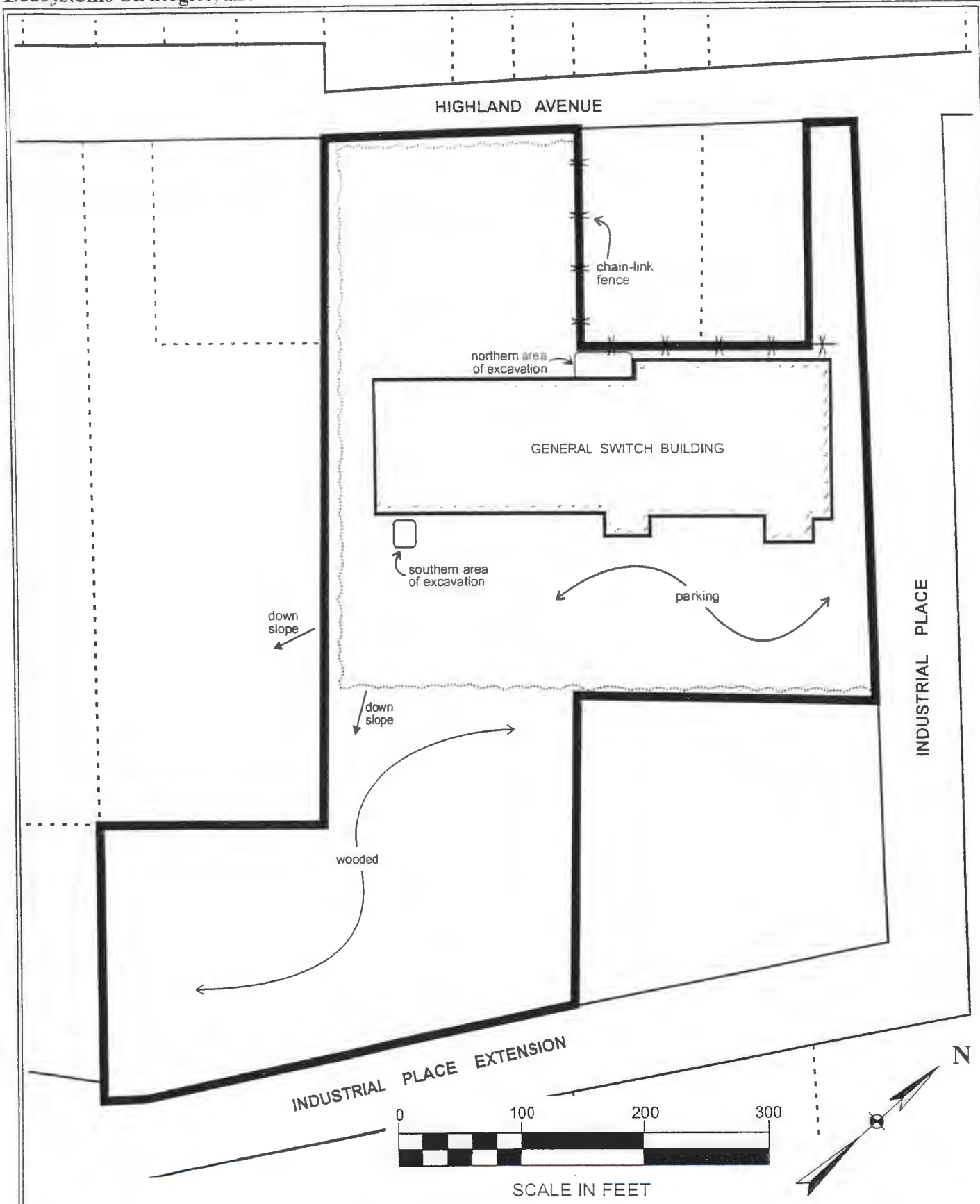
U.S.G.S. Topographic Map
General Switch Property
20 Industrial Place
City of Middletown
Orange County, New York

N

ESI File: LM97145.40

Date: May 2003

Scale: 1:24000



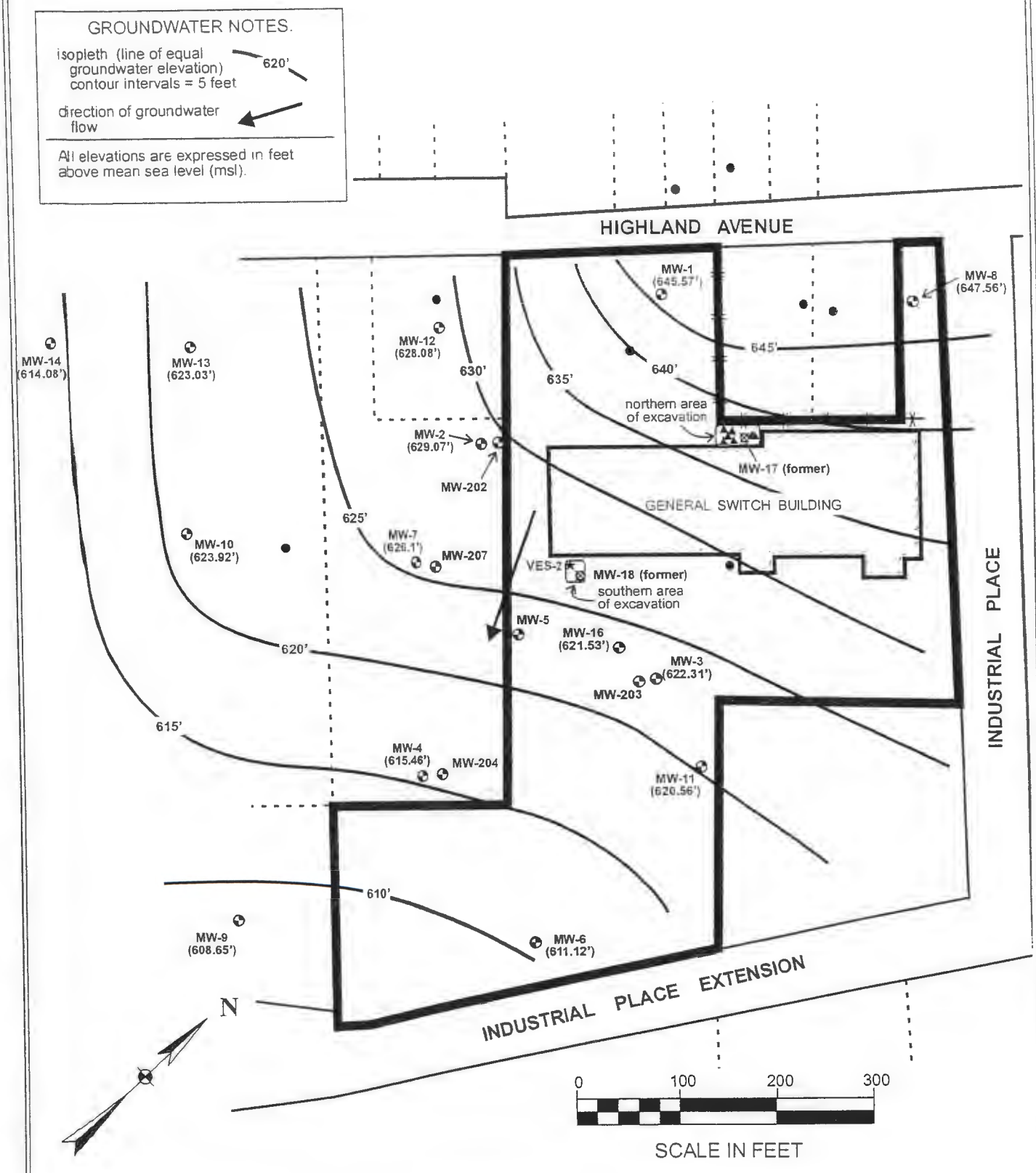
All feature locations are approximate.
Map sources: Shakti Consultants, Inc. 1991 and Lawler, Matusky & Skelly Engineers, LLP, 1998.

Site Property Map

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

Legend:
subject property border

ESI File: LM97145.40
May 2003
Appendix A

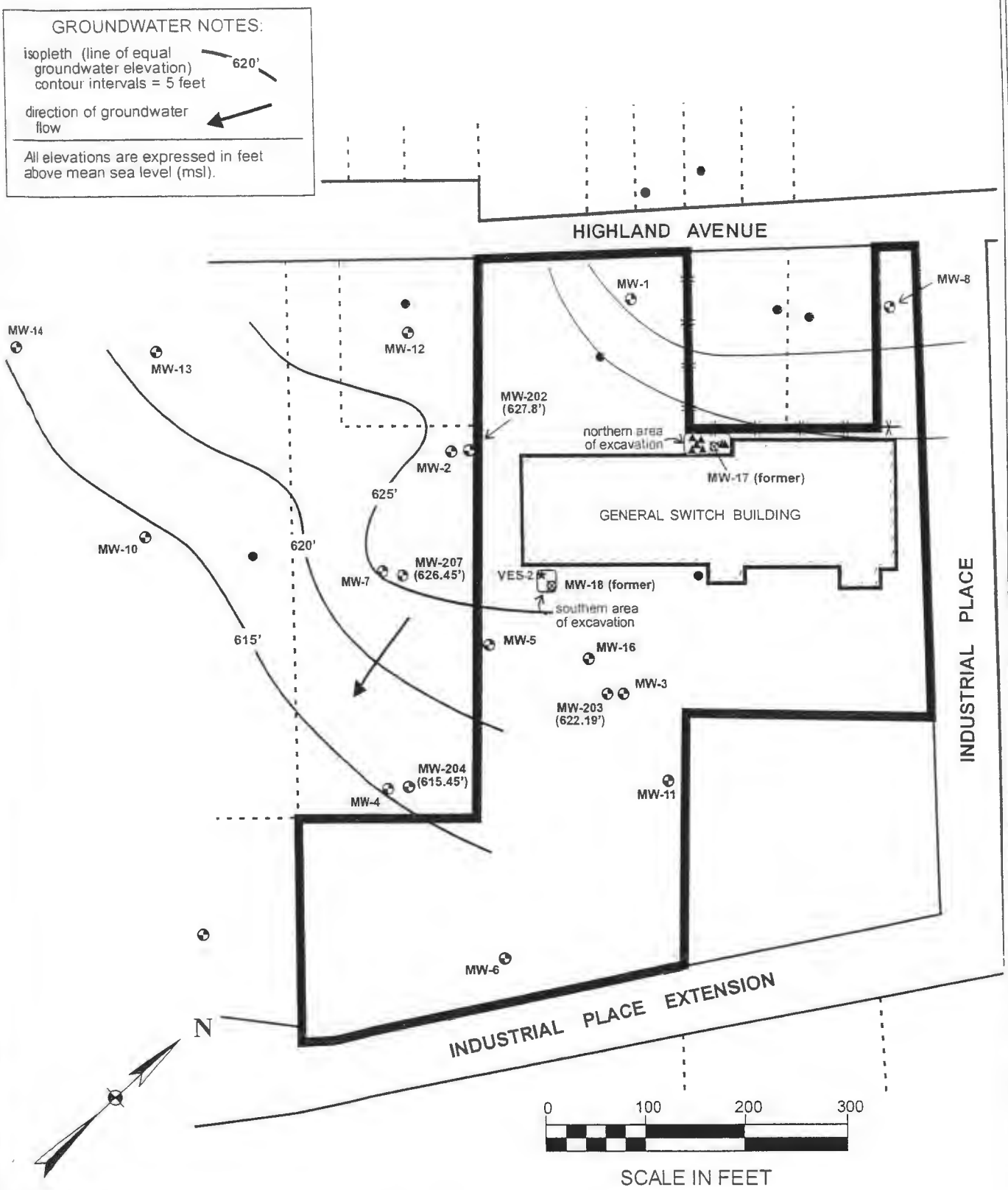


All feature locations are approximate.
Map sources: Shakti Consultants, Inc. 1991 and Lawler, Matusky & Skelly Engineers, LLP, 1998.

Groundwater Elevation Contour Map of 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 ▬

ESI File: LM97145.40
May 2003
Appendix A

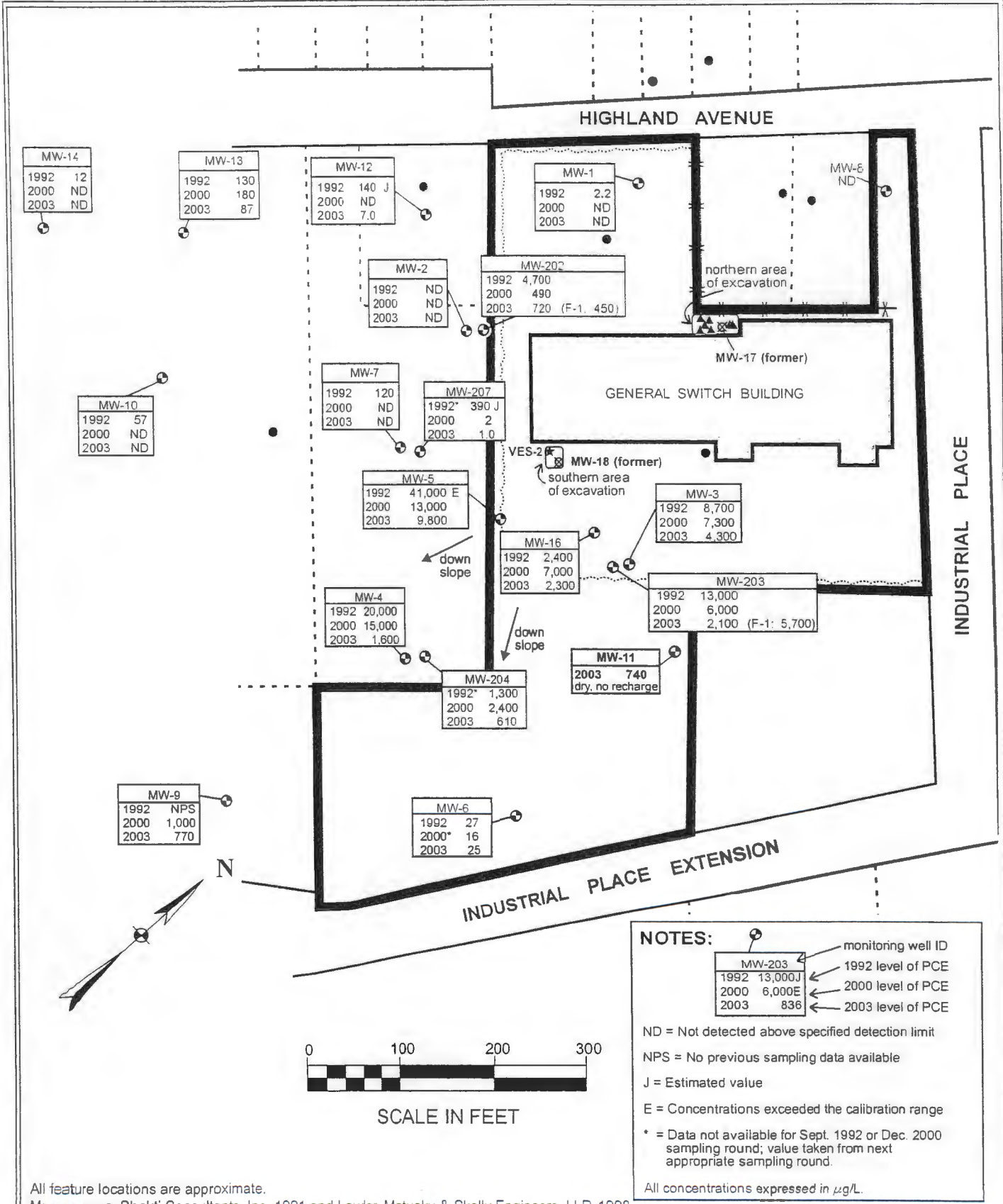


All feature locations are approximate.
Map sources: Shakti Consultants, Inc. 1991 and Lawler, Matusky & Skelly Engineers, LLP, 1998.

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 ▬

ESI File: LM97145.40
May 2003
Appendix A



NOTES:

MW-203
1992 13,000J ← 1992 level of PCE
2000 6,000E ← 2000 level of PCE
2003 836 ← 2003 level of PCE

monitoring well ID

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

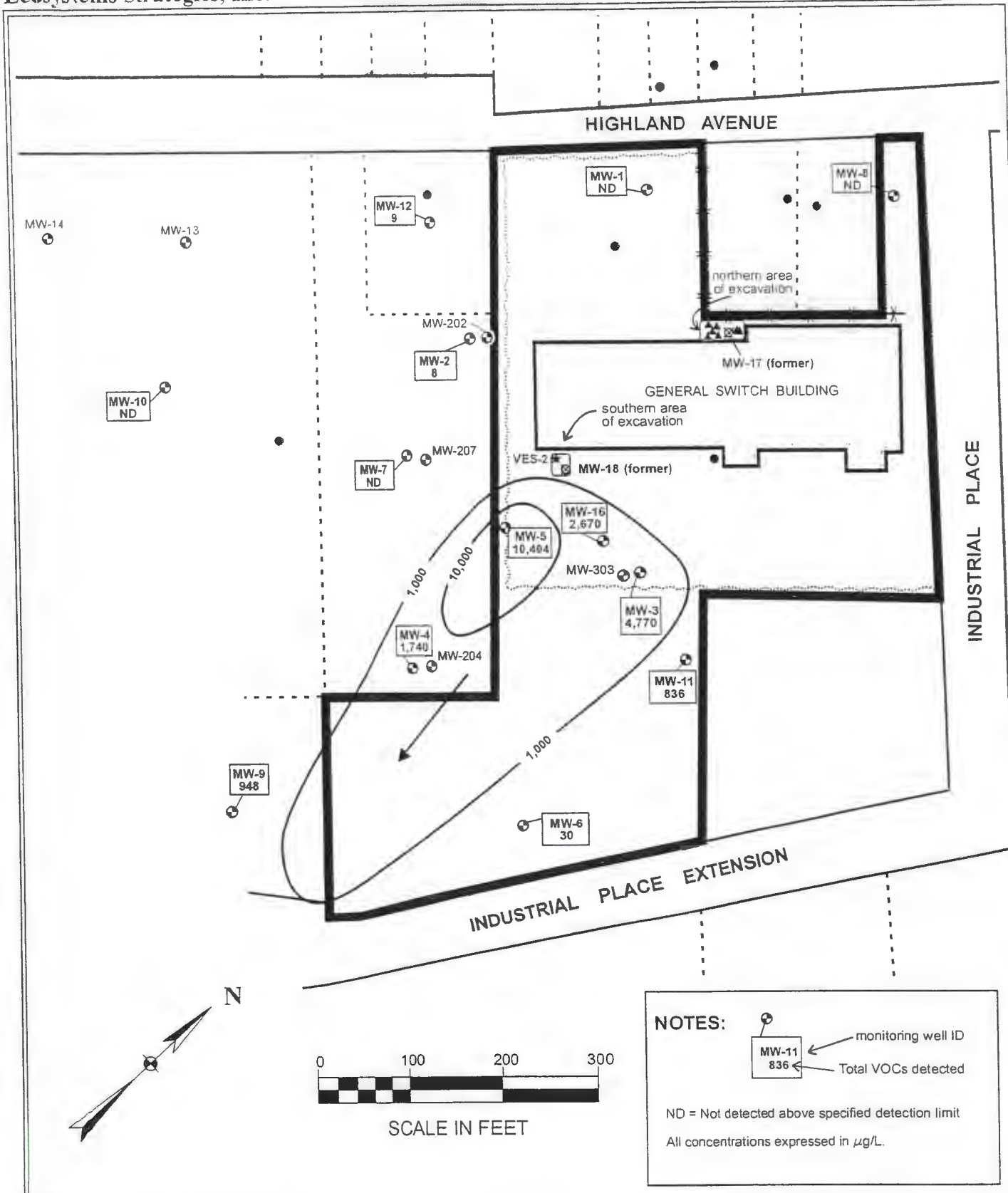
General Switch Site
City of Middletown
Orange County, New York

Legend:
- subject property border
- monitoring well
- other well
- previous sample locations

ESI File: LM97145.40

May 2003

Appendix A



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)

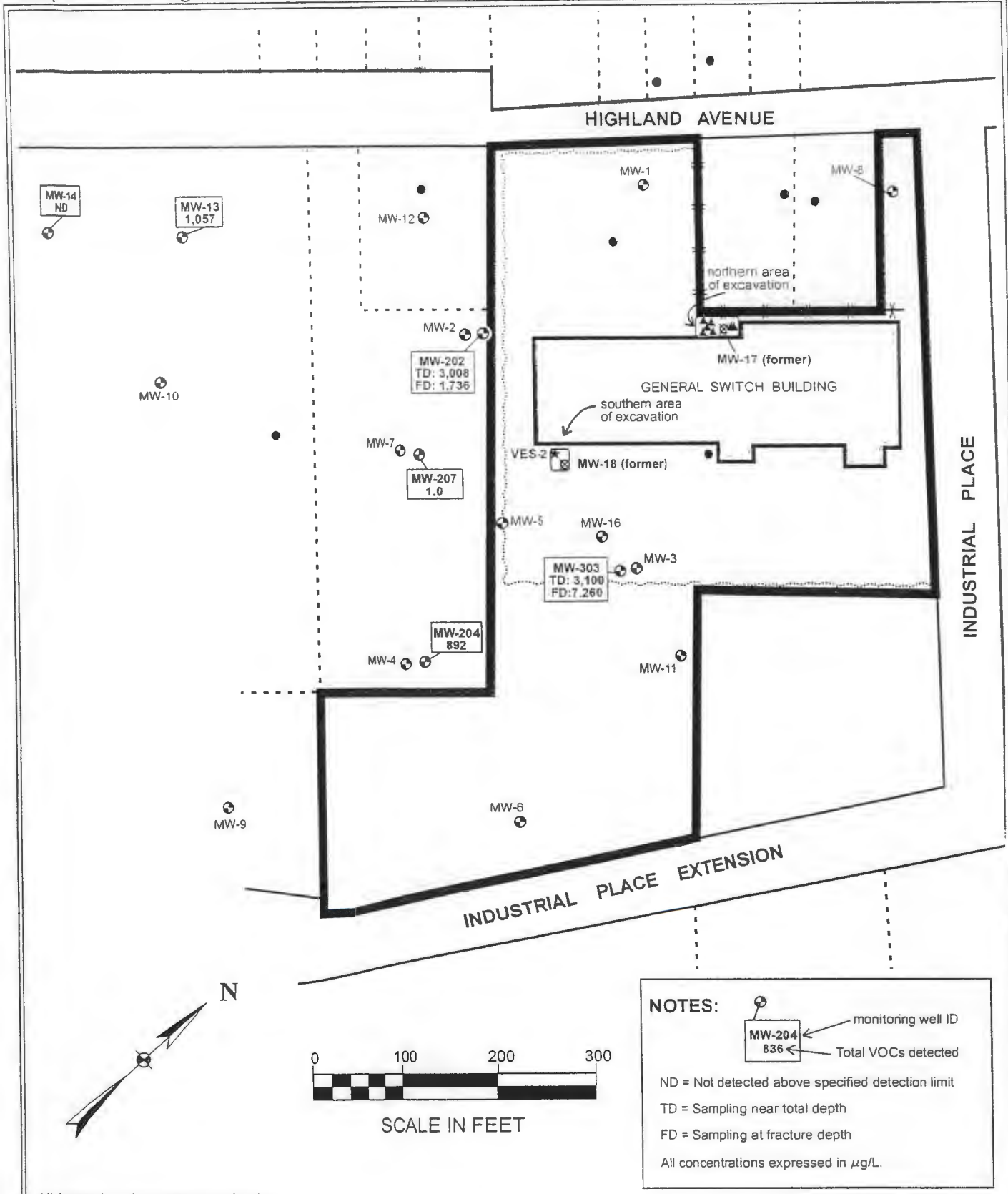
General Switch Site
City of Middletown
Orange County, New York

Legend:
- subject property border
- monitoring well
- other well
- previous sample locations

ESI File: LM97145.40

May 2003

Appendix A



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

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	
Turbidity	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
Temperature	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 c
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 frac
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

YORK
ANALYTICAL LABORATORIES, INC.

Technical Report

prepared for

Ecosystems Strategies, Inc.
24 Davis Avenue
Poughkeepsie, NY 12603
Attention: Jonathan A. Kaplan

Report Date: 1/17/2003
Re: Client Project ID: LM9714S.40
York Project No.: 03010123

CT License No. PH-0723 New York License No. 10854 Mass. License No. M-CT106 Rhode Island License No. 93 EPA I.D. No. CT00106

ONE RESEARCH DRIVE STAMFORD, CT 06906 (203) 325-1371 FAX (203) 357-0166

Report Date: 1/17/2003
Client Project ID: LM9714S.40
York Project No.: 03010123

Ecosystems Strategies, Inc.
24 Davis Avenue
Poughkeepsie, NY 12603
Attention: Jonathan A. Kaplan

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on 01/07/03. The project was identifed as your project "LM9714S.40 ".

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables .

All samples were received in proper condition meeting the NELAC acceptance requirements for environmental samples except those indicated under the Notes section of this report.

All the analyses met the method and laboratory standard operating procedure requirements except as indicated under the Notes section of this report, or as indicated by any data flags, the meaning of which is explained in the attachment to this report, if applicable.

The results of the analyses, which are all reported on an as-received basis unless otherwise noted, are summarized in the following table(s).

Analysis Results

Client Sample ID			MW-6		MW-11	
York Sample ID			03010123-01		03010123-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	10
1,1,1-Trichloroethane			Not detected	1	Not detected	10
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	10
1,1,2-Trichloroethane			Not detected	1	Not detected	10
1,1-Dichloroethane			Not detected	1	Not detected	10
1,1-Dichloroethylene			Not detected	1	Not detected	10
1,2-Dichlorobenzene			Not detected	1	Not detected	10
1,2-Dichloroethane			Not detected	1	Not detected	10
1,2-Dichloroethylene (Total)			Not detected	1	40	10
1,2-Dichloropropane			Not detected	1	Not detected	10
1,3-Dichlorobenzene			Not detected	1	Not detected	10
1,4-Dichlorobenzene			Not detected	1	Not detected	10
1-Chlorohexane			Not detected	1	Not detected	10
2-Chloroethylvinyl ether			Not detected	1	Not detected	10
2-Chlorotoluene			Not detected	1	Not detected	10
4-Chlorotoluene			Not detected	1	Not detected	10

Client Sample ID			MW-6		MW-11	
York Sample ID			03010123-01		03010123-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Benzyl chloride			Not detected	10	Not detected	100
Bis(2-chloroethoxy)methane			Not detected	10	Not detected	100
Bis(2-chloroisopropyl)ether			Not detected	10	Not detected	100
Bromobenzene			Not detected	1	Not detected	10
Bromodichloromethane			Not detected	1	Not detected	10
Bromoform			Not detected	1	Not detected	10
Bromomethane			Not detected	10	Not detected	100
Carbon tetrachloride			Not detected	1	Not detected	10
Chloroacetaldehyde			Not detected	10	Not detected	100
Chlorobenzene			Not detected	1	Not detected	10
Chloroethane			Not detected	10	Not detected	100
Chloroform			Not detected	1	Not detected	10
Chloromethane			Not detected	10	Not detected	100
Chloromethyl methyl ether			Not detected	1	Not detected	10
cis-1,3-Dichloropropylene			Not detected	1	Not detected	10
Dibromochloromethane			Not detected	1	Not detected	10
Dibromomethane			Not detected	1	Not detected	10
Dichlorodifluoromethane			Not detected	1	Not detected	10
Methylene chloride			Not detected	1	Not detected	10
Tetrachloroethylene			25	1	740	10
trans-1,3-Dichloropropylene			Not detected	1	Not detected	10
Trichloroethylene			5	1	56	10
Trichlorofluoromethane			Not detected	1	Not detected	10
Trichloropropane			Not detected	1	Not detected	10
Vinyl chloride			Not detected	10	Not detected	100
Target Gases	EPA M18m	ppb	---	---	---	---
Ethane			Not detected	10.0	Not detected	10.0
Ethene (Ethylene)			Not detected	10.0	Not detected	10.0
Methane			Not detected	10.0	Not detected	10.0
Manganese	SW846-6010	mg/L	0.080	0.005	0.050	0.005
Total Organic Carbon	SM505B	mg/L	1.0	1.0	1.2	1.0

Client Sample ID			Trip Blank 1-6-03		F-Blank 1-6-03	
York Sample ID			03010123-03		03010123-04	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,1-Trichloroethane			Not detected	1	Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,2-Trichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethylene			Not detected	1	Not detected	1
1,2-Dichlorobenzene			Not detected	1	Not detected	1
1,2-Dichloroethane			Not detected	1	Not detected	1
1,2-Dichloroethylene (Total)			Not detected	1	Not detected	1
1,2-Dichloropropane			Not detected	1	Not detected	1
1,3-Dichlorobenzene			Not detected	1	Not detected	1
1,4-Dichlorobenzene			Not detected	1	Not detected	1

YORK

Client Sample ID			Trip Blank 1-6-03		F-Blank 1-6-03	
York Sample ID			03010123-03		03010123-04	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
1-Chlorohexane			Not detected	1	Not detected	1
2-Chloroethylvinyl ether			Not detected	1	Not detected	1
2-Chlorotoluene			Not detected	1	Not detected	1
4-Chlorotoluene			Not detected	1	Not detected	1
Benzyl chloride			Not detected	10	Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10	Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10	Not detected	10
Bromobenzene			Not detected	1	Not detected	1
Bromodichloromethane			Not detected	1	Not detected	1
Bromoform			Not detected	1	Not detected	1
Bromomethane			Not detected	10	Not detected	10
Carbon tetrachloride			Not detected	1	Not detected	1
Chloroacetaldehyde			Not detected	10	Not detected	10
Chlorobenzene			Not detected	1	Not detected	1
Chloroethane			Not detected	10	Not detected	10
Chloroform			Not detected	1	Not detected	1
Chloromethane			Not detected	10	Not detected	10
Chloromethyl methyl ether			Not detected	1	Not detected	1
cis-1,3-Dichloropropylene			Not detected	1	Not detected	1
Dibromochloromethane			Not detected	1	Not detected	1
Dibromomethane			Not detected	1	Not detected	1
Dichlorodifluoromethane			Not detected	1	Not detected	1
Methylene chloride			Not detected	1	Not detected	1
Tetrachloroethylene			Not detected	1	Not detected	1
trans-1,3-Dichloropropylene			Not detected	1	Not detected	1
Trichloroethylene			Not detected	1	Not detected	1
Trichlorofluoromethane			Not detected	1	Not detected	1
Trichloropropane			Not detected	1	Not detected	1
Vinyl chloride			Not detected	10	Not detected	10

Client Sample ID			E-Blank 1-6-03	
York Sample ID			03010123-05	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---
1,1,1,2-Tetrachloroethane			Not detected	1
1,1,1-Trichloroethane			Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1
1,1,2-Trichloroethane			Not detected	1
1,1-Dichloroethane			Not detected	1
1,1-Dichloroethylene			Not detected	1
1,2-Dichlorobenzene			Not detected	1
1,2-Dichloroethane			Not detected	1
1,2-Dichloroethylene (Total)			Not detected	1
1,2-Dichloropropane			Not detected	1
1,3-Dichlorobenzene			Not detected	1
1,4-Dichlorobenzene			Not detected	1
1-Chlorohexane			Not detected	1
2-Chloroethylvinyl ether			Not detected	1

YORK

Client Sample ID			E-Blank 1-6-03	
York Sample ID			03010123-05	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
2-Chlorotoluene			Not detected	1
4-Chlorotoluene			Not detected	1
Benzyl chloride			Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10
Bromobenzene			Not detected	1
Bromodichloromethane			Not detected	1
Bromoform			Not detected	1
Bromomethane			Not detected	10
Carbon tetrachloride			Not detected	1
Chloroacetaldehyde			Not detected	10
Chlorobenzene			Not detected	1
Chloroethane			Not detected	10
Chloroform			Not detected	1
Chloromethane			Not detected	10
Chloromethyl methyl ether			Not detected	1
cis-1,3-Dichloropropylene			Not detected	1
Dibromochloromethane			Not detected	1
Dibromomethane			Not detected	1
Dichlorodifluoromethane			Not detected	1
Methylene chloride			Not detected	1
Tetrachloroethylene			Not detected	1
trans-1,3-Dichloropropylene			Not detected	1
Trichloroethylene			Not detected	1
Trichlorofluoromethane			Not detected	1
Trichloropropane			Not detected	1
Vinyl chloride			Not detected	10

Units Key: For Waters/Liquids: mg/L = ppm ; ug/L = ppb For Soils/Solids: mg/kg = ppm ; ug/kg = ppb

Notes for York Project No. 03010123

1. The MDL (Minimum Detectable Limit) reported is adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All samples were received in proper condition for analysis with proper documentation.
6. All analyses conducted met method or Laboratory SOP requirements.
7. It is noted that the Total Organic Carbon analyses reported herein were subcontracted to EAS Laboratories; Watertown, CT.

Approved By: Robert Q. Bradley
Managing Director

Date: 1/17/2003

YORK

YORK
ANALYTICAL LABORATORIES, INC.
ONE RESEARCH DRIVE
STAMFORD, CT 06906
(203) 325-1371 FAX (203) 357-0166

Field Chain-of-Custody Record

0301023.

Company Name	Report To:	Invoice To:	Project ID/No.
ECOSYSTEMS STRATEGIES INC.	JONATHAN A. KAPLAN	PAM Q	LM97145.40

Jonathan A Kaplan
Samples Collected By (Signature)

JONATHAN A KAPLAN
Name (Printed)

Sample No.	Location/ID	Date Sampled	Sample Matrix: Water	Soil	Air	OTHER	ANALYSES REQUESTED	Container Description(s)
	MW-6	1.6.03	X				8021 B HALOGANETED COMPOUNDS METHANE, ETHANE, ETHENE TOTAL ORGANIC CARBON - MANGANESE	1-AMBER LITRE 2-250 ML PLASTIC 4-40 ML VIAL
	MW-11						X	
	TRIP BLANK 1.6.03						8021 B HALOGANETED COMPOUNDS	2-40 ML VIALS
	F-BLANK 1.6.03							
	E-BLANK 1.6.03	X	X				X	X
	* NEED ASP-B DELIVERABLE PACKAGE							

Chain-of-Custody Record

Bottles Relinquished from Lab by	Date/Time	C. Nider	1/7/03 1:30pm	R. Van Deusen	1/7/03 1:30 P.M.
Bottles Received in Field by	Date/Time	Sample Relinquished by	Date/Time	Sample Received in LAB by	Date/Time

Comments/Special Instructions

Turn-Around Time

X Standard ___ RUSH(define)_____

YORK
ANALYTICAL LABORATORIES, INC.

Technical Report

prepared for

Ecosystems Strategies, Inc.
24 Davis Avenue
Poughkeepsie, NY 12603
Attention: Jonathan A. Kaplan

Report Date: 1/13/2003
Re: Client Project ID: LM97145.40
York Project No.: 03010083

CT License No. PH-0723 New York License No. 10854 Mass. License No. M-CT106 Rhode Island License No. 93 EPA I.D. No. CT00106

nelac nelap

ONE RESEARCH DRIVE STAMFORD, CT 06906 (203) 325-1371 FAX (203) 357-0166

Report Date: 1/13/2003
Client Project ID: LM97145.40
York Project No.: 03010083

Ecosystems Strategies, Inc.
24 Davis Avenue
Poughkeepsie, NY 12603
Attention: Jonathan A. Kaplan

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on 01/06/03. The project was identifed as your project "LM97145.40 ".

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables .

All samples were received in proper condition meeting the NELAC acceptance requirements for environmental samples except those indicated under the Notes section of this report.

All the analyses met the method and laboratory standard operating procedure requirements except as indicated under the Notes section of this report, or as indicated by any data flags, the meaning of which is explained in the attachment to this report, if applicable.

The results of the analyses, which are all reported on an as-received basis unless otherwise noted, are summarized in the following table(s).

Analysis Results

Client Sample ID			MW-202-1F		MW-9-1	
York Sample ID			03010083-01		03010083-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	25	Not detected	10
1,1,1-Trichloroethane			Not detected	25	Not detected	10
1,1,2,2-Tetrachloroethane			Not detected	25	Not detected	10
1,1,2-Trichloroethane			Not detected	25	Not detected	10
1,1-Dichloroethane			Not detected	25	Not detected	10
1,1-Dichloroethylene			Not detected	25	Not detected	10
1,2-Dichlorobenzene			Not detected	25	Not detected	10
1,2-Dichloroethane			Not detected	25	Not detected	10
1,2-Dichloroethylene (Total)			230(cis-)	25	85(cis-)	10
1,2-Dichloropropane			Not detected	25	Not detected	10
1,3-Dichlorobenzene			Not detected	25	Not detected	10
1,4-Dichlorobenzene			Not detected	25	Not detected	10
1-Chlorohexane			Not detected	25	Not detected	10
2-Chloroethylvinyl ether			Not detected	25	Not detected	10
2-Chlorotoluene			Not detected	25	Not detected	10
4-Chlorotoluene			Not detected	25	Not detected	10

YORK

Client Sample ID			MW-202-1F		MW-9-1	
York Sample ID			03010083-01		03010083-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Benzyl chloride			Not detected	250	Not detected	100
Bis(2-chloroethoxy)methane			Not detected	250	Not detected	100
Bis(2-chloroisopropyl)ether			Not detected	250	Not detected	100
Bromobenzene			Not detected	25	Not detected	10
Bromodichloromethane			Not detected	25	Not detected	10
Bromoform			Not detected	25	Not detected	10
Bromomethane			Not detected	250	Not detected	100
Carbon tetrachloride			Not detected	25	Not detected	10
Chloroacetaldehyde			Not detected	250	Not detected	100
Chlorobenzene			Not detected	25	Not detected	10
Chloroethane			Not detected	250	Not detected	100
Chloroform			Not detected	25	Not detected	10
Chloromethane			Not detected	250	Not detected	100
Chloromethyl methyl ether			Not detected	25	Not detected	10
cis-1,3-Dichloropropylene			Not detected	25	Not detected	10
Dibromochloromethane			Not detected	25	Not detected	10
Dibromomethane			Not detected	25	Not detected	10
Dichlorodifluoromethane			Not detected	25	Not detected	10
Methylene chloride			56 B	25	20 B	10
Tetrachloroethylene			450	25	770	10
trans-1,3-Dichloropropylene			Not detected	25	Not detected	10
Trichloroethylene			1000	25	73	10
Trichlorofluoromethane			Not detected	25	Not detected	10
Trichloropropane			Not detected	25	Not detected	10
Vinyl chloride			Not detected	250	Not detected	100
Target Gases	EPA M18m	ppb	---	---	---	---
Ethane			Not detected	10.0	Not detected	10.0
Ethene (Ethylene)			Not detected	10.0	Not detected	10.0
Methane			59.3	10.0	Not detected	10.0
Manganese	SW846-6010	mg/L	0.136	0.005	0.043	0.005
Total Organic Carbon	SM505B	mg/L	Not detected	1.0	3.0	1.0

Client Sample ID			MW-5-1	
York Sample ID			03010083-03	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---
1,1,1,2-Tetrachloroethane			Not detected	50
1,1,1-Trichloroethane			Not detected	50
1,1,2,2-Tetrachloroethane			Not detected	50
1,1,2-Trichloroethane			Not detected	50
1,1-Dichloroethane			Not detected	50
1,1-Dichloroethylene			Not detected	50
1,2-Dichlorobenzene			Not detected	50
1,2-Dichloroethane			Not detected	50
1,2-Dichloroethylene (Total)			350(cis-)	50
1,2-Dichloropropane			Not detected	50
1,3-Dichlorobenzene			Not detected	50
1,4-Dichlorobenzene			Not detected	50

YORK

Client Sample ID			MW-5-1	
York Sample ID			03010083-03	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
1-Chlorohexane			Not detected	50
2-Chloroethylvinyl ether			Not detected	50
2-Chlorotoluene			Not detected	50
4-Chlorotoluene			Not detected	50
Benzyl chloride			Not detected	500
Bis(2-chloroethoxy)methane			Not detected	500
Bis(2-chloroisopropyl)ether			Not detected	500
Bromobenzene			Not detected	50
Bromodichloromethane			Not detected	50
Bromoform			Not detected	50
Bromomethane			Not detected	500
Carbon tetrachloride			Not detected	50
Chloroacetaldehyde			Not detected	500
Chlorobenzene			Not detected	50
Chloroethane			Not detected	500
Chloroform			Not detected	50
Chloromethane			Not detected	500
Chloromethyl methyl ether			Not detected	50
cis-1,3-Dichloropropylene			Not detected	50
Dibromochloromethane			Not detected	50
Dibromomethane			Not detected	50
Dichlorodifluoromethane			Not detected	50
Methylene chloride			94 B	50
Tetrachloroethylene			9800	50
trans-1,3-Dichloropropylene			Not detected	50
Trichloroethylene			160	50
Trichlorofluoromethane			Not detected	50
Trichloropropane			Not detected	50
Vinyl chloride			Not detected	500
Target Gases	EPA M18m	ppb	---	---
Ethane			Not detected	10.0
Ethene (Ethylene)			Not detected	10.0
Methane			Not detected	10.0
Manganese	SW846-6010	mg/L	0.027	0.005
Total Organic Carbon	SM505B	mg/L	4.3	1.0

Client Sample ID			Trip Blank 1-2-03		F-Blank 1-2-03	
York Sample ID			03010083-04		03010083-05	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,1-Trichloroethane			Not detected	1	Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,2-Trichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethylene			Not detected	1	Not detected	1
1,2-Dichlorobenzene			Not detected	1	Not detected	1

YORK

Client Sample ID			Trip Blank 1-2-03		F-Blank 1-2-03	
York Sample ID			03010083-04		03010083-05	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
1,2-Dichloroethane			Not detected	1	Not detected	1
1,2-Dichloroethylene (Total)			Not detected	1	Not detected	1
1,2-Dichloropropane			Not detected	1	Not detected	1
1,3-Dichlorobenzene			Not detected	1	Not detected	1
1,4-Dichlorobenzene			Not detected	1	Not detected	1
1-Chlorohexane			Not detected	1	Not detected	1
2-Chloroethylvinyl ether			Not detected	1	Not detected	1
2-Chlorotoluene			Not detected	1	Not detected	1
4-Chlorotoluene			Not detected	1	Not detected	1
Benzyl chloride			Not detected	10	Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10	Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10	Not detected	10
Bromobenzene			Not detected	1	Not detected	1
Bromodichloromethane			Not detected	1	Not detected	1
Bromoform			Not detected	1	Not detected	1
Bromomethane			Not detected	10	Not detected	10
Carbon tetrachloride			Not detected	1	Not detected	1
Chloroacetaldehyde			Not detected	10	Not detected	10
Chlorobenzene			Not detected	1	Not detected	1
Chloroethane			Not detected	10	Not detected	10
Chloroform			Not detected	1	Not detected	1
Chloromethane			Not detected	10	Not detected	10
Chloromethyl methyl ether			Not detected	1	Not detected	1
cis-1,3-Dichloropropylene			Not detected	1	Not detected	1
Dibromochloromethane			Not detected	1	Not detected	1
Dibromomethane			Not detected	1	Not detected	1
Dichlorodifluoromethane			Not detected	1	Not detected	1
Methylene chloride			Not detected	1	Not detected	1
Tetrachloroethylene			Not detected	1	Not detected	1
trans-1,3-Dichloropropylene			Not detected	1	Not detected	1
Trichloroethylene			Not detected	1	Not detected	1
Trichlorofluoromethane			Not detected	1	Not detected	1
Trichloropropane			Not detected	1	Not detected	1
Vinyl chloride			Not detected	10	Not detected	10

Client Sample ID			E-Blank 1-2-03	
York Sample ID			03010083-06	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---
1,1,1,2-Tetrachloroethane			Not detected	1
1,1,1-Trichloroethane			Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1
1,1,2-Trichloroethane			Not detected	1
1,1-Dichloroethane			Not detected	1
1,1-Dichloroethylene			Not detected	1
1,2-Dichlorobenzene			Not detected	1
1,2-Dichloroethane			Not detected	1
1,2-Dichloroethylene (Total)			Not detected	1

YORK

Client Sample ID			E-Blank 1-2-03	
York Sample ID			03010083-06	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
1,2-Dichloropropane			Not detected	1
1,3-Dichlorobenzene			Not detected	1
1,4-Dichlorobenzene			Not detected	1
1-Chlorohexane			Not detected	1
2-Chloroethylvinyl ether			Not detected	1
2-Chlorotoluene			Not detected	1
4-Chlorotoluene			Not detected	1
Benzyl chloride			Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10
Bromobenzene			Not detected	1
Bromodichloromethane			Not detected	1
Bromoform			Not detected	1
Bromomethane			Not detected	10
Carbon tetrachloride			Not detected	1
Chloroacetaldehyde			Not detected	10
Chlorobenzene			Not detected	1
Chloroethane			Not detected	10
Chloroform			Not detected	1
Chloromethane			Not detected	10
Chloromethyl methyl ether			Not detected	1
cis-1,3-Dichloropropylene			Not detected	1
Dibromochloromethane			Not detected	1
Dibromomethane			Not detected	1
Dichlorodifluoromethane			Not detected	1
Methylene chloride			Not detected	1
Tetrachloroethylene			8	1
trans-1,3-Dichloropropylene			Not detected	1
Trichloroethylene			Not detected	1
Trichlorofluoromethane			Not detected	1
Trichloropropane			Not detected	1
Vinyl chloride			Not detected	10

Units Key: For Waters/Liquids: mg/L = ppm ; ug/L = ppb For Soils/Solids: mg/kg = ppm ; ug/kg = ppb

Notes for York Project No. 03010083

1. The MDL (Minimum Detectable Limit) reported is adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All samples were received in proper condition for analysis with proper documentation.
6. All analyses conducted met method or Laboratory SOP requirements.
7. It is noted that Total Organic Carbon analyses reported herein were subcontracted to EAS, Watertown, CT.

Approved By: _____ **Date:** 1/13/2003

Robert Q. Bradley
Managing Director

YORK

YORK
ANALYTICAL LABORATORIES, INC.
ONE RESEARCH DRIVE
STAMFORD, CT 06906
(203) 325-1371 FAX (203) 357-0166

Field Chain-of-Custody Record

03010083

Company Name	Report To:	Invoice To:	Project ID/No.
ESI	JONATHAN A KAPLAN	PAM Q.	LM97145.40

Samples Collected By (Signature): Jonathan A Kaplan / Z.L. – K.B.

Name (Printed): JONATHAN A KAPLAN

Sample No.	Location/ID	Date Sampled	Sample Matrix: Water	Soil	Air	OTHER	ANALYSES REQUESTED	Container Description(s)
	MW-202-1F	1.2.03	X				8021 B HALOGENATED COMPOUNDS METHANE, ETHANE, ETHENE – MANGANESE TOTAL ORGANIC CARBON	1-AMBER 4-40 ML VIAL 2-250 ML PLASTIC
	MW-9-1							
*	MW-5-1						X	X
	TRIP BLANK 1.2.03						8021 B HALOGENATED COMPOUNDS	2-40 ML VIALS
	F-BLANK 1.2.03							
	E-BLANK 1.2.03	X	X				X	X
	* NEED ASP. B	DELIVERABLE DATA	PACKAGES	FOR ~~MAY SET~~ THIS EVENT				

Chain-of-Custody Record

Bottles Relinquished from Lab by	Date/Time	JK Sample Relinquished by	1/3/03 10:50 Date/Time
Bottles Received in Field by	Date/Time	Sample Relinquished by	Date/Time
Sample Received by	1/3/03 10:50 Date/Time		
Sample Received in LAB by #1	1/03 9:31 AM Date/Time		

Comments/Special Instructions

Turn-Around Time

X Standard ___ RUSH(define)_____

YORK
ANALYTICAL LABORATORIES, INC.

Technical Report

prepared for

Ecosystems Strategies, Inc.
24 Davis Avenue
Poughkeepsie, NY 12603
Attention: Jonathan Kaplan

Report Date: 1/8/2003
Re: Client Project ID: LM97145.40
York Project No.: 03010024

CT License No. PH-0723 New York License No. 10854 Mass. License No. M-CT106 Rhode Island License No. 93 EPA I.D. No. CT00106

ONE RESEARCH DRIVE STAMFORD, CT 06906 (203) 325-1371 FAX (203) 357-0166

Report Date: 1/8/2003
Client Project ID: LM97145.40
York Project No.: 03010024

Ecosystems Strategies, Inc.
24 Davis Avenue
Poughkeepsie, NY 12603
Attention: Jonathan Kaplan

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on 12/31/02. The project was identifed as your project "LM97145.40 ".

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables .

All samples were received in proper condition meeting the NELAC acceptance requirements for environmental samples except those indicated under the Notes section of this report.

All the analyses met the method and laboratory standard operating procedure requirements except as indicated under the Notes section of this report, or as indicated by any data flags, the meaning of which is explained in the attachment to this report, if applicable.

The results of the analyses, which are all reported on an as-received basis unless otherwise noted, are summarized in the following table(s).

Analysis Results

Client Sample ID			MW-14-1		MW-13-1	
York Sample ID			03010024-01		03010024-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	10
1,1,1-Trichloroethane			Not detected	1	Not detected	10
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	10
1,1,2-Trichloroethane			Not detected	1	Not detected	10
1,1-Dichloroethane			Not detected	1	Not detected	10
1,1-Dichloroethylene			Not detected	1	Not detected	10
1,2-Dichlorobenzene			Not detected	1	Not detected	10
1,2-Dichloroethane			Not detected	1	Not detected	10
1,2-Dichloroethylene (Total)			Not detected	1	780(cis-)	10
1,2-Dichloropropane			Not detected	1	Not detected	10
1,3-Dichlorobenzene			Not detected	1	Not detected	10
1,4-Dichlorobenzene			Not detected	1	Not detected	10
1-Chlorohexane			Not detected	1	Not detected	10
2-Chloroethylvinyl ether			Not detected	1	Not detected	10
2-Chlorotoluene			Not detected	1	Not detected	10
4-Chlorotoluene			Not detected	1	Not detected	10

YORK

Client Sample ID			MW-14-1		MW-13-1	
York Sample ID			03010024-01		03010024-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Benzyl chloride			Not detected	10	Not detected	100
Bis(2-chloroethoxy)methane			Not detected	10	Not detected	100
Bis(2-chloroisopropyl)ether			Not detected	10	Not detected	100
Bromobenzene			Not detected	1	Not detected	10
Bromodichloromethane			Not detected	1	Not detected	10
Bromoform			Not detected	1	Not detected	10
Bromomethane			Not detected	10	Not detected	100
Carbon tetrachloride			Not detected	1	Not detected	10
Chloroacetaldehyde			Not detected	10	Not detected	100
Chlorobenzene			Not detected	1	Not detected	10
Chloroethane			Not detected	10	Not detected	100
Chloroform			Not detected	1	Not detected	10
Chloromethane			Not detected	10	Not detected	100
Chloromethyl methyl ether			Not detected	1	Not detected	10
cis-1,3-Dichloropropylene			Not detected	1	Not detected	10
Dibromochloromethane			Not detected	1	Not detected	10
Dibromomethane			Not detected	1	Not detected	10
Dichlorodifluoromethane			Not detected	1	Not detected	10
Methylene chloride			Not detected	1	Not detected	10
Tetrachloroethylene			Not detected	1	87	10
trans-1,3-Dichloropropylene			Not detected	1	Not detected	10
Trichloroethylene			Not detected	1	190	10
Trichlorofluoromethane			Not detected	1	Not detected	10
Trichloropropane			Not detected	1	Not detected	10
Vinyl chloride			Not detected	10	Not detected	100
Target Gases	EPA M18m	ppb	---	---	---	---
Ethane			Not detected	10.0	Not detected	10.0
Ethene (Ethylene)			Not detected	10.0	Not detected	10.0
Methane			Not detected	10.0	Not detected	10.0
Manganese	SW846-6010	mg/L	0.097	0.005	0.172	0.005
Total Organic Carbon	SM505B	mg/L	Not detected	1.0	1.4	1.0

Client Sample ID			MW-202-1		Trip Blank 12-30-02	
York Sample ID			03010024-03		03010024-04	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,1-Trichloroethane			Not detected	1	Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,2-Trichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethylene			Not detected	1	Not detected	1
1,2-Dichlorobenzene			Not detected	1	Not detected	1
1,2-Dichloroethane			Not detected	1	Not detected	1
1,2-Dichloroethylene (Total)			48(t-)440(c-)	1	Not detected	1
1,2-Dichloropropane			Not detected	1	Not detected	1
1,3-Dichlorobenzene			Not detected	1	Not detected	1
1,4-Dichlorobenzene			Not detected	1	Not detected	1

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Client Sample ID			MW-202-1		Trip Blank 12-30-02	
York Sample ID			03010024-03		03010024-04	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
1-Chlorohexane			Not detected	1	Not detected	1
2-Chloroethylvinyl ether			Not detected	1	Not detected	1
2-Chlorotoluene			Not detected	1	Not detected	1
4-Chlorotoluene			Not detected	1	Not detected	1
Benzyl chloride			Not detected	10	Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10	Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10	Not detected	10
Bromobenzene			Not detected	1	Not detected	1
Bromodichloromethane			Not detected	1	Not detected	1
Bromoform			Not detected	1	Not detected	1
Bromomethane			Not detected	10	Not detected	10
Carbon tetrachloride			Not detected	1	Not detected	1
Chloroacetaldehyde			Not detected	10	Not detected	10
Chlorobenzene			Not detected	1	Not detected	1
Chloroethane			Not detected	10	Not detected	10
Chloroform			Not detected	1	Not detected	1
Chloromethane			Not detected	10	Not detected	10
Chloromethyl methyl ether			Not detected	1	Not detected	1
cis-1,3-Dichloropropylene			Not detected	1	Not detected	1
Dibromochloromethane			Not detected	1	Not detected	1
Dibromomethane			Not detected	1	Not detected	1
Dichlorodifluoromethane			Not detected	1	Not detected	1
Methylene chloride			Not detected	1	Not detected	1
Tetrachloroethylene			720	1	Not detected	1
trans-1,3-Dichloropropylene			Not detected	1	Not detected	1
Trichloroethylene			1800	1	Not detected	1
Trichlorofluoromethane			Not detected	1	Not detected	1
Trichloropropane			Not detected	1	Not detected	1
Vinyl chloride			Not detected	10	Not detected	10
Target Gases	EPA M18m	ppb	---	---	---	---
Ethane			Not detected	10.0		
Ethene (Ethylene)			Not detected	10.0		
Methane			70.6	10.0		
Manganese	SW846-6010	mg/L	0.164	0.005	---	---
Total Organic Carbon	SM505B	mg/L	2.8	1.0	---	---

Client Sample ID			F-Blank 12-30-02		E-Blank 12-30-02	
York Sample ID			03010024-05		03010024-06	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,1-Trichloroethane			Not detected	1	Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,2-Trichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethylene			Not detected	1	Not detected	1
1,2-Dichlorobenzene			Not detected	1	Not detected	1
1,2-Dichloroethane			Not detected	1	Not detected	1

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Client Sample ID			F-Blank 12-30-02		E-Blank 12-30-02	
York Sample ID			03010024-05		03010024-06	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
1,2-Dichloroethylene (Total)			Not detected	1	Not detected	1
1,2-Dichloropropane			Not detected	1	Not detected	1
1,3-Dichlorobenzene			Not detected	1	Not detected	1
1,4-Dichlorobenzene			Not detected	1	Not detected	1
1-Chlorohexane			Not detected	1	Not detected	1
2-Chloroethylvinyl ether			Not detected	1	Not detected	1
2-Chlorotoluene			Not detected	1	Not detected	1
4-Chlorotoluene			Not detected	1	Not detected	1
Benzyl chloride			Not detected	10	Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10	Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10	Not detected	10
Bromobenzene			Not detected	1	Not detected	1
Bromodichloromethane			Not detected	1	Not detected	1
Bromoform			Not detected	1	Not detected	1
Bromomethane			Not detected	10	Not detected	10
Carbon tetrachloride			Not detected	1	Not detected	1
Chloroacetaldehyde			Not detected	10	Not detected	10
Chlorobenzene			Not detected	1	Not detected	1
Chloroethane			Not detected	10	Not detected	10
Chloroform			Not detected	1	Not detected	1
Chloromethane			Not detected	10	Not detected	10
Chloromethyl methyl ether			Not detected	1	Not detected	1
cis-1,3-Dichloropropylene			Not detected	1	Not detected	1
Dibromochloromethane			Not detected	1	Not detected	1
Dibromomethane			Not detected	1	Not detected	1
Dichlorodifluoromethane			Not detected	1	Not detected	1
Methylene chloride			Not detected	1	Not detected	1
Tetrachloroethylene			Not detected	1	Not detected	1
trans-1,3-Dichloropropylene			Not detected	1	Not detected	1
Trichloroethylene			Not detected	1	Not detected	1
Trichlorofluoromethane			Not detected	1	Not detected	1
Trichloropropane			Not detected	1	Not detected	1
Vinyl chloride			Not detected	10	Not detected	10

Units Key: For Waters/Liquids: mg/L = ppm ; ug/L = ppb For Soils/Solids: mg/kg = ppm ; ug/kg = ppb

Notes for York Project No. 03010024

1. The MDL (Minimum Detectable Limit) reported is adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All samples were received in proper condition for analysis with proper documentation.
6. All analyses conducted met method or Laboratory SOP requirements.
7. It is noted that the Total Organic Carbon analyses reported herein were subcontracted to EAS Laboratories; Watertown, CT.

Approved By: _____ **Date:** 1/8/2003

Robert Q. Bradley
Managing Director

YORK

YORK
ANALYTICAL LABORATORIES, INC.
ONE RESEARCH DRIVE
STAMFORD, CT 06906
(203) 325-1371 FAX (203) 357-0166

Field Chain-of-Custody Record

Company Name	Report To:	Invoice To:	Project ID/No.
Ecosystems Strategies	Jonathan A. Kaplan	PAM	LM97145.40

Jonathan A Kaplan / Z.L. / K.B
Samples Collected By (Signature)
Jonathan A. Kaplan
Name (Printed)

Sample No.	Location/ID	Date Sampled	Sample Matrix: Water	Soil	Air	OTHER	ANALYSES REQUESTED	Container Description(s)
	MW-14-1	12.30.02	X				8021 B HALOGENATED COMPOUNDS METHANE, ETHANE, ETHENE TOTAL ORGANIC CARBON	1-AMBER 4-40 ML VIAL 2-250 ML PLASTIC
	MW-13-1							
	MW-202-1						X	X
	TRIP BLANK 12.30.02						8021 B HALOGENATED COMPOUNDS	2 40 ML VIALS
	F-BLANK 12.30.02							
	E-BLANK 12.30.02	X	X				X	X

Chain-of-Custody Record					
Bottles Relinquished from Lab by	Date/Time	Sample Relinquished by	12/31/02 Date/Time	R Van Iderstine Sample Received by	12/31/02 11:00 Date/Time
Bottles Received in Field by	Date/Time	Sample Relinquished by	Date/Time	J. Kaplan Sample Received in LAB by	12-31-02/1500 Date/Time

Comments/Special Instructions: 4.4°C

Turn-Around Time: X Standard ____ RUSH(define)_____

YORK
ANALYTICAL LABORATORIES, INC.

Technical Report

prepared for

Ecosystems Strategies, Inc.
24 Davis Avenue
Poughkeepsie, NY 12603
Attention: Jonathan A. Kaplan

Report Date: 1/6/2003
Re: Client Project ID: LM97145S.40
York Project No.: 02120634

CT License No. PH-0723 New York License No. 10854 Mass. License No. M-CT106 Rhode Island License No. 93 EPA I.D. No. CT00106

nelac nelap

ONE RESEARCH DRIVE STAMFORD, CT 06906 (203) 325-1371 FAX (203) 357-0166

Report Date: 1/6/2003
Client Project ID: LM97145S.40
York Project No.: 02120634

Ecosystems Strategies, Inc.
24 Davis Avenue
Poughkeepsie, NY 12603
Attention: Jonathan A. Kaplan

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on 12/24/02. The project was identifed as your project "LM97145S.40 ".

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables .

All samples were received in proper condition meeting the NELAC acceptance requirements for environmental samples except those indicated under the Notes section of this report.

All the analyses met the method and laboratory standard operating procedure requirements except as indicated under the Notes section of this report, or as indicated by any data flags, the meaning of which is explained in the attachment to this report, if applicable.

The results of the analyses, which are all reported on an as-received basis unless otherwise noted, are summarized in the following table(s).

Analysis Results

Client Sample ID			MW-10-1		Trip Blank	
York Sample ID			02120634-01		02120634-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,1-Trichloroethane			Not detected	1	Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,2-Trichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethylene			Not detected	1	Not detected	1
1,2-Dichlorobenzene			Not detected	1	Not detected	1
1,2-Dichloroethane			Not detected	1	Not detected	1
1,2-Dichloroethylene (Total)			Not detected	1	Not detected	1
1,2-Dichloropropane			Not detected	1	Not detected	1
1,3-Dichlorobenzene			Not detected	1	Not detected	1
1,4-Dichlorobenzene			Not detected	1	Not detected	1
1-Chlorohexane			Not detected	1	Not detected	1
2-Chloroethylvinyl ether			Not detected	1	Not detected	1
2-Chlorotoluene			Not detected	1	Not detected	1
4-Chlorotoluene			Not detected	1	Not detected	1

Client Sample ID			MW-10-1		Trip Blank	
York Sample ID			02120634-01		02120634-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Benzyl chloride			Not detected	10	Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10	Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10	Not detected	10
Bromobenzene			Not detected	1	Not detected	1
Bromodichloromethane			Not detected	1	Not detected	1
Bromoform			Not detected	1	Not detected	1
Bromomethane			Not detected	10	Not detected	10
Carbon tetrachloride			Not detected	1	Not detected	1
Chloroacetaldehyde			Not detected	10	Not detected	10
Chlorobenzene			Not detected	1	Not detected	1
Chloroethane			Not detected	10	Not detected	10
Chloroform			Not detected	1	Not detected	1
Chloromethane			Not detected	10	Not detected	10
Chloromethyl methyl ether			Not detected	1	Not detected	1
cis-1,3-Dichloropropylene			Not detected	1	Not detected	1
Dibromochloromethane			Not detected	1	Not detected	1
Dibromomethane			Not detected	1	Not detected	1
Dichlorodifluoromethane			Not detected	1	Not detected	1
Methylene chloride			Not detected	1	Not detected	1
Tetrachloroethylene			Not detected	1	Not detected	1
trans-1,3-Dichloropropylene			Not detected	1	Not detected	1
Trichloroethylene			Not detected	1	Not detected	1
Trichlorofluoromethane			Not detected	1	Not detected	1
Trichloropropane			Not detected	1	Not detected	1
Vinyl chloride			Not detected	10	Not detected	10
Target Gases	EPA M18m	ppb	---	---	---	---
Ethane			Not detected	10.0		
Ethene (Ethylene)			Not detected	10.0		
Methane			Not detected	10.0		
Manganese	SW846-6010	mg/L	0.063	0.005	---	---
Total Organic Carbon	SM505B	mg/L	1.0	1.0	---	---

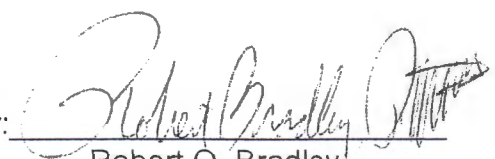
Client Sample ID			F-Blank		E-Blank	
York Sample ID			02120634-03		02120634-04	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,1-Trichloroethane			Not detected	1	Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,2-Trichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethylene			Not detected	1	Not detected	1
1,2-Dichlorobenzene			Not detected	1	Not detected	1
1,2-Dichloroethane			Not detected	1	Not detected	1
1,2-Dichloroethylene (Total)			Not detected	1	Not detected	1
1,2-Dichloropropane			Not detected	1	Not detected	1
1,3-Dichlorobenzene			Not detected	1	Not detected	1
1,4-Dichlorobenzene			Not detected	1	Not detected	1

Client Sample ID			F-Blank		E-Blank	
York Sample ID			02120634-03		02120634-04	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
1-Chlorohexane			Not detected	1	Not detected	1
2-Chloroethylvinyl ether			Not detected	1	Not detected	1
2-Chlorotoluene			Not detected	1	Not detected	1
4-Chlorotoluene			Not detected	1	Not detected	1
Benzyl chloride			Not detected	10	Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10	Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10	Not detected	10
Bromobenzene			Not detected	1	Not detected	1
Bromodichloromethane			Not detected	1	Not detected	1
Bromoform			Not detected	1	Not detected	1
Bromomethane			Not detected	10	Not detected	10
Carbon tetrachloride			Not detected	1	Not detected	1
Chloroacetaldehyde			Not detected	10	Not detected	10
Chlorobenzene			Not detected	1	Not detected	1
Chloroethane			Not detected	10	Not detected	10
Chloroform			Not detected	1	Not detected	1
Chloromethane			Not detected	10	Not detected	10
Chloromethyl methyl ether			Not detected	1	Not detected	1
cis-1,3-Dichloropropylene			Not detected	1	Not detected	1
Dibromochloromethane			Not detected	1	Not detected	1
Dibromomethane			Not detected	1	Not detected	1
Dichlorodifluoromethane			Not detected	1	Not detected	1
Methylene chloride			Not detected	1	Not detected	1
Tetrachloroethylene			Not detected	1	Not detected	1
trans-1,3-Dichloropropylene			Not detected	1	Not detected	1
Trichloroethylene			Not detected	1	Not detected	1
Trichlorofluoromethane			Not detected	1	Not detected	1
Trichloropropane			Not detected	1	Not detected	1
Vinyl chloride			Not detected	10	Not detected	10

Units Key: For Waters/Liquids: mg/L = ppm ; ug/L = ppb For Soils/Solids: mg/kg = ppm ; ug/kg = ppb

Notes for York Project No. 02120634

1. The MDL (Minimum Detectable Limit) reported is adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All samples were received in proper condition for analysis with proper documentation.
6. All analyses conducted met method or Laboratory SOP requirements.
7. It is noted that Total Organic Carbon analyses reported herein were subcontracted to EAS, Wastertown, CT.

Approved By: 

Robert Q. Bradley
Managing Director

Date: 1/6/2003

YORK

YORK
ANALYTICAL LABORATORIES, INC.
ONE REBEARCH DRIVE
STAMFORD, CT 06906
(203) 325-1371 FAX (203) 357-0166

Field Chain-of-Custody Record

02120634

Company Name	Report To:	Invoice To:	Project ID/No.
Ecosystems Strategies	Jonathan A. Kaplan	PAM	LM97145.40

Jonathan A Kaplan
Samples Collected By (Signature)
Jonathan A. Kaplan
Name (Printed)

Sample No.	Location/ID	Date Sampled	Sample Matrix: Water	Soil	Air	OTHER	ANALYSES REQUESTED	Container Description(s)
	MW-10-1	12.20.02	X				8021 B - HALOGENATED COMPOUNDS TOTAL ORGANIC CARBON METHANE, ETHANE, ETHENE	1-AMBER, 4-40ML VIAL 2-250-ML
	TRIP BLANK						8021 B	2-40 ML VIALS
	F-BLANK							
	E-BLANK	X	X				X	X

Chain-of-Custody Record

Bottles Relinquished from Lab by	Date/Time	Sample Relinquished by	Date/Time	Sample Received by	Date/Time
			12/24/02	R. Van Dolsen	12/24/02 10:10
Bottles Received in Field by	Date/Time	Sample Relinquished by	Date/Time	Sample Received in LAB by	Date/Time
					12/24 12:46P

Comments/Special Instructions

Turn-Around Time 4 hr
X Standard ____ RUSH(define)_____

YORK
ANALYTICAL LABORATORIES, INC.

Technical Report

prepared for

Ecosystems Strategies, Inc.
24 Davis Avenue
Poughkeepsie, NY 12603
Attention: Jonathan A. Kaplan

Report Date: 1/3/2003
Re: Client Project ID: LM97145.40
York Project No.: 02120551

CT License No. PH-0723 New York License No. 10854 Mass. License No. M-CT106 Rhode Island License No. 93 EPA I.D. No. CT00106

nelac nelap

ONE RESEARCH DRIVE STAMFORD, CT 06906 (203) 325-1371 FAX (203) 357-0166

Report Date: 1/3/2003
Client Project ID: LM97145.40
York Project No.: 02120551

Ecosystems Strategies, Inc.
24 Davis Avenue
Poughkeepsie, NY 12603
Attention: Jonathan A. Kaplan

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on 12/20/02. The project was identifed as your project "LM97145.40 ".

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables .

All samples were received in proper condition meeting the NELAC acceptance requirements for environmental samples except those indicated under the Notes section of this report.

All the analyses met the method and laboratory standard operating procedure requirements except as indicated under the Notes section of this report, or as indicated by any data flags, the meaning of which is explained in the attachment to this report, if applicable.

The results of the analyses, which are all reported on an as-received basis unless otherwise noted, are summarized in the following table(s).

Analysis Results

Client Sample ID			MW-4-1		MW-207-1	
York Sample ID			02120551-01		02120551-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,1-Trichloroethane			Not detected	1	Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,2-Trichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethylene			Not detected	1	Not detected	1
1,2-Dichlorobenzene			Not detected	1	Not detected	1
1,2-Dichloroethane			Not detected	1	Not detected	1
1,2-Dichloroethylene (Total)			140(cis-)	1	Not detected	1
1,2-Dichloropropane			Not detected	1	Not detected	1
1,3-Dichlorobenzene			Not detected	1	Not detected	1
1,4-Dichlorobenzene			Not detected	1	Not detected	1
1-Chlorohexane			Not detected	1	Not detected	1
2-Chloroethylvinyl ether			Not detected	1	Not detected	1
2-Chlorotoluene			Not detected	1	Not detected	1
4-Chlorotoluene			Not detected	1	Not detected	1

Client Sample ID			MW-4-1		MW-207-1	
York Sample ID			02120551-01		02120551-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Benzyl chloride			Not detected	10	Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10	Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10	Not detected	10
Bromobenzene			Not detected	1	Not detected	1
Bromodichloromethane			Not detected	1	Not detected	1
Bromoform			Not detected	1	Not detected	1
Bromomethane			Not detected	10	Not detected	10
Carbon tetrachloride			Not detected	1	Not detected	1
Chloroacetaldehyde			Not detected	10	Not detected	10
Chlorobenzene			Not detected	1	Not detected	1
Chloroethane			Not detected	10	Not detected	10
Chloroform			Not detected	1	Not detected	1
Chloromethane			Not detected	10	Not detected	10
Chloromethyl methyl ether			Not detected	1	Not detected	1
cis-1,3-Dichloropropylene			Not detected	1	Not detected	1
Dibromochloromethane			Not detected	1	Not detected	1
Dibromomethane			Not detected	1	Not detected	1
Dichlorodifluoromethane			Not detected	1	Not detected	1
Methylene chloride			Not detected	1	Not detected	1
Tetrachloroethylene			1600	1	1	1
trans-1,3-Dichloropropylene			Not detected	1	Not detected	1
Trichloroethylene			Not detected	1	Not detected	1
Trichlorofluoromethane			Not detected	1	Not detected	1
Trichloropropane			Not detected	1	Not detected	1
Vinyl chloride			Not detected	10	Not detected	10
Target Gases	EPA M18m	ppb	---	---	---	---
Ethane			Not detected	10.0	Not detected	10.0
Ethene (Ethylene)			Not detected	10.0	Not detected	10.0
Methane			Not detected	10.0	Not detected	10.0
Manganese	SW846-6010	mg/L	0.013	0.005	0.294	0.005
Total Organic Carbon	SM505B	mg/L	25	1.0	2.3	1.0

Client Sample ID			MW-12-1	
York Sample ID			02120551-03	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---
1,1,1,2-Tetrachloroethane			Not detected	1
1,1,1-Trichloroethane			Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1
1,1,2-Trichloroethane			Not detected	1
1,1-Dichloroethane			Not detected	1
1,1-Dichloroethylene			Not detected	1
1,2-Dichlorobenzene			Not detected	1
1,2-Dichloroethane			Not detected	1
1,2-Dichloroethylene (Total)			Not detected	1
1,2-Dichloropropane			Not detected	1
1,3-Dichlorobenzene			Not detected	1
1,4-Dichlorobenzene			Not detected	1

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Client Sample ID			MW-12-1	
York Sample ID			02120551-03	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
1-Chlorohexane			Not detected	1
2-Chloroethylvinyl ether			Not detected	1
2-Chlorotoluene			Not detected	1
4-Chlorotoluene			Not detected	1
Benzyl chloride			Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10
Bromobenzene			Not detected	1
Bromodichloromethane			Not detected	1
Bromoform			Not detected	1
Bromomethane			Not detected	10
Carbon tetrachloride			Not detected	1
Chloroacetaldehyde			Not detected	10
Chlorobenzene			Not detected	1
Chloroethane			Not detected	10
Chloroform			Not detected	1
Chloromethane			Not detected	10
Chloromethyl methyl ether			Not detected	1
cis-1,3-Dichloropropylene			Not detected	1
Dibromochloromethane			Not detected	1
Dibromomethane			Not detected	1
Dichlorodifluoromethane			Not detected	1
Methylene chloride			Not detected	1
Tetrachloroethylene			7	1
trans-1,3-Dichloropropylene			Not detected	1
Trichloroethylene			2	1
Trichlorofluoromethane			Not detected	1
Trichloropropane			Not detected	1
Vinyl chloride			Not detected	10
Target Gases	EPA M18m	ppb	---	---
Ethane			Not detected	10.0
Ethene (Ethylene)			Not detected	10.0
Methane			Not detected	10.0
Manganese	SW846-6010	mg/L	0.271	0.005
Total Organic Carbon	SM505B	mg/L	1.2	1.0

Client Sample ID			Trip Blank		F-Blank	
York Sample ID			02120551-04		02120551-05	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,1-Trichloroethane			Not detected	1	Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,2-Trichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethylene			Not detected	1	Not detected	1
1,2-Dichlorobenzene			Not detected	1	Not detected	1
1,2-Dichloroethane			Not detected	1	Not detected	1

Client Sample ID			Trip Blank		F-Blank	
York Sample ID			02120551-04		02120551-05	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
1,2-Dichloroethylene (Total)			Not detected	1	Not detected	1
1,2-Dichloropropane			Not detected	1	Not detected	1
1,3-Dichlorobenzene			Not detected	1	Not detected	1
1,4-Dichlorobenzene			Not detected	1	Not detected	1
1-Chlorohexane			Not detected	1	Not detected	1
2-Chloroethylvinyl ether			Not detected	1	Not detected	1
2-Chlorotoluene			Not detected	1	Not detected	1
4-Chlorotoluene			Not detected	1	Not detected	1
Benzyl chloride			Not detected	10	Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10	Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10	Not detected	10
Bromobenzene			Not detected	1	Not detected	1
Bromodichloromethane			Not detected	1	Not detected	1
Bromoform			Not detected	1	Not detected	1
Bromomethane			Not detected	10	Not detected	10
Carbon tetrachloride			Not detected	1	Not detected	1
Chloroacetaldehyde			Not detected	10	Not detected	10
Chlorobenzene			Not detected	1	Not detected	1
Chloroethane			Not detected	10	Not detected	10
Chloroform			Not detected	1	Not detected	1
Chloromethane			Not detected	10	Not detected	10
Chloromethyl methyl ether			Not detected	1	Not detected	1
cis-1,3-Dichloropropylene			Not detected	1	Not detected	1
Dibromochloromethane			Not detected	1	Not detected	1
Dibromomethane			Not detected	1	Not detected	1
Dichlorodifluoromethane			Not detected	1	Not detected	1
Methylene chloride			Not detected	1	Not detected	1
Tetrachloroethylene			Not detected	1	Not detected	1
trans-1,3-Dichloropropylene			Not detected	1	Not detected	1
Trichloroethylene			Not detected	1	Not detected	1
Trichlorofluoromethane			Not detected	1	Not detected	1
Trichloropropane			Not detected	1	Not detected	1
Vinyl chloride			Not detected	10	Not detected	10

Client Sample ID			E-Blank	
York Sample ID			02120551-06	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---
1,1,1,2-Tetrachloroethane			Not detected	1
1,1,1-Trichloroethane			Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1
1,1,2-Trichloroethane			Not detected	1
1,1-Dichloroethane			Not detected	1
1,1-Dichloroethylene			Not detected	1
1,2-Dichlorobenzene			Not detected	1
1,2-Dichloroethane			Not detected	1
1,2-Dichloroethylene (Total)			Not detected	1
1,2-Dichloropropane			Not detected	1

YORK

Client Sample ID			E-Blank	
York Sample ID			02120551-06	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
1,3-Dichlorobenzene			Not detected	1
1,4-Dichlorobenzene			Not detected	1
1-Chlorohexane			Not detected	1
2-Chloroethylvinyl ether			Not detected	1
2-Chlorotoluene			Not detected	1
4-Chlorotoluene			Not detected	1
Benzyl chloride			Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10
Bromobenzene			Not detected	1
Bromodichloromethane			Not detected	1
Bromoform			Not detected	1
Bromomethane			Not detected	10
Carbon tetrachloride			Not detected	1
Chloroacetaldehyde			Not detected	10
Chlorobenzene			Not detected	1
Chloroethane			Not detected	10
Chloroform			Not detected	1
Chloromethane			Not detected	10
Chloromethyl methyl ether			Not detected	1
cis-1,3-Dichloropropylene			Not detected	1
Dibromochloromethane			Not detected	1
Dibromomethane			Not detected	1
Dichlorodifluoromethane			Not detected	1
Methylene chloride			Not detected	1
Tetrachloroethylene			Not detected	1
trans-1,3-Dichloropropylene			Not detected	1
Trichloroethylene			7	1
Trichlorofluoromethane			Not detected	1
Trichloropropane			Not detected	1
Vinyl chloride			Not detected	10

Units Key: For Waters/Liquids: mg/L = ppm ; ug/L = ppb For Soils/Solids: mg/kg = ppm ; ug/kg = ppb

Notes for York Project No. 02120551

1. The MDL (Minimum Detectable Limit) reported is adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All samples were received in proper condition for analysis with proper documentation.
6. All analyses conducted met method or Laboratory SOP requirements.
7. It is noted that Total Organic Carbons analyses reported herein were subcontracted to EAS, Watertown, CT.

Approved By: _____ **Date:** 1/3/2003

Robert Q. Bradley
Managing Director

YORK

YORK
ANALYTICAL LABORATORIES, INC.
ONE REBEARCH DRIVE
STAMFORD, CT 06906
(203) 325-1371 FAX (203) 357-0166

Field Chain-of-Custody Record

02120551.

Company Name	Report To:	Invoice To:	Project ID/No.
Ecosystems Strategies	Jonathan A. Kaplan	PAM	LM97145.40

Jonathan A Kaplan
Samples Collected By (Signature)

Jonathan A. Kaplan
Name (Printed)

Sample No.	Location/ID	Date Sampled	Sample Matrix: Water	Soil	Air	OTHER	ANALYSES REQUESTED	Container Description(s)
	MW-4-1	12.19.02	X				8021 B - HALOGANETED COMPOUNDS TOTAL ORGANIC CARBON, METHANE, ETHANE, ETHENE	1-AMBER 2-250 mL. 2-40 mL VIAL
	MW-207-1						MANGANESE*	
	MW-12-1							
	TRIP BLANK						8021 B	2-40 mL VIAL
	F-BLANK							
	E-BLANK	X	X				X	X
	* NOTE - LAB will ADD NITRIC TO 1-250 mL PLASTIC JAR						FOR MANGANESE ANALYSIS	

Chain-of-Custody Record

Bottles Relinquished from Lab by	Date/Time	Sample Relinquished by	Date/Time
Bottles Received in Field by	Date/Time	Sample Relinquished by	Date/Time

R. Tom Dawson 12/20/01
Sample Received by Date/Time

12/20/02 3PM
Sample Received in LAB by Date/Time

4.4C

Comments/Special Instructions

Turn-Around Time
X Standard ___ RUSH(define)_____

YORK
ANALYTICAL LABORATORIES, INC.

Technical Report

prepared for

Ecosystems Strategies, Inc.
24 Davis Avenue
Poughkeepsie, NY 12603
Attention: Jonathan A. Kaplan

Report Date: 1/3/2003
Re: Client Project ID: LM97145.40
York Project No.: 02120517

CT License No. PH-0723 New York License No. 10854 Mass. License No. M-CT106 Rhode Island License No. 93 EPA I.D. No. CT00106

nelac nelap

ONE RESEARCH DRIVE STAMFORD, CT 06906 (203) 325-1371 FAX (203) 357-0166

Report Date: 1/3/2003
Client Project ID: LM97145.40
York Project No.: 02120517

Ecosystems Strategies, Inc.
24 Davis Avenue
Poughkeepsie, NY 12603
Attention: Jonathan A. Kaplan

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on 12/19/02. The project was identifed as your project "LM97145.40 ".

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables .

All samples were received in proper condition meeting the NELAC acceptance requirements for environmental samples except those indicated under the Notes section of this report.

All the analyses met the method and laboratory standard operating procedure requirements except as indicated under the Notes section of this report, or as indicated by any data flags, the meaning of which is explained in the attachment to this report, if applicable.

The results of the analyses, which are all reported on an as-received basis unless otherwise noted, are summarized in the following table(s).

Analysis Results

Client Sample ID			MW-204-1		MW-203F-1	
York Sample ID			02120517-01		02120517-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	25	Not detected	100
1,1,1-Trichloroethane			Not detected	25	Not detected	100
1,1,2,2-Tetrachloroethane			Not detected	25	Not detected	100
1,1,2-Trichloroethane			Not detected	25	Not detected	100
1,1-Dichloroethane			Not detected	25	Not detected	100
1,1-Dichloroethylene			Not detected	25	Not detected	100
1,2-Dichlorobenzene			Not detected	25	Not detected	100
1,2-Dichloroethane			Not detected	25	Not detected	100
1,2-Dichloroethylene (Total)			98(cis-)	25	590(cis-)	100
1,2-Dichloropropane			Not detected	25	Not detected	100
1,3-Dichlorobenzene			Not detected	25	Not detected	100
1,4-Dichlorobenzene			Not detected	25	Not detected	100
1-Chlorohexane			Not detected	25	Not detected	100
2-Chloroethylvinyl ether			Not detected	25	Not detected	100
2-Chlorotoluene			Not detected	25	Not detected	100
4-Chlorotoluene			Not detected	25	Not detected	100

YORK

Client Sample ID			MW-204-1		MW-203F-1	
York Sample ID			02120517-01		02120517-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Benzyl chloride			Not detected	250	Not detected	1000
Bis(2-chloroethoxy)methane			Not detected	250	Not detected	1000
Bis(2-chloroisopropyl)ether			Not detected	250	Not detected	1000
Bromobenzene			Not detected	25	Not detected	100
Bromodichloromethane			Not detected	25	Not detected	100
Bromoform			Not detected	25	Not detected	100
Bromomethane			Not detected	250	Not detected	1000
Carbon tetrachloride			Not detected	25	Not detected	100
Chloroacetaldehyde			Not detected	250	Not detected	1000
Chlorobenzene			Not detected	25	Not detected	100
Chloroethane			Not detected	250	Not detected	1000
Chloroform			Not detected	25	Not detected	100
Chloromethane			Not detected	250	Not detected	1000
Chloromethyl methyl ether			Not detected	25	Not detected	100
cis-1,3-Dichloropropylene			Not detected	25	Not detected	100
Dibromochloromethane			Not detected	25	Not detected	100
Dibromomethane			Not detected	25	Not detected	100
Dichlorodifluoromethane			Not detected	25	Not detected	100
Methylene chloride			120 B	25	670 B	100
Tetrachloroethylene			610	25	5700	100
trans-1,3-Dichloropropylene			Not detected	25	Not detected	100
Trichloroethylene			64	25	300	100
Trichlorofluoromethane			Not detected	25	Not detected	100
Trichloropropane			Not detected	25	Not detected	100
Vinyl chloride			Not detected	250	Not detected	1000
Target Gases	EPA M18m	ppb	---	---	---	---
Ethane			Not detected	10.0	Not detected	10.0
Ethene (Ethylene)			Not detected	10.0	Not detected	10.0
Methane			Not detected	10.0	Not detected	10.0
Manganese	SW846-6010	mg/L	0.242	0.005	0.083	0.005
Total Organic Carbon	SM505B	mg/L	1.5	1.0	2.1	1.0

Client Sample ID			MW-203-1	
York Sample ID			02120517-03	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---
1,1,1,2-Tetrachloroethane			Not detected	100
1,1,1-Trichloroethane			Not detected	100
1,1,2,2-Tetrachloroethane			Not detected	100
1,1,2-Trichloroethane			Not detected	100
1,1-Dichloroethane			Not detected	100
1,1-Dichloroethylene			Not detected	100
1,2-Dichlorobenzene			Not detected	100
1,2-Dichloroethane			Not detected	100
1,2-Dichloroethylene (Total)			280(cis-)	100
1,2-Dichloropropane			Not detected	100
1,3-Dichlorobenzene			Not detected	100
1,4-Dichlorobenzene			Not detected	100

YORK

Client Sample ID			MW-203-1	
York Sample ID			02120517-03	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
1-Chlorohexane			Not detected	100
2-Chloroethylvinyl ether			Not detected	100
2-Chlorotoluene			Not detected	100
4-Chlorotoluene			Not detected	100
Benzyl chloride			Not detected	1000
Bis(2-chloroethoxy)methane			Not detected	1000
Bis(2-chloroisopropyl)ether			Not detected	1000
Bromobenzene			Not detected	100
Bromodichloromethane			Not detected	100
Bromoform			Not detected	100
Bromomethane			Not detected	1000
Carbon tetrachloride			Not detected	100
Chloroacetaldehyde			Not detected	1000
Chlorobenzene			Not detected	100
Chloroethane			Not detected	1000
Chloroform			Not detected	100
Chloromethane			Not detected	1000
Chloromethyl methyl ether			Not detected	100
cis-1,3-Dichloropropylene			Not detected	100
Dibromochloromethane			Not detected	100
Dibromomethane			Not detected	100
Dichlorodifluoromethane			Not detected	100
Methylene chloride			600 B	100
Tetrachloroethylene			2100	100
trans-1,3-Dichloropropylene			Not detected	100
Trichloroethylene			120	100
Trichlorofluoromethane			Not detected	100
Trichloropropane			Not detected	100
Vinyl chloride			Not detected	1000
Target Gases	EPA M18m	ppb	---	---
Ethane			Not detected	10.0
Ethene (Ethylene)			Not detected	10.0
Methane			Not detected	10.0
Manganese	SW846-6010	mg/L	0.049	0.005
Total Organic Carbon	SM505B	mg/L	2.2	1.0

Client Sample ID			Trip Blank-12-18-02		F-Blank-12-18-02	
York Sample ID			02120517-04		02120517-05	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,1-Trichloroethane			Not detected	1	Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,2-Trichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethylene			Not detected	1	Not detected	1
1,2-Dichlorobenzene			Not detected	1	Not detected	1
1,2-Dichloroethane			Not detected	1	Not detected	1

Client Sample ID			Trip Blank-12-18-02		F-Blank-12-18-02	
York Sample ID			02120517-04		02120517-05	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
1,2-Dichloroethylene (Total)			Not detected	1	Not detected	1
1,2-Dichloropropane			Not detected	1	Not detected	1
1,3-Dichlorobenzene			Not detected	1	Not detected	1
1,4-Dichlorobenzene			Not detected	1	Not detected	1
1-Chlorohexane			Not detected	1	Not detected	1
2-Chloroethylvinyl ether			Not detected	1	Not detected	1
2-Chlorotoluene			Not detected	1	Not detected	1
4-Chlorotoluene			Not detected	1	Not detected	1
Benzyl chloride			Not detected	10	Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10	Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10	Not detected	10
Bromobenzene			Not detected	1	Not detected	1
Bromodichloromethane			Not detected	1	Not detected	1
Bromoform			Not detected	1	Not detected	1
Bromomethane			Not detected	10	Not detected	10
Carbon tetrachloride			Not detected	1	Not detected	1
Chloroacetaldehyde			Not detected	10	Not detected	10
Chlorobenzene			Not detected	1	Not detected	1
Chloroethane			Not detected	10	Not detected	10
Chloroform			Not detected	1	Not detected	1
Chloromethane			Not detected	10	Not detected	10
Chloromethyl methyl ether			Not detected	1	Not detected	1
cis-1,3-Dichloropropylene			Not detected	1	Not detected	1
Dibromochloromethane			Not detected	1	Not detected	1
Dibromomethane			Not detected	1	Not detected	1
Dichlorodifluoromethane			Not detected	1	Not detected	1
Methylene chloride			3 B	1	Not detected	1
Tetrachloroethylene			Not detected	1	Not detected	1
trans-1,3-Dichloropropylene			Not detected	1	Not detected	1
Trichloroethylene			Not detected	1	Not detected	1
Trichlorofluoromethane			Not detected	1	Not detected	1
Trichloropropane			Not detected	1	Not detected	1
Vinyl chloride			Not detected	10	Not detected	10

Client Sample ID			E-Blank-12-18-02	
York Sample ID			02120517-06	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---
1,1,1,2-Tetrachloroethane			Not detected	1
1,1,1-Trichloroethane			Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1
1,1,2-Trichloroethane			Not detected	1
1,1-Dichloroethane			Not detected	1
1,1-Dichloroethylene			Not detected	1
1,2-Dichlorobenzene			Not detected	1
1,2-Dichloroethane			Not detected	1
1,2-Dichloroethylene (Total)			Not detected	1
1,2-Dichloropropane			Not detected	1

YORK

Client Sample ID			E-Blank-12-18-02	
York Sample ID			02120517-06	
Matrix			WATER	
Parameter	Method	Units	Results	MDL
1,3-Dichlorobenzene			Not detected	1
1,4-Dichlorobenzene			Not detected	1
1-Chlorohexane			Not detected	1
2-Chloroethylvinyl ether			Not detected	1
2-Chlorotoluene			Not detected	1
4-Chlorotoluene			Not detected	1
Benzyl chloride			Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10
Bromobenzene			Not detected	1
Bromodichloromethane			Not detected	1
Bromoform			Not detected	1
Bromomethane			Not detected	10
Carbon tetrachloride			Not detected	1
Chloroacetaldehyde			Not detected	10
Chlorobenzene			Not detected	1
Chloroethane			Not detected	10
Chloroform			Not detected	1
Chloromethane			Not detected	10
Chloromethyl methyl ether			Not detected	1
cis-1,3-Dichloropropylene			Not detected	1
Dibromochloromethane			Not detected	1
Dibromomethane			Not detected	1
Dichlorodifluoromethane			Not detected	1
Methylene chloride			Not detected	1
Tetrachloroethylene			5	1
trans-1,3-Dichloropropylene			Not detected	1
Trichloroethylene			Not detected	1
Trichlorofluoromethane			Not detected	1
Trichloropropane			Not detected	1
Vinyl chloride			Not detected	10

Units Key: For Waters/Liquids: mg/L = ppm ; ug/L = ppb For Soils/Solids: mg/kg = ppm ; ug/kg = ppb

Notes for York Project No. 02120517

1. The MDL (Minimum Detectable Limit) reported is adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All samples were received in proper condition for analysis with proper documentation.
6. All analyses conducted met method or Laboratory SOP requirements.
7. It is noted that Total Organic Carbon nalyses reported herein were subcontracted to EAS, Watertown, CT.

Approved By: _____ **Date:** 1/3/2003

Robert Q. Bradley
Managing Director

YORK

YORK
ANALYTICAL LABORATORIES, INC.
ONE RESEARCH DRIVE
STAMFORD, CT 06906
(203) 325-1371 FAX (203) 357-0166

Field Chain-of-Custody Record

0212057.

Company Name	Report To:	Invoice To:	Project ID/No.	
Ecosystems Strategies	Jonathan A. Kaplan	PAM	LM97145.40	Jonathan A Kaplan (Samples Collected By (Signature)); Jonathan A. Kaplan (Name (Printed))

Sample No.	Location/ID	Date Sampled	Sample Matrix: Water	Soil	Air	OTHER	ANALYSES REQUESTED	Container Description(s)
	MW-204-1	12-18-02	X				8021B HALOGANETED COMPOUNDS METHANE, ETHANE, ETHENE - TOTAL ORGANIC CARBON	1-AMBER, 2 40 ML. VIAL 2-250 ML PLASTIC
	MW-203F-1						MANGANESE	
	MW-203-1						X	X
	TRIP BLANK - 12-18-02						8021B HALOGANETED COMPOUNDS	2-40 ML VIALS
	F-BLANK - 12-18-02							
	E-BLANK - 12-18-02	X	X				X	
	* NEED DELIVERABLE DATA PACKAGES FOR ALL LISTED							
	AS PER DISCUSSION W/ PHIL MURPHY -JK							
	LAB WILL ADD NITRIC TO 250 ML PLASTIC FOR MANGANESE ANALYSIS							

Chain-of-Custody Record					
Bottles Relinquished from Lab by	Date/Time	Sample Relinquished by	12/19/02 Date/Time	R. Van Doran Sample Received by	12/19/02 11:15 Date/Time
Bottles Received in Field by	Date/Time	Sample Relinquished by	Date/Time	Sample Received in LAB by	12/19 2:15P Date/Time

Comments/Special Instructions

Turn-Around Time
X Standard ___ RUSH(define)_____

4.4C

YORK
ANALYTICAL LABORATORIES, INC.

Technical Report

prepared for

Ecosystems Strategies, Inc.
24 Davis Avenue
Poughkeepsie, NY 12603
Attention: Jonathan A. Kaplan

Report Date: 12/30/2002
Re: Client Project ID: LM97145.40
York Project No.: 02120492 R

CT License No. PH-0723 New York License No. 10854 Mass. License No. M-CT106 Rhode Island License No. 98 EPA I.D. No. CT00106

ONE RESEARCH DRIVE STAMFORD, CT 06906 (203) 325-1371 FAX (203) 357-0166

Report Date: 12/30/2002
Client Project ID: LM97145.40
York Project No.: 02120492 R

Ecosystems Strategies, Inc.
24 Davis Avenue
Poughkeepsie, NY 12603
Attention: Jonathan A. Kaplan

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on 12/18/02. The project was identifed as your project "LM97145.40 ".

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables .

All samples were received in proper condition meeting the NELAC acceptance requirements for environmental samples except those indicated under the Notes section of this report.

All the analyses met the method and laboratory standard operating procedure requirements except as indicated under the Notes section of this report, or as indicated by any data flags, the meaning of which is explained in the attachment to this report, if applicable.

The results of the analyses, which are all reported on an as-received basis unless otherwise noted, are summarized in the following table(s).

Analysis Results

Client Sample ID			MW-1-1		MW-2-1	
York Sample ID			02120492-01		02120492-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,1-Trichloroethane			Not detected	1	Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,2-Trichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethylene			Not detected	1	Not detected	1
1,2-Dichlorobenzene			Not detected	1	Not detected	1
1,2-Dichloroethane			Not detected	1	Not detected	1
1,2-Dichloroethylene (Total)			Not detected	1	Not detected	1
1,2-Dichloropropane			Not detected	1	Not detected	1
1,3-Dichlorobenzene			Not detected	1	Not detected	1
1,4-Dichlorobenzene			Not detected	1	Not detected	1
1-Chlorohexane			Not detected	1	Not detected	1
2-Chloroethylvinyl ether			Not detected	1	Not detected	1
2-Chlorotoluene			Not detected	1	Not detected	1
4-Chlorotoluene			Not detected	1	Not detected	1

YORK

Client Sample ID			MW-1-1		MW-2-1	
York Sample ID			02120492-01		02120492-02	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Benzyl chloride			Not detected	10	Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10	Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10	Not detected	10
Bromobenzene			Not detected	1	Not detected	1
Bromodichloromethane			Not detected	1	Not detected	1
Bromoform			Not detected	1	Not detected	1
Bromomethane			Not detected	10	Not detected	10
Carbon tetrachloride			Not detected	1	Not detected	1
Chloroacetaldehyde			Not detected	10	Not detected	10
Chlorobenzene			Not detected	1	Not detected	1
Chloroethane			Not detected	10	Not detected	10
Chloroform			Not detected	1	Not detected	1
Chloromethane			Not detected	10	Not detected	10
Chloromethyl methyl ether			Not detected	1	Not detected	1
cis-1,3-Dichloropropylene			Not detected	1	Not detected	1
Dibromochloromethane			Not detected	1	Not detected	1
Dibromomethane			Not detected	1	Not detected	1
Dichlorodifluoromethane			Not detected	1	Not detected	1
Methylene chloride			Not detected	1	8 B	1
Tetrachloroethylene			Not detected	1	Not detected	1
trans-1,3-Dichloropropylene			Not detected	1	Not detected	1
Trichloroethylene			Not detected	1	Not detected	1
Trichlorofluoromethane			Not detected	1	Not detected	1
Trichloropropane			Not detected	1	Not detected	1
Vinyl chloride			Not detected	10	Not detected	10
Target Gases	EPA M18m	ppb	---	---	---	---
Ethane			Not detected	10.0	Not detected	10.0
Ethene (Ethylene)			Not detected	10.0	Not detected	10.0
Methane			Not detected	10.0	Not detected	10.0
Alkalinity-Total	SM403	mg/L	124	4.0	210	10
Total Organic Carbon	SM505B	mg/L	Not detected	1.0	Not detected	1.0

Client Sample ID			MW-8-1		F-Blank 12-16-02	
York Sample ID			02120492-03		02120492-04	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,1-Trichloroethane			Not detected	1	Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,2-Trichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethylene			Not detected	1	Not detected	1
1,2-Dichlorobenzene			Not detected	1	Not detected	1
1,2-Dichloroethane			Not detected	1	Not detected	1
1,2-Dichloroethylene (Total)			Not detected	1	Not detected	1
1,2-Dichloropropane			Not detected	1	Not detected	1
1,3-Dichlorobenzene			Not detected	1	Not detected	1
1,4-Dichlorobenzene			Not detected	1	Not detected	1

YORK

Client Sample ID			MW-8-1		F-Blank 12-16-02	
York Sample ID			02120492-03		02120492-04	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
1-Chlorohexane			Not detected	1	Not detected	1
2-Chloroethylvinyl ether			Not detected	1	Not detected	1
2-Chlorotoluene			Not detected	1	Not detected	1
4-Chlorotoluene			Not detected	1	Not detected	1
Benzyl chloride			Not detected	10	Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10	Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10	Not detected	10
Bromobenzene			Not detected	1	Not detected	1
Bromodichloromethane			Not detected	1	Not detected	1
Bromoform			Not detected	1	Not detected	1
Bromomethane			Not detected	10	Not detected	10
Carbon tetrachloride			Not detected	1	Not detected	1
Chloroacetaldehyde			Not detected	10	Not detected	10
Chlorobenzene			Not detected	1	Not detected	1
Chloroethane			Not detected	10	Not detected	10
Chloroform			Not detected	1	Not detected	1
Chloromethane			Not detected	10	Not detected	10
Chloromethyl methyl ether			Not detected	1	Not detected	1
cis-1,3-Dichloropropylene			Not detected	1	Not detected	1
Dibromochloromethane			Not detected	1	Not detected	1
Dibromomethane			Not detected	1	Not detected	1
Dichlorodifluoromethane			Not detected	1	Not detected	1
Methylene chloride			Not detected	1	Not detected	1
Tetrachloroethylene			Not detected	1	Not detected	1
trans-1,3-Dichloropropylene			Not detected	1	Not detected	1
Trichloroethylene			Not detected	1	Not detected	1
Trichlorofluoromethane			Not detected	1	Not detected	1
Trichloropropane			Not detected	1	Not detected	1
Vinyl chloride			Not detected	10	Not detected	10
Target Gases	EPA M18m	ppb	---	---	---	---
Ethane			Not detected	10.0		
Ethene (Ethylene)			Not detected	10.0		
Methane			Not detected	10.0		
Alkalinity-Total	SM403	mg/L	240	4.0	---	---
Total Organic Carbon	SM505B	mg/L	Not detected	1.0	---	---

Client Sample ID			E-Blank 12-16-02		Trip Blank 12-16-02	
York Sample ID			02120492-05		02120492-06	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
Volatiles-8021 Halogenated	SW846-8260	ug/L	---	---	---	---
1,1,1,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,1-Trichloroethane			Not detected	1	Not detected	1
1,1,2,2-Tetrachloroethane			Not detected	1	Not detected	1
1,1,2-Trichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethane			Not detected	1	Not detected	1
1,1-Dichloroethylene			Not detected	1	Not detected	1
1,2-Dichlorobenzene			Not detected	1	Not detected	1
1,2-Dichloroethane			Not detected	1	Not detected	1

YORK

Client Sample ID			E-Blank 12-16-02		Trip Blank 12-16-02	
York Sample ID			02120492-05		02120492-06	
Matrix			WATER		WATER	
Parameter	Method	Units	Results	MDL	Results	MDL
1,2-Dichloroethylene (Total)			Not detected	1	Not detected	1
1,2-Dichloropropane			Not detected	1	Not detected	1
1,3-Dichlorobenzene			Not detected	1	Not detected	1
1,4-Dichlorobenzene			Not detected	1	Not detected	1
1-Chlorohexane			Not detected	1	Not detected	1
2-Chloroethylvinyl ether			Not detected	1	Not detected	1
2-Chlorotoluene			Not detected	1	Not detected	1
4-Chlorotoluene			Not detected	1	Not detected	1
Benzyl chloride			Not detected	10	Not detected	10
Bis(2-chloroethoxy)methane			Not detected	10	Not detected	10
Bis(2-chloroisopropyl)ether			Not detected	10	Not detected	10
Bromobenzene			Not detected	1	Not detected	1
Bromodichloromethane			Not detected	1	Not detected	1
Bromoform			Not detected	1	Not detected	1
Bromomethane			Not detected	10	Not detected	10
Carbon tetrachloride			Not detected	1	Not detected	1
Chloroacetaldehyde			Not detected	10	Not detected	10
Chlorobenzene			Not detected	1	Not detected	1
Chloroethane			Not detected	10	Not detected	10
Chloroform			Not detected	1	Not detected	1
Chloromethane			Not detected	10	Not detected	10
Chloromethyl methyl ether			Not detected	1	Not detected	1
cis-1,3-Dichloropropylene			Not detected	1	Not detected	1
Dibromochloromethane			Not detected	1	Not detected	1
Dibromomethane			Not detected	1	Not detected	1
Dichlorodifluoromethane			Not detected	1	Not detected	1
Methylene chloride			Not detected	1	4 B	1
Tetrachloroethylene			Not detected	1	Not detected	1
trans-1,3-Dichloropropylene			Not detected	1	Not detected	1
Trichloroethylene			Not detected	1	Not detected	1
Trichlorofluoromethane			Not detected	1	Not detected	1
Trichloropropane			Not detected	1	Not detected	1
Vinyl chloride			Not detected	10	Not detected	10

Units Key: For Waters/Liquids: mg/L = ppm ; ug/L = ppb For Soils/Solids: mg/kg = ppm ; ug/kg = ppb

Notes for York Project No. 02120492 R

1. The MDL (Minimum Detectable Limit) reported is adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All samples were received in proper condition for analysis with proper documentation.
6. All analyses conducted met method or Laboratory SOP requirements.
7. It is noted that TOC analyses reported herein were subcontracted to EAS Labs, Watertown, CT.

Approved By: Robert Q. Bradley
Managing Director

Date: 12/30/2002

YORK

YORK
ANALYTICAL LABORATORIES, INC.
ONE RESEARCH DRIVE
STAMFORD, CT 06906
(203) 325-1371 FAX (203) 357-0166

Field Chain-of-Custody Record

0220492.

Company Name	Report To:	Invoice To:	Project ID/No.
Ecosystems Strategies	Jonathan A. Kaplan	PAM	LM97145.40

Jonathan A Kaplan/C.K.
Samples Collected By (Signature)
Jonathan A. Kaplan
Name (Printed)

Sample No.	Location/ID	Date Sampled	Sample Matrix: Water	Soil	Air	OTHER	ANALYSES REQUESTED	Container Description(s)
	MW-1-1	12-16-02	X				8021, ALKALINITY, TOTAL ORGANIC CARBON, METHANE, ETHANE, ETHINE	2-40 ML VIAL 1-AMBER, 1 250 ML PLASTIC
	MW-2-1							
	MW-8-1							
	F-BLANK-12-16-02						8021	2 40 ML VIALS
	E-BLANK-12-16-02							
	TRIP-BLANK-12-16-02							
	* NEED A+B DELIVERABLE DATA PACKAGES							
	FOR MW-1-1, MW-2-1 AND MW-8-1							

Chain-of-Custody Record

Bottles Relinquished from Lab by	Date/Time	Sample Relinquished by	Date/Time	Sample Received by	Date/Time
		C. Nider	12:30 PM 12/17/02	L Wayne	12/17 1230
Bottles Received in Field by	Date/Time	Sample Relinquished by	Date/Time	Sample Received in LAB by	Date/Time
				#	12/17 2PM 3.9C

Comments/Special Instructions

Turn-Around Time
X Standard ___ RUSH(define)

Mon Dec 30, 2002

W-14 PID = 0.0

Depth to water = 20.55

Depth to water = 20.29

Pump on Bottom @ 80'

11:05 AM

Time	PH					
11:10 am	5.34	.484	78.2	11.04	9.52	146
11:11	5.21	.478	77.3	9.96	10.11	147
11:12	5.19	.476	43.7	8.91	10.51	148
11:13	5.18	.474	39.8	8.40	10.67	141
	5.43	.472	89.0	6.96	10.59	62
11:18	7.04	.477	99.5	6.19	10.45	-10
11:19	7.56	.477	136	5.62	10.30	-27
11:20	7.78	.477	148	5.40	10.05	-40
11:22	7.99	.479	165	5.31	9.67	-44
11:23	8.05	.481	146	5.13	9.36	-45
11:25	8.08	.485	154	5.15	8.80	-47
11:27	8.12	.489	154	5.36	8.36	-47
11:29	8.12	.487	155	5.18	8.31	-48
11:31	8.13	.480	153	5.05	8.76	-46
11:33	8.10	.477	154	5.06	8.99	-45
11:35	8.08	.474	141	5.04	9.42	-46
11:37	8.10	.472	139	5.06	9.64	-47

	flow	depth
11:11	200ml = 175/min	
11:12	300	20.80
11:13 am	500	
11:16 am	725	20.96
11:18 am	850	21.02
11:20	1000	21.1
11:22	1150	
11:23	1250	21.19
11:29		21.23
11:31	1500	
11:35	1800	21.40
11:37	2000	

MW-13

9/16" socket (6-sides)

PID=0

depth to water 15.96'

depth w. pump 15.69

pump 1-2' off Bottom-
(dedicated tubing)

Time						
1:28pm	9.63	.618	8.7	9.25	10.91	-100
1:29p	9.05	.654	12.8	8.06	10.58	-126
1:30	9.27	.663	12.9	6.89	10.18	-132
1:31	9.35	.692	51.8	5.86	10.09	-133
1:32	9.38	.716	60.3	4.72	9.95	-132
1:34	9.38	.729	63.8	3.77	9.86	-135
1:35	9.44	.731	77.6	3.26	9.88	-139
1:36	9.50	.734	81.0	2.71	9.70	-143
1:37	9.57	.750	80.9	2.22	9.85	-144
1:38	9.58	.739	106.0	1.91	9.92	-147
1:40	9.62	.752	124	1.74	10.19	-149
1:42	9.67	.761	139	1.56	10.34	-152
1:43	9.69	.765	94.2	1.21	10.16	-151
1:4	9.68	.765	88.8	1.21	10.07	-153
1:48	9.70	.766	87.8	1.21	10.02	-153

1:28	400	
1:29	500	
1:30	575	16.29'
1:32	700	16.38
	1000	16.46
1:3	1150	16.53
	1300	
	1500	
1:42	1625	16.64
	2000	
1:	2200	

MW-202

PID = 0.0

Depth to water = 13.68 ft

Pump on Bottom -

TD = 143' - measured today

Time					Temp	ORP
433pm	8.97	.441	70.7	11.46	10.49	-14
	9.25	.451	72.4	6.74	10.49	-138
436	9.27	.451	71.1	5.72	10.28	-136
	9.30	.523	70.9	5.58	10.21	-135
	9.29	.544	70.8	5.43	10.13	-133
	9.29	.557	69.3	5.48	10.56	-133
	9.31	.559	62.5	5.17	10.32	-133
	9.37	.578	54.7	4.82	10.26	-135
	9.39	.587	79.1	4.36	10.24	-136
	9.41	.588	97.0	3.86	10.14	-136
4:47	9.42	.591	112	3.49	10.03	-137

	375	
4:38	650	13.34
4:40	775	
4:42	900	13.38
	1000	13.44
	1250	
	1400	13.48
	1500	13.4
	1700	13.53
Left @ 5:30 PM		

MW-202f Jan. 2, 2002

depth water = 12.03

Pump @ 54'

fracture @ 53'

10:55 A/M

Time	pH	Cond	Turb	DO	Temp	ORP
11:02	.464	895	8.91	8.08		-5 →
11:03	7.59	.470	72.8	7.57	8.55	-77
11:05	8.76	.526	82.9	7.11	9.00	-103
11:07	8.93	.523	70.9	7.21	9.25	-113
11:08	9.11	.520	77.2	7.06	9.22	-119
11:09	9.20	.538	37.8	6.51	9.15	-125
11:10	9.29	.562	35.5	5.11	9.09	-133
11:13	9.55	.608	37.4	4.66	8.52	-144
11:14	9.62	.610	35.5	4.14	8.51	-147
11:15	9.64	.609	33.8	4.01	8.55	-148
11:16	9.64	.611	33.6	3.94	8.58	-148
11:17	9.64	.610	35.0	3.74	8.62	-148
11:18	9.65	.611	33.6	3.48	8.69	-148

~~11.68~~ 12.03

11.95

	75	
11:03 am	200	
	500	
11:08	800	12.08
11:12	1000	12.12
11:14	1250	12.14
	1500	12.21
	1600	
11:18	1750	12.24

MW-9

depth to water 4.18
PID = 0.0
pump on Bottom
TD = 14' 6 3/4"

Time	pH	Cond	Turb	DO	Temp	ORP
12:52	5.54	.085	169	12.10	6.97	125
	5.12	.085	116	11.75	7.03	138
	4.90	.086	87.1	11.73	7.12	147
	4.82	.086	72.5	11.66	7.19	156
	4.66	.086	100.0	11.81	7.52	161
12:58	4.60	.085	166.	11.66	7.92	165
	4.58	.085	185	11.68	8.21	166
	4.57	.085	277	11.69	8.37	167
	4.59	.085	240	11.84	8.51	166
1:04	4.62	.086	231	11.95	8.57	164
	4.65	.085	201	12.09	8.68	163
1:07	4.66	.085	182	12.03	8.84	163
	4.66	.085	181	12.01	8.91	164
1:09	4.63	.086	111	12.20	8.95	166

		4.24'
12:52	325	4.27'
1253	500	4.27'
	700	
12:58	1500	4.29
	1750	
	2000	
1:02 pm	2400	
	2500	4.28
	2825	
	3000	
	3300	
1:07	3800	4.29'
1:10 pm	5350	4.29

MW-5

PID = 58.3 ppm
Depth to water = 3.78
Pump on Bottom
Depth to Water w/ pump 3.14'
TD = 13'2"

Time	pH	Cond	Turb	DO	Temp	ORP
3:40pm	4.84	.245	315	7.37	6.70	149
	4.94	.247	308	6.82	6.33	147
3:44	4.95	.248	306	6.44	6.32	144
	5.02	.248	300	5.71	6.30	141
	5.03	.244	233	5.53	6.44	138
	5.08	.246	200	5.56	6.42	136
3:50	5.11	.247	195	5.50	6.39	134
	5.14	.247	172	5.47	6.34	133
	5.16	.247	202	5.32	6.45	133
	5.18	.246	212	5.20	6.61	131
	5.19	.242	185	4.99	6.99	131

		4.04 A
	250 ml	
3:44	460 ml	4.14
3:47	700	
	900	4.30
3:48	1000	
3:50pm	1200	4.33
		4.38
3:53	1700	3 38
3:54	1850	

Mon Jan 6, 2003

MW-6 FID = N/A

Bridge to well

Depth to water 1.18'

Depth ~ about 8" with pump

Pump on Bottom TD=6.84'

Snowing + Methane odor

2:52 pm

Time	pH	cond	turb	DO	Temp	Orp
1256	6.	.58	19.5	2.78	7.43	55
57	6.64	.581	20.4	5.65		51
58	6.64	.581	18.0	5.41	7.43	51
59	6.67	.581	16.0	4.75	7.42	49
1:00	6.68	.581	18.4	4.51	7.42	49
1:01	6.70	.580	19.4	3.78	7.39	47
1:02	6.71	.582	15.4	3.50	7.32	47
1:03	6.72	.582	16.7	3.05	7.25	46
1:04	6.74	.582	79.0	2.93	7.20	45
1:05	6.60	.579	24.3	2.83	7.34	45
1:06	6.66	.582	74.3	2.44	8.01	48
1:07	6.71	.566	76.4	2.23	7.97	42
1:08	6.74	.569	74.5	2.12	7.88	41
1:09	6.78	.571	60.9	1.97	7.87	39
1:10	6.81	.571	64.0	1.92	7.91	37

1 min	245 ml	
2	375	
3	450	2.60 ½
4	550	
5	650	
6	735	2.96'
7	805	
8	900	
9	935	3.21'
10	1090	
11	1260	
12	1315	3.53'
13	1345	
14	1460	
15	1580	3.87

MW-11

PID = N/A

Depth to water = 5.46

Depth w. pump pump on Bottom

2:58pm 11'1"

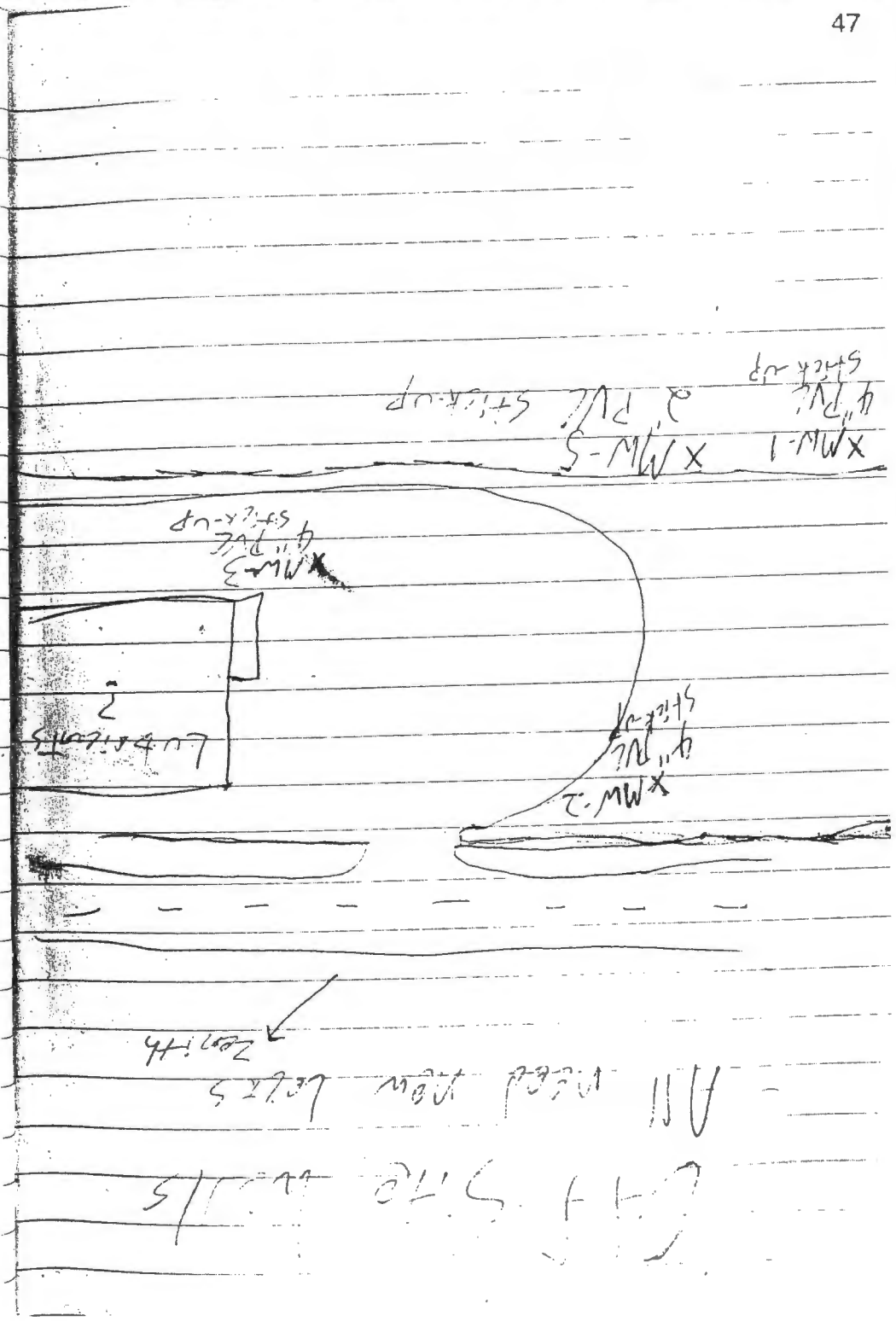
Time	pH	Cond	Turb	DO	Temp	ORP
3:01	4.55	.092	167.0	14.22	5.60	157
3:02	4.42	.092	143	11.79	6.07	169
3:03	4.25	.091	135	11.13	6.37	173
3:04	4.19	.088	161	10.30	6.84	175
3:05	4.18	.086	157	9.90	6.81	175
3:06	4.19	.083	162	9.78	7.21	175
3:07	4.21	.082	183	9.72	7.48	173
3:08	4.26	.081	192	9.64	7.78	169
3:09	4.34	.081	210	9.60	8.02	167
3:10	4.41	.081	232	9.36	8.36	164
3:11	4.45	.081	226	9.29	8.53	163

1 min		5.56'
2 min	500 ml.	5.56'
3	625	
4	760	5.56
5	940	
6	1140	
7	1345	5.57'
8	1540	
9	1730	
10	1910	5.58'
10½	2000	

Tue. Jan 7, 2003

Depth to Water

MW-1	6.51	CO_2 = <10
MW-2	9.995	CO_2 = 18
MW-202	12.31	
MW-12	15.54	
MW-14	21.73	
MW-10	3.06	
MW-13	15.09	
MW-207	2.73	
MW-7	2.58	
MW-8	7.56	CO_2<10
MW-5	4.52	
MW-204	3.45	
MW-4	3.82	
MW-203	2.81	
MW-16	4.17	
MW-3	3.91	
OFFS.to-SE	6.67	
MW-1(off site)	5.57	
MW-2(off site)	5.51	
MW-3(off site)	9.13	
MW-4	5.14	



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
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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

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Premier Environmental Services.

APPENDIX A

2815 COVERED BRIDGE ROAD, MERRICK, NEW YORK 11566
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Premier Environmental Services.

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.

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APPENDIX B

2815 COVERED BRIDGE ROAD, MERRICK, NEW YORK 11566
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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
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

U4

YORK
Analytical Laboratories, Inc.

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 UJ
MW-203F-1	02120517-02	Trichloropropane	100 U
MW-203F-1	02120517-02	Vinyl chloride	1000 U

Form 1-VOA

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 U
Trip Blank-12-18-02	02120517-04	1,1,1,2-Tetrachloroethane	1 U

YORK
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

Form 1-VOA

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
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

YORK
Analytical Laboratories, Inc.

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
F-Blank-12-18-02	02120517-05	Trichloropropane	1 U
F-Blank-12-18-02	02120517-05	Vinyl chloride	10 U

UJ

Form 1-VOA

YORK
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

YORK
Analytical Laboratories, Inc.

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
E-Blank-12-18-02	02120517-06	Trichloropropane	1 U
E-Blank-12-18-02	02120517-06	Vinyl chloride	10 U

U J

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

YORK
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

YORK
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

YORK
Analytical Laboratories, Inc.

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

YORK
Analytical Laboratories, Inc.

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
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: 03010083-05
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

YORK
Analytical Laboratories, Inc.

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
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

YORK
Analytical Laboratories, Inc.

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

YORK
Analytical Laboratories, Inc.

Form 1
Volatile Organics Analysis Data Sheet-8260

Client Sample ID
Trip Blank 1-6-03

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

Form 1-VOA

000047

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

YORK
Analytical Laboratories, Inc.

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

000054

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
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: 03010123-05
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

YORK
Analytical Laboratories, Inc.

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

000061

Premier Environmental Services.

APPENDIX C

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

YORK
ANALYTICAL LABORATORIES, INC.
ONE RESEARCH DRIVE
STAMFORD, CT 06906
(203) 325-1371 FAX (203) 357-0166

Field Chain-of-Custody Record

0212057.

Company Name	Report To:	Invoice To:	Project ID/No.
Ecosystems Strategies	Jonathan A. Kaplan	PAM	LM97145.40

Jonathan A Kaplan
Samples Collected By (Signature)
Jonathan A. Kaplan
Name (Printed)

Sample No.	Location/ID	Date Sampled	Sample Matrix: Water	Soil	Air	OTHER	ANALYSES REQUESTED	Container Description(s)
	MW-204-1	12.18.02	X				8021B HALOGANETED COMPOUNDS METHANE, ETHANE, ETHENE - TOTAL ORGANIC CARBON MANGANESE	1-AMBER, 2 40 ML VIA 2-250 ML PLASTIC
	MW-203F-1						X	X
	MW-203-1							
	TRIP BLANK - 12.18.02						8021 BHALOGANETED COMPOUNDS	2-40 ML VIALS
	F-BLANK - 12.18.02							
	E-BLANK - 12.18.02	X	X				X	
	* NEED DELIVERABLE DATA PACKAGES FOR ALL LISTED							
	AS PER DISCUSSION W/ PHIL MURPHY -JK							
	LAB WILL ADD NITRIC TO 250 ML PLASTIC FOR MANGANESE ANALYSIS							

800000

Chain-of-Custody Record

Bottles Relinquished from Lab by	Date/Time	Sample Relinquished by	12/19/02 Date/Time
Bottles Received in Field by	Date/Time	Sample Relinquished by	Date/Time

R. Van Dorsten — Sample Received by — 12/19/02 Date/Time
Sample Received in Lab by — 12/19/02 11:15 Date/Time

Comments/Special Instructions

Turn-Around Time
X Standard ___ RUSH(define)_____

4.4C

YORK
ANALYTICAL LABORATORIES, INC.
ONE RESEARCH DRIVE
STAMFORD, CT 06906
(203) 325-1371
FAX (203) 357-0166

Laboratory Chain-of-Custody Record

for York Project No. 02120517

Date: 12/19 page 1 of ___

ALL SAMPLES RECEIVED IN PROPER CONDITION: YES X NO ___*

BY: [signature] Date: 12/19

Lab Sample No.	Removed By	Date&Time	Reason (check and enter reason)		Date & Time Returned	
02120517 01→06	SS	12/27/02 10:00AM	___Extraction for ___Prep. for X Analysis for	VOA		___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed

000009

Remarks

YORK
ANALYTICAL LABORATORIES, INC.
ONE RESEARCH DRIVE
STAMFORD, CT 06906
(203) 325-1371 FAX (203) 357-0166

Field Chain-of-Custody Record

03010083

Company Name	Report To:	Invoice To:	Project ID/No.	Samples Collected By (Signature)
ESI	JONATHAN A KAPLAN	PAM Q.	LM97145.40	Jonathan A Kaplan / Z.L. – K.B.

Name (Printed): JONATHAN A KAPLAN

Sample No.	Location/ID	Date Sampled	Sample Matrix: Water	Soil	Air	OTHER	ANALYSES REQUESTED	Container Description(s)
	MW-202-1F	1-2-03	X				8021 B HALOGENATED COMPOUNDS METHANE, ETHANE, ETHENE – MANGANESE TOTAL ORGANIC CARBON	1-AMBER 4-40 ML VIAL 2-250 ML PLASTIC
	MW-9-1							
*	MW-5-1						X	X
	TRIP BLANK 1-2-03						8021 B HALOGENATED COMPOUNDS	2-40 ML VIALS
	F-BLANK 1-2-03							
	E-BLANK 1-2-03	X	X				X	X
	* NEED ASP-B	DELIVERABLE DATA	PACKAGES				FOR ~~MANASOT~~ THIS EVENT	

Chain-of-Custody Record					
Bottles Relinquished from Lab by	Date/Time	JK	1/3/03 10^50	Sample Received by	1/3/03 10^50 Date/Time
Bottles Received in Field by	Date/Time	Sample Relinquished by	Date/Time	Sample Received in LAB by	1/6/03 9:31 AM Date/Time

Comments/Special Instructions

Turn-Around Time: X Standard ___ RUSH(define)_____

YORK
ANALYTICAL LABORATORIES, INC.
ONE RESEARCH DRIVE
STAMFORD, CT 06906
(203) 325-1371 FAX (203) 357-0166

Field Chain-of-Custody Record

03010123.

Company Name	Report To:	Invoice To:	Project ID/No.
ECOSYSTEMS STRATEGIES INC.	JONATHAN A. KAPLAN	PAM Q	LM97145.40

Jonathan A Kaplan
Samples Collected By (Signature)

JONATHAN A KAPLAN
Name (Printed)

Sample No.	Location/ID	Date Sampled	Sample Matrix: Water	Soil	Air	OTHER	ANALYSES REQUESTED	Container Description(s)
	MW-6	1.6.03	X				8021 B HALOGANETED COMPOUNDS METHANE ETHANE EMENE TOTAL ORGANIC CARBON - MANGANESE	1-AMBER LIRE 2-250 ML PLASTIC 4-40 ML VIAL
	MW-11						X	
	TRIP BLANK 1.6.03						8021 B HALOGANETED COMPOUNDS	2-40 ML VIALS
	F-BLANK 1.6.03							
	E-BLANK 1.6.03	X	X				X	X
	* NEED ASP-B DELIVERABLE PACKAGE							

20000

Chain-of-Custody Record					
Bottles Relinquished from Lab by	Date/Time	C. Nider	1/7/03 1:30pm	R. Van Deusen	1/7/03 1:30 PM
Bottles Received in Field by	Date/Time	Sample Relinquished by	Date/Time	Sample Received in LAB by	Date/Time

Comments/Special Instructions

Turn-Around Time 4 DAY
X Standard ___ RUSH(define)_____

YORK
ANALYTICAL LABORATORIES, INC.
ONE RESEARCH DRIVE
STAMFORD, CT 06906
(203) 325-1371
FAX (203) 357-0166

Laboratory Chain-of-Custody Record

for York Project No. 03010123
Date: 1/8/03
page 1 of ___

ALL SAMPLES RECEIVED IN PROPER CONDITION: YES X NO ___ *
BY: [illegible] Date: 1/8/03

Lab Sample No.	Removed By	Date&Time	Reason (check and enter reason)		Date & Time Returned	
03010123-01→05	SS	1/10/03 9:00AM	___Extraction for ___Prep. for X Analysis for	VOA		___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed
			___Extraction for ___Prep. for ___Analysis for			___Consumed

Remarks

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 Photolonization 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

Aller, Linda, et al, 1991, Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells, EPA160014-891034.

Bardenhagen, Ingo and Jorg Goedicke, Investigation Methods for Contaminated Fractured Aquifer

Cohen, Andrew J. et al, 1996, Hydrogeologic Characterization of Fractured Rock Formations: A Guide for Groundwater Remediators, EPA Project Summary, EPA/800/S-96/001.

The Coalition Opposed to PCB Ash in Monroe County, Indiana (COPA), 2002, Test Report for MW-1 Packer/Pump Test of June 4, 2002, Http://www.copa.org/2002/lemonlane/4i/4I-testreport.html.

Pulido-Silva, Gonzalo and Thomas P. Ballestero, Hydraulic Tests in Fractured Bedrock Formation,

Rowe, Clem, Inflatable Packer Applications, Age Developments Pty. Ltd.

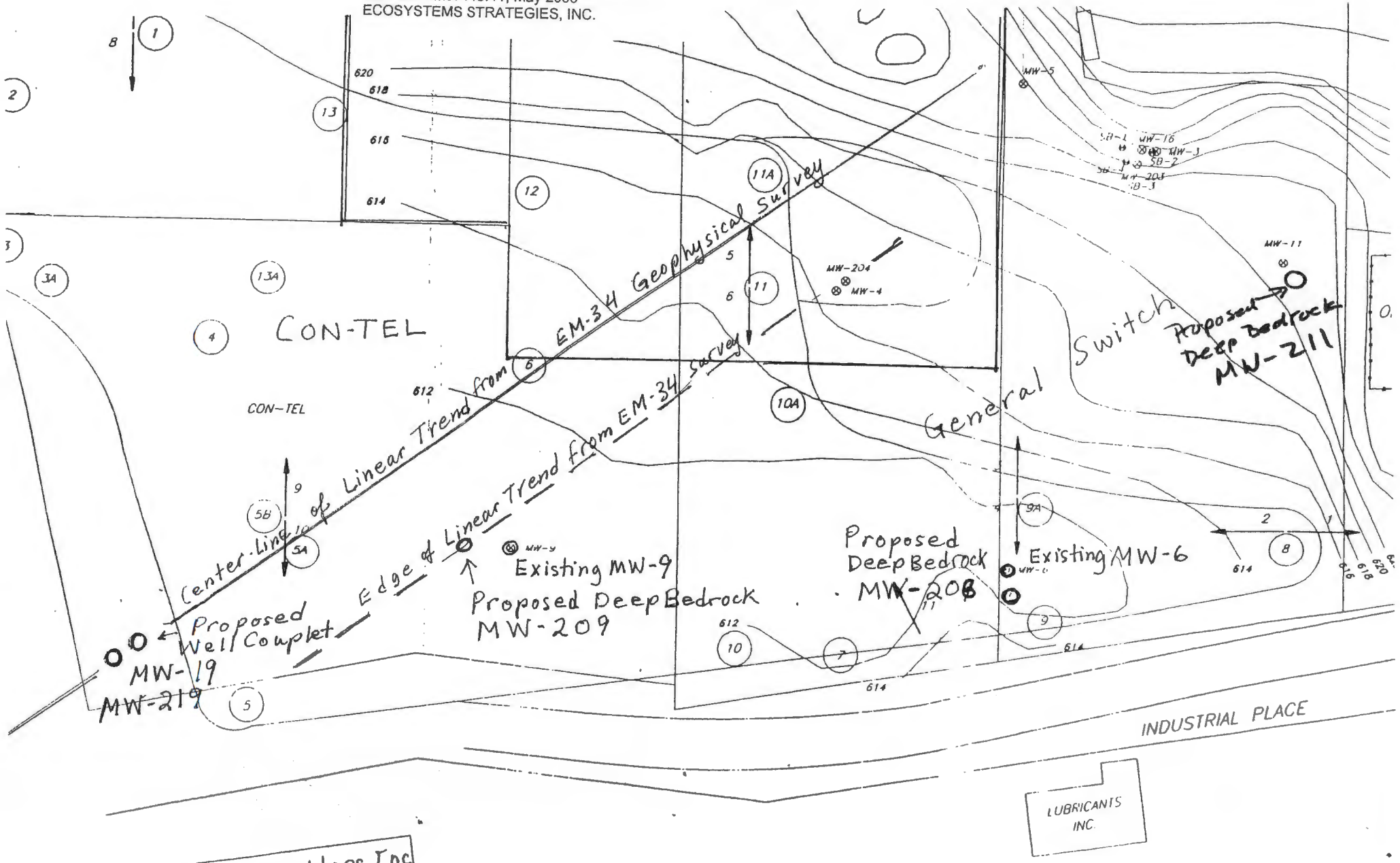
Royle, Michael, Standard Operating Procedures for Borehole Packer Testing,

Senior, Lisa A. and Daniel J. Goode, 1999, Ground-Water System, Estimation of Aquifer Hydraulic Properties, and Effects of Pumping on Ground-Water Flow in Triassic Sedimentary Rocks in and near Lansdale, Pennsylvania, USGS, Water-Resources Investigations Report 99-4228.

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)
ESI File: LM97145.41, May 2003
ECOSYSTEMS STRATEGIES, INC.



APPENDIX B

Pertinent Pages and Figures from Shakti "Site Characterization Report" February 1994

SITE CHARACTERIZATION REPORT

VOLUME I
(Report)

for

General Switch Site
Middletown, New York

February 18, 1994
Submission

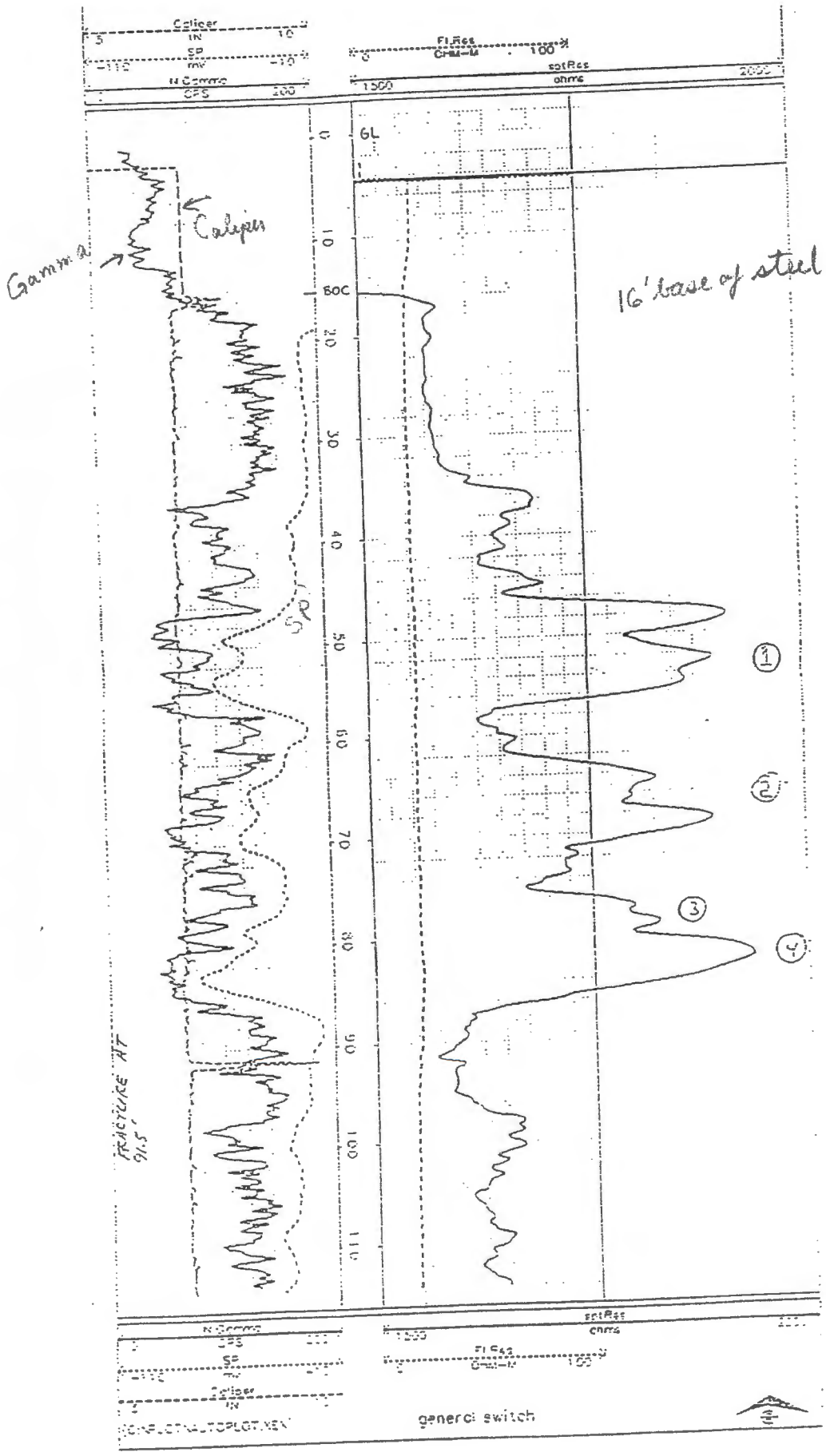
Prepared by:

Jacobs Environmental, Inc.
120 Centannial Avenue, Piscataway, New Jersey

Shakti Consultants, Inc.
185 Gatzmer Avenue, Jamesburg, New Jersey

and

Sadat Associates, Inc.
116 Village Boulevard, Princeton, New Jersey



TYPICAL GEOPHYSICAL LOG OF 200 SERIES MONITOR WELL

FIG. 2-9

packers. The dye was observed in the water discharged from the pump within the packers. This indicates that there is leakage occurring around the packers. Robert Marshalk, the manufacturer of the packers was contacted by Shakti to confirm that the packers were being used in accordance with design specifications. Marshalk indicated that Shakti was in fact using the packers properly and that the design of the packers would prevent water from leaking between the packers and the well hole wall. Based on this, it is apparent that the leakage is occurring through interconnected vertical and horizontal fractures in the formation.

4.4.2.4 MW-207 Packer Test

In order to confirm the conclusions drawn during the packer test of MW-203 regarding the suitability of performing packer tests, Shakti performed additional packer tests on MW-207 and W-33 (Contel). The packer test of MW-203 was conducted on May 20, 1993. The well was packed below the bottom of the steel casing at a depth of 32-44' and pumped at ½, 1, 1½, 2, 3 and 4 gpm. During the pumping of the 32-44' interval at 4 gpm, dye was placed in the water in the zone immediately above the packers. Within 7 minutes the dye was observed in the discharge water. The observation of the dye indicated that there is leakage in the well and therefore further packer testing of MW-207 would not yield useful data.

4.4.2.5 W-33 (Contel Well) Packer Test

As with the packer test of MW-207, the packer test of W-33 (Contel well) was performed in order to confirm the conclusions drawn regarding the reliability of packer tests data. The packer test of W-33 (Contel) was conducted on May 21, 1993. W-33 was packed below the steel casing at a depth of 62-74' and pumped at 1, 2 and 3 gpm. During the pumping of this interval at 3 gpm, dye was injected into the water in the zone immediately above the packers. Within 12 minutes the dye was observed in the discharge water. Like the packer tests of MW-203 and MW-207, the observation of the dye indicated that there is leakage through the formation and therefore no further packer testing of W-33 was performed.

4.4.3 Conclusions and Recommendations

In light of the foregoing, General Switch has re-evaluated the reliability of data obtained from the packer testing. Since evidence of leakage was observed in all of the wells that were packer tested, it is apparent that packer testing does not provide data regarding the extent of fracture zones, the amount of water yielded by specific fracture zones or the concentrations of contamination travelling through the fractures.

The packer tests, although not providing data about specific fracture zones, do provide useful information regarding the overall site geology; namely, that the shale bedrock is highly fractured in both the horizontal and vertical directions. Upon review of the caliper logs of the deep residential wells, it is clear that the older residential wells are degraded. The rock cores for the deep bedrock monitoring wells and the outcrop strike and dip analysis were reviewed and the fracturing observed in the cores for each of the bedrock wells and at the outcrop was in both the horizontal and vertical planes. These observations are consistent with the nature of the bedrock - it is a shale that is highly fractured in many directions.

The results of the packer tests indicate that there may be vertical leakage in all of the well tested. This fact combined with the caliper log data, the rock core analysis and outcrop analysis indicates that regardless of whether the packer is able to obtain a good seal, complete isolation of the suspected fracture zone will not be possible due to vertical leakage.

In light of the foregoing, one additional conclusion that can be drawn is that groundwater flow in the bedrock is most likely through numerous minor fractures instead of several major fractures. This conclusion is supported by the evaluation of the W-30 (Parella) bedrock well pump test data. A radial flow method for data evaluation was employed instead of a linear flow method, which indicates that the flow is probably through numerous interconnected minor fractures and not only major fractures.

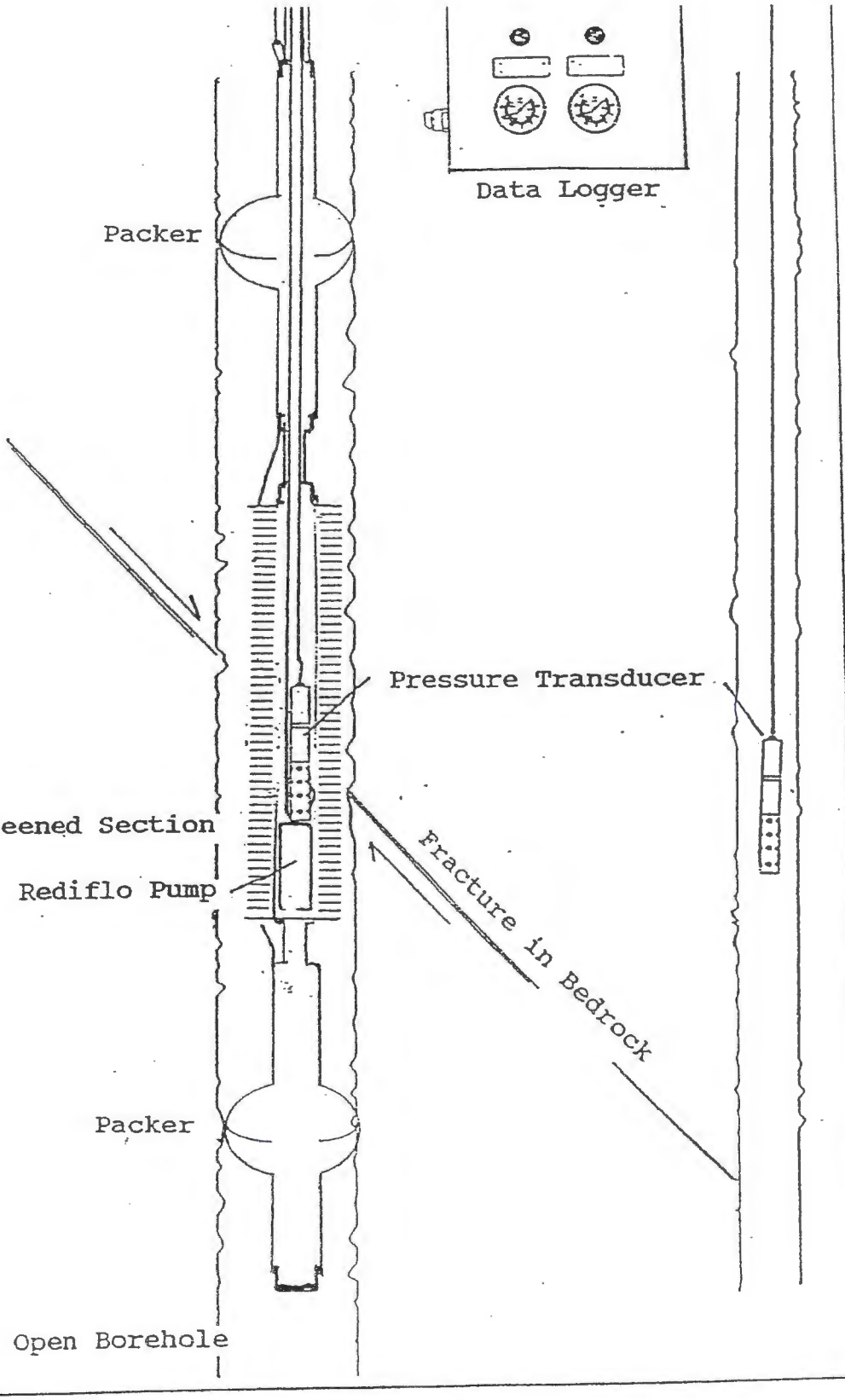


FIG. 2-10

Packer and Pressure Transducer Array in Bedrock Wells

nakti Consultants
85 Gatzmer Avenue
amesburg, NJ 08831

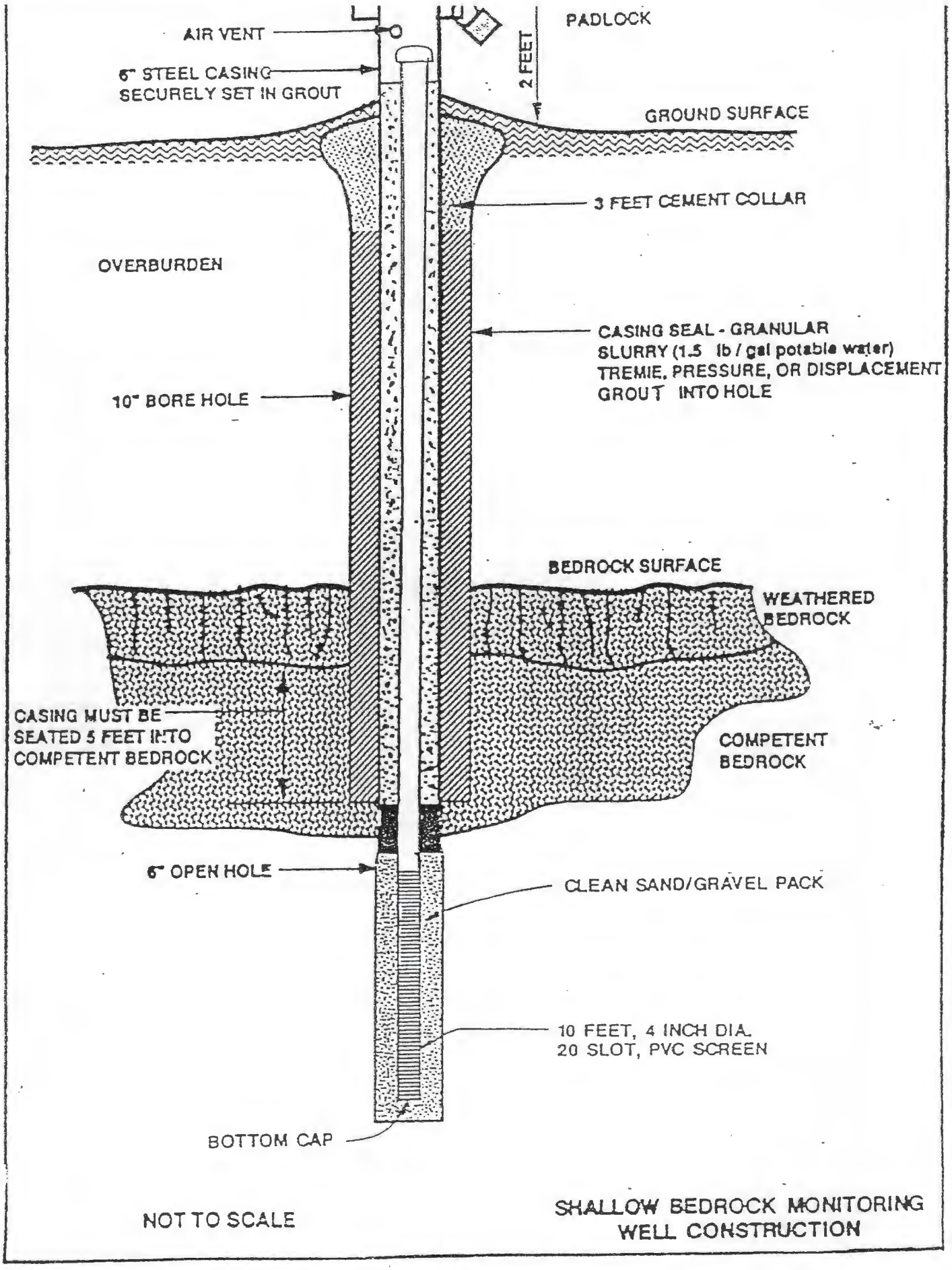

AIR VENT
6" STEEL CASING SECURELY SET IN GROUT
PADLOCK
2 FEET
GROUND SURFACE
3 FEET CEMENT COLLAR
OVERBURDEN
CASING SEAL - GRANULAR SLURRY (1.5 lb / gal potable water) TREMIE, PRESSURE, OR DISPLACEMENT GROUT INTO HOLE
10" BORE HOLE
BEDROCK SURFACE
WEATHERED BEDROCK
CASING MUST BE SEATED 5 FEET INTO COMPETENT BEDROCK
COMPETENT BEDROCK
6" OPEN HOLE
CLEAN SAND/GRAVEL PACK
10 FEET, 4 INCH DIA. 20 SLOT, PVC SCREEN
BOTTOM CAP
NOT TO SCALE
SHALLOW BEDROCK MONITORING WELL CONSTRUCTION

FIG. 2-19

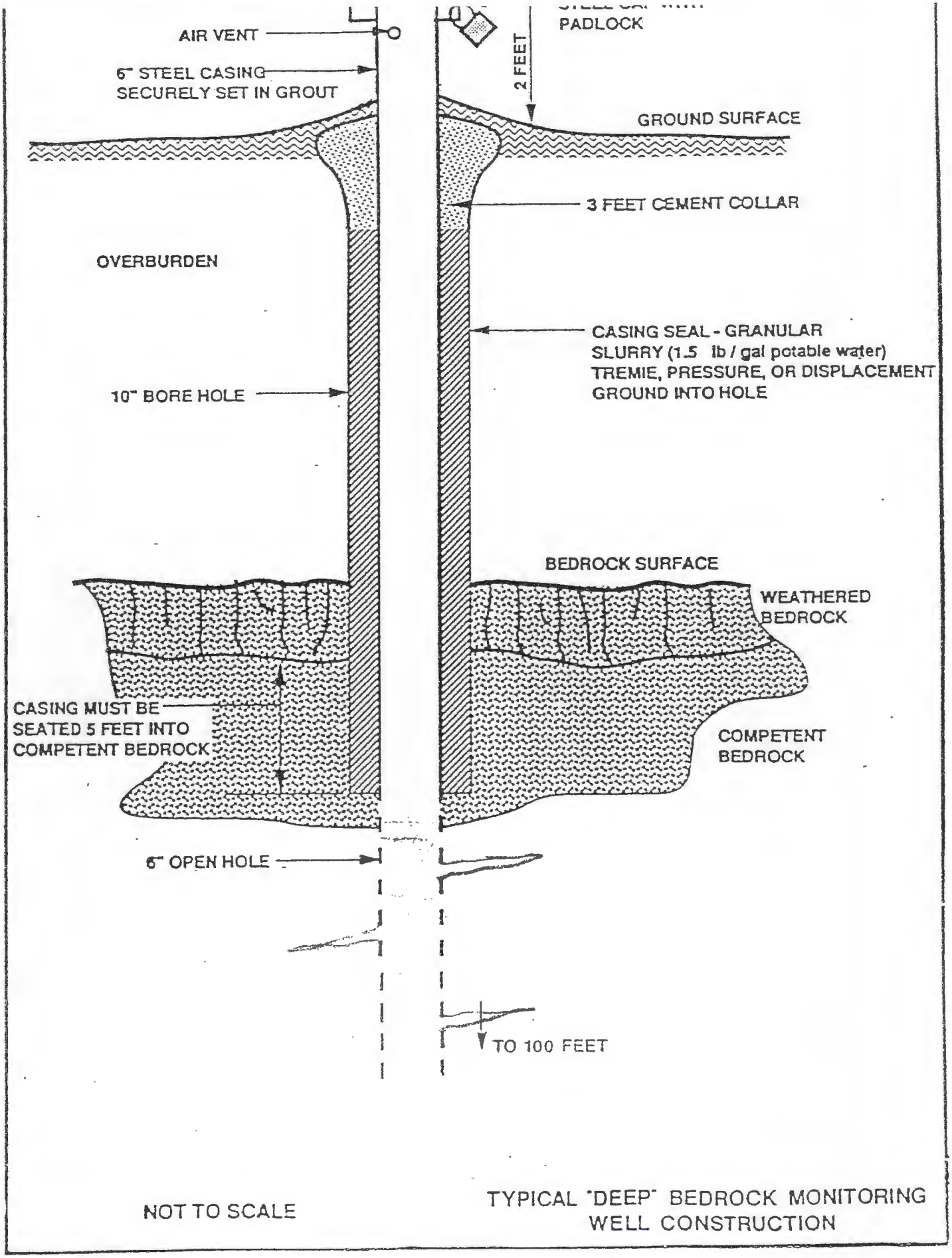

AIR VENT
6" STEEL CASING
SECURELY SET IN GROUT
PADLOCK
2 FEET
GROUND SURFACE
3 FEET CEMENT COLLAR
OVERBURDEN
CASING SEAL - GRANULAR
SLURRY (1.5 lb / gal potable water)
TREMIE, PRESSURE, OR DISPLACEMENT
GROUND INTO HOLE
10" BORE HOLE
BEDROCK SURFACE
WEATHERED
BEDROCK
CASING MUST BE
SEATED 5 FEET INTO
COMPETENT BEDROCK
COMPETENT
BEDROCK
6" OPEN HOLE
TO 100 FEET
NOT TO SCALE
TYPICAL "DEEP" BEDROCK MONITORING
WELL CONSTRUCTION

FIG. 2-21

measured and plotted to indicate the piezometric head in the shale aquifer and groundwater piezometric gradients that determine the horizontal and vertical direction of groundwater flow.

2.6.1 Installation of Monitoring Wells, 1992

There were eight existing groundwater monitoring wells at the site, MW-1 through MW-8, which were installed in 1984-85 by Fred C. Hart, as depicted in Figure 2-15. In order to more fully define the extent of groundwater contamination, a total of 14 additional soil borings and eight shallow unconsolidated monitoring wells were installed at the site during the RSAMP site investigation, as depicted in Figure 2-15.

Only flush threaded joints were used for the casing, screen and riser pipe. Field welds are prone to leakage and were not used. No glues or oils were allowed during the drilling and installation of the wells. The riser pipes were permanently marked at the survey reference points for accurate and consistent water level measurements. The wells were numbered clearly on the outer casing for easy identification. A diagram of the rock well locations and details are presented in Figure 2-16. A detailed site map of the well locations is presented in Appendix 2.

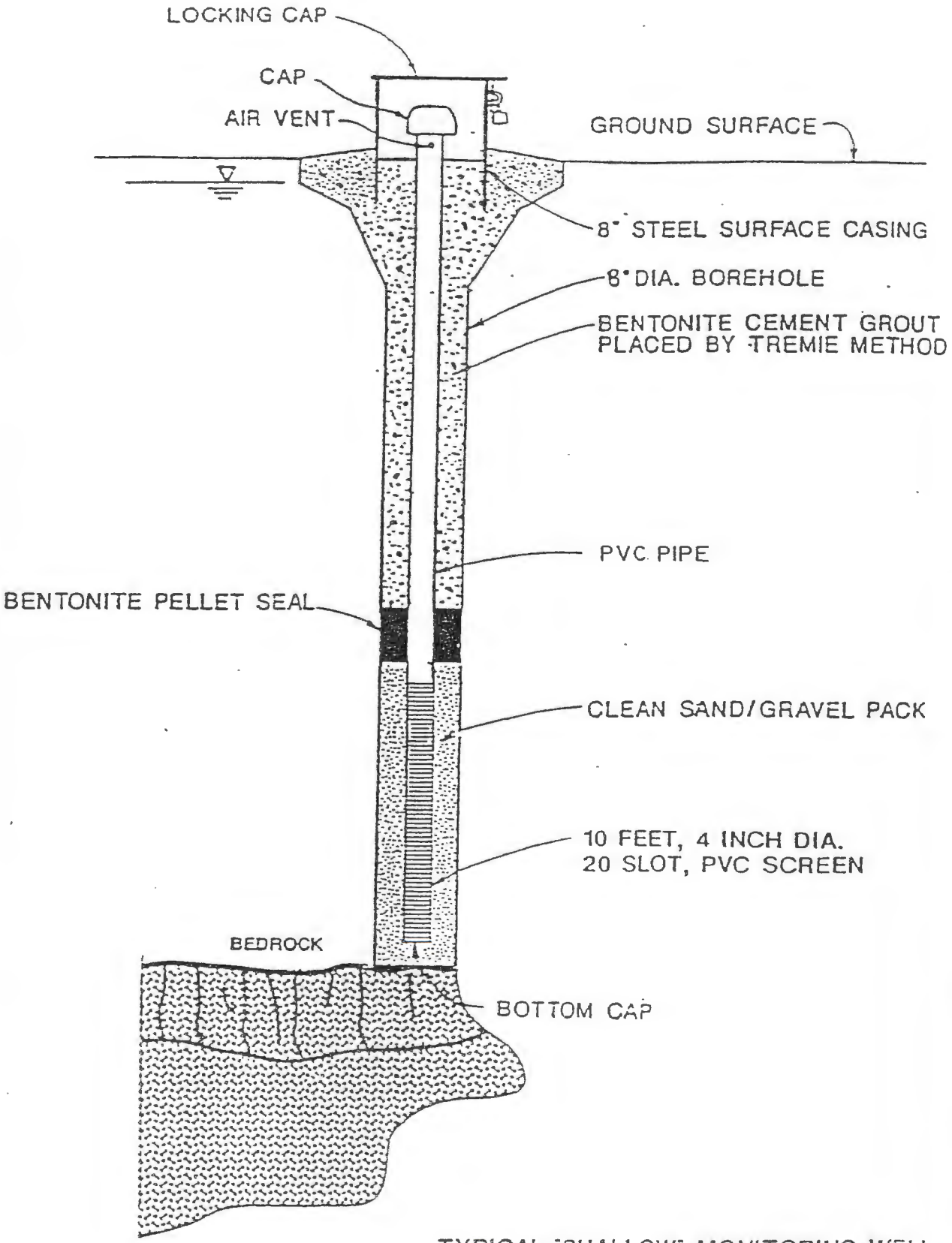
2.6.1.1 Shallow Overburden Wells

The shallow overburden wells MW-1 through MW-8 were installed in or near the soil contamination hot spots at the General Switch site and at upgradient or sidegradient locations. In some cases the wells were installed to the interface of the base of the overburden and top of bedrock, encountered between 10 and 66 feet, to monitor the groundwater quality and flow at the overburden/bedrock disconformity. The wells were constructed of galvanized steel riser pipes with stainless steel screens. These wells did not penetrate the bedrock to avoid introducing any contaminants from the overburden into the shale aquifer.

Three monitoring wells were installed during the RSAMP site investigation down-gradient of existing wells MW-3 and MW-4 and south of well W-30 (Parella). These wells were installed to the top of the bedrock at a depth of between 10 and 15 feet below the existing grade and were designated MW-9, MW-10 and MW-11.

Three monitoring wells were installed at a depth of between 15 and 23 feet, at the base of the overburden in the hot spots TP-6, TP-A and TP-D on the General Switch property and were designated MW-16, MW-17 and MW-18, respectively.

The shallow, 4-inch-diameter monitoring wells were installed to a depth of between 5 and 35 feet screened across first water at the locations indicated in Figure 2-17 in accordance with Section 4



TYPICAL "SHALLOW" MONITORING WELL CONSTRUCTION AT BASE OF GLACIAL TILL

NOT TO SCALE

FIG. 2-18

APPENDIX C

Relevant Pages from Reference: Senior, Lisa A. and Daniel J. Goode, 1999, Ground-Water System, Estimation of Aquifer Hydraulic Properties, and Effects of Plumbing on Ground-Water Flow in Triassic Sedimentary Rocks in and near Lansdale, Pennsylvania, USGS Water-Resources Investigations Report 99-4228

U.S. Department of the Interior
U.S. Geological Survey

Ground-Water System, Estimation of Aquifer Hydraulic Properties, and Effects of Pumping on Ground-Water Flow in Triassic Sedimentary Rocks in and near Lansdale, Pennsylvania

by Lisa A. Senior and Daniel J. Goode

Water-Resources Investigations Report 99-4228

prepared in cooperation with the
U.S. ENVIRONMENTAL PROTECTION AGENCY

Lemoyne, Pennsylvania
1999

were measured during pumping by use of pressure transducers; drawdowns were recorded at a specified change in water level [0.1 ft (.03 m)]. Pumping duration was approximately 1 to 2 hours; rates ranged from about 0.2 to 4 gal/min (0.76 to 15 L/min) for each test.

Specific capacity and transmissivity for each isolated zone were calculated. These results are compared to additional data, where available, on specific capacities of the open-hole wells determined from pumping rates and drawdowns during pumping for open-hole tests (Conger, 1999; Black & Veatch Waste Science Inc., 1998). The transmissivity (T) was calculated by use of the Thiem equation (Bear, 1979), assuming steady-state conditions, as follows:

$$T = \frac{Q}{2\pi\Delta h}\ln\frac{R}{r_w}, \qquad (1)$$

where Q is pumping rate,

Δh is change in head,

R is radius of influence of pumping, and

r_w is radius of well.

For analysis of data from single-well, interval-isolation tests at the three wells (Mg-80, Mg-1443, and Mg-1444), R was assumed to equal 328 ft (100 m). This method of estimating transmissivity is similar to that used by Shapiro and Hsieh (1998) for short-term, low-injection-rate, single-well, interval-isolation tests in low-permeability fractured rocks. For the tests by Shapiro and Hsieh (1998), R was assumed to equal 9.8 ft (3 m). The rate and duration of pumping of tests for the present study were greater than in the tests by Shapiro and Hsieh (1998), and it is reasonable to assume that R would be greater than 9.8 ft (3 m).

Single-well, interval-isolation aquifer tests at three wells in Lansdale (Mg-80, Mg-1444, Mg-1443) generally indicate that (1) discrete water-bearing openings are not well connected in the vertical direction and (2) specific capacity and estimated transmissivity ranged over two to three orders of magnitude in the water-bearing zones tested. No relation between depth and specific capacity or estimated transmissivity was noted in the results of tests of isolated zones in the three wells, Evidence for limited vertical hydraulic connection between water-bearing openings includes differences in static potentiometric head up to 15 ft (46 m) over 300 vertical ft (91 m) and typically small drawdown in zones adjacent to the isolated pumped zone.

The chemical and physical properties of borehole discharge were measured at various times during pumping by the USGS by the use of temperature-compensated pH and specific-conductance meters. After physical and chemical properties stabilized or after three test-interval volumes of borehole water were pumped, water samples for measurement of pH, specific conductance, temperature, and dissolved oxygen concentration were collected. Samples for VOC analysis then were collected by the USGS and forwarded to USEPA's contractor, B&V, for analysis. In single-well, aquifer-interval-isolation tests by QST Environmental, Inc., in wells Mg-624 and Mg-1639, the USGS measured chemical and physical properties and QST Environmental, Inc., collected samples for VOC analysis. The pH and specific conductance were measured by methods outlined in Wood (1976). Dissolved oxygen was measured by use of the azide modification of the Winkler titration method (American Public Health Association and others, 1976).

Well Mg-80

The open-hole well is about 270 ft (82.3 m) in depth with a few feet of soft sediment at the bottom of the well. An 8-in. (0.2-m) diameter casing extends to a depth of 138 ft bls (42.1 m). Geophysical logging (Conger, 1999) indicated water-bearing zones at 144-154 ft bls (43.4-46.9 m) and 253-258 ft bls (77.1-78.6 m) (fig. 24). Under non-pumping conditions, upward flow in the borehole was measured with inflow from fractures at 253-258 ft bls (77.1-78.6 m) and outflow through fractures at 144-154 ft bls (43.4-46.9 m). The flow pattern indicated a difference in hydraulic heads in the well. When the open-hole well was pumped at a rate of about 1 gal/min (3.785 L/min) in summer 1996, the fractures at 144-154 ft bls (43.4-46.9 m) produced most of the fluid.

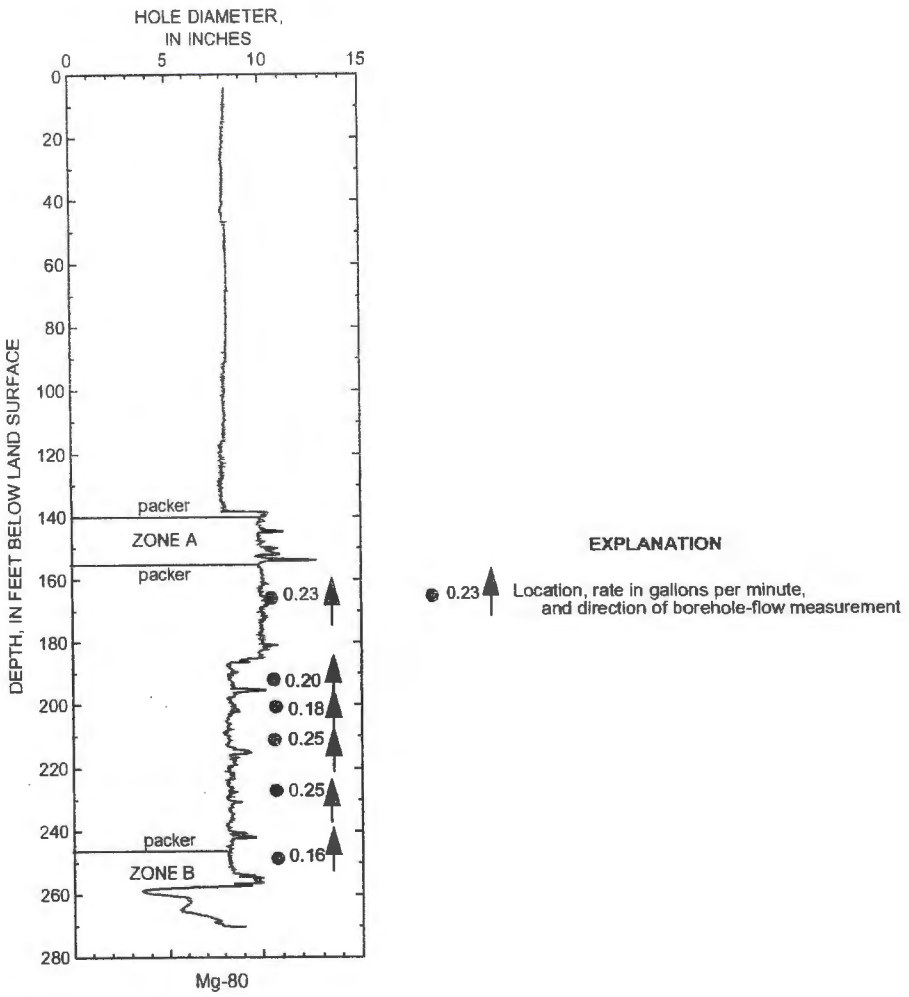


Figure 24. Depth of packers for aquifer-interval-isolation tests and direction of nonpumping flow in well Mg-80 in Lansdale, Pa.

Tests in well Mg-80 were conducted on March 24-27, 1997. Packers isolated two intervals (fig. 24) for testing, including below 246 ft bls (75 m) (zone B) and 142-157 ft bls (43.3-47.8 m) (zone A). Depth to water in the open borehole was 12.43 ft bls (3.79 m). After packer inflation, water levels were measured above, in, and for zone A below the isolated intervals. Water levels in isolated intervals stabilized in about 15 minutes after packer inflation. In test of zone A, the isolated interval was pumped at about 2 gal/min (7.6 L/min), and drawdown was observed in all three intervals (fig. 25, table 7). The observed drawdowns indicate either the packers did not isolate the interval (seal the borehole) effectively or the intervals are connected outside of the well. In the test of zone B, a single packer was placed at 246 ft bls (75 m) and the pump was placed below the packer. Drawdown was observed only in the pumped zone (fig. 26, table 7). These results indicate that the zone below 246 ft bls (75 m) is hydraulically isolated from water-bearing zones above that depth. In the test of zone A, a straddle packer with a 15-ft (4.6-m) spacing between center of packers was used to isolate the interval of 142-157 ft bls (43.3-47.8 m). The water level in the isolated interval was slightly higher than in the upper or lower intervals after packer inflation (table 7).

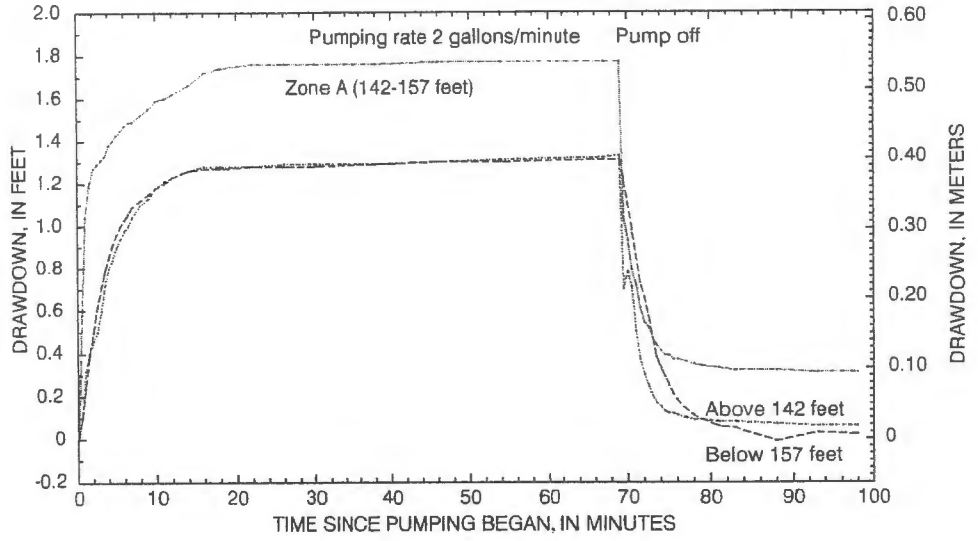


Figure 25. Drawdown as a function of time in aquifer-interval-isolation test of zone A in well Mg-80 in Lansdale, Pa., March 26, 1997.

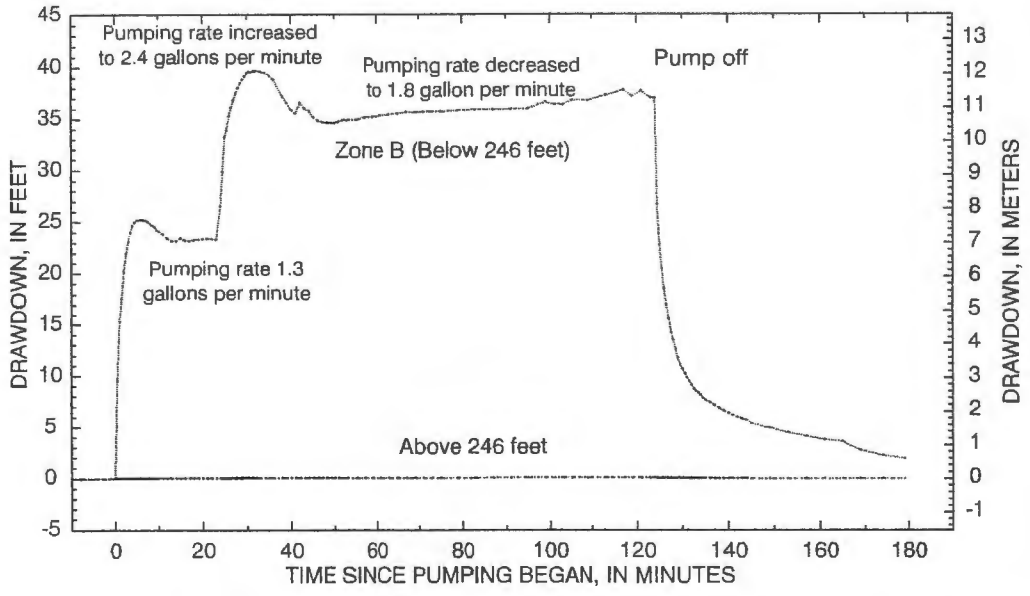


Figure 26. Drawdown as a function of time in aquifer-interval-isolation test of zone B in well Mg-80 in Lansdale, Pa., March 27, 1997.

The interval between 142-157 ft bls (43.3-47.8 m) has a greater specific capacity than the interval below 246 ft bls (75 m). These specific-capacity measurements are consistent with the heatpulse-flowmeter measurements that indicated fractures in the upper zone produced most water when the open well was pumped (Conger, 1999). The calculated specific capacity for the zone A (table 7) in this borehole probably is greater than actual specific capacity for the zone because of contribution from other intervals. The sum of specific capacities determined for isolated zones A and B is similar or somewhat less than the specific capacity determined for the open-hole tests (table 7).

Table 7. *Depths, water levels, specific capacity, and transmissivity of aquifer intervals isolated by packers and of the open hole for well Mg-80 in Lansdale, Pa., March 1997, May 1996, and September 1997*

[ft bls, feet below land surface; ft, feet; gal/min, gallons per minute; min, minutes; (gal/min)/ft, gallons per minute per foot; ft^2/d, square feet per day; NA, not applicable]

Depth of isolated intervals (ft bls)	Date of test	Pre-pumping depth to water in interval[1] (ft bls)	Depth to water in interval at end of test[2] (ft bls)	Drawdown at end of test (ft)	Pumping rate (gal/min)	Pumping duration (min)	Specific capacity [(gal/min)/ft]	Trans-missivity[3] (ft^2/d)
			Zone A (142-157 ft bls)					
Open hole	3-26-97	12.43	NA	NA	NA	NA	NA	NA
Above 142	3-26-97	11.93	13.26	1.33	NA	NA	NA	NA
142-157 (pumped)	3-26-97	11.88	13.65	1.77	2	69	[4] 1.13	[5] 238
Below 157	3-26-97	12.03	13.34	1.31	NA	NA	NA	NA
			Zone B (below 246 ft bls)					
Above 246	3-27-97	12.11	12.19	.08	NA	NA	NA	NA
Below 246 (pumped)	3-27-97	12.07	49.10	37.03	1.8	124	.037	10.2
Sum of specific capacities or transmissivities for intervals tested							1.17	248
			Open-hole tests					
Open hole	5-23-97	13.29	13.8	.51	1	79	1.96	413
Open hole	9-30-97	15.2	25.78	10.58	12	65	1.13	239

[1] Stabilized water levels after packers were inflated.
[2] Depth to water at end of pumping at a constant rate before the pump was shut off.
[3] Calculated using Thiem equation, assuming a radius of influence, r_0, of 328 feet (100 meters).
[4] Measured specific capacity for zone greater than actual specific capacity because of contributions of flow from other intervals.
[5] Calculated transmissivity for zone greater than actual transmissivity because of contributions of flow from other intervals.

Well Mg-1443

The caliper log indicated fractures at 35-41 ft bls (10.7-12.5 m), 104-106 ft bls (31.7-32.3 m), 175-178 ft bls (53.3-54.3 m), and 289-291 ft bls (88.1-88.7 m) in the 339-ft (103.3-m) deep, 8-in.- (0.2 m) diameter borehole (fig. 27). When the open-hole well was pumped at a rate of about 1 gal/min (3.785 L/min) in summer 1996, the fractures at 289-291 ft bls (88.1-88.7 m) appeared to produce most of the water and fractures at 104-106 ft bls (31.7-32.3 m) produced the second greatest amount (Conger, 1999). Under nonpumping conditions in summer 1996, minor upward flow was measured between the depths of 332 ft bls (101.2 m) and 68 ft bls (20.7 m) (Conger, 1999). This flow pattern indicates a difference in hydraulic heads between water-bearing zones in the borehole.

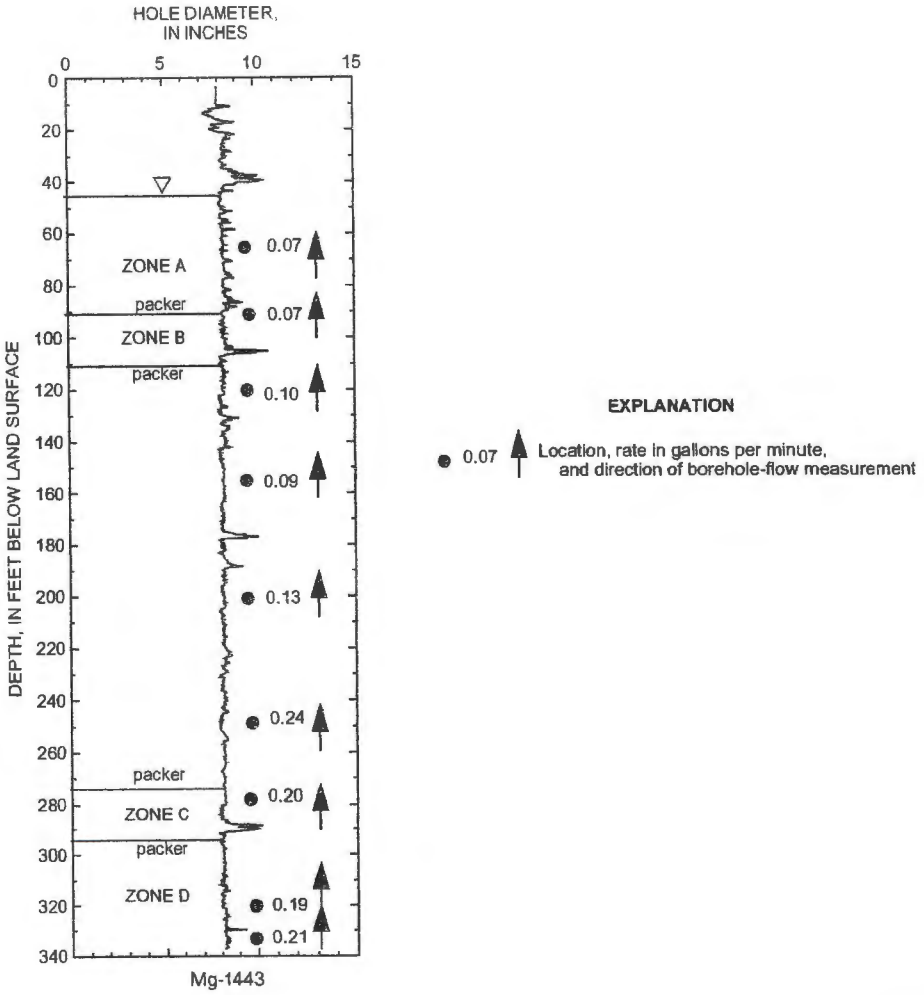


Figure 27. Depth of packers for aquifer-interval-isolation tests and direction of nonpumping flow in well Mg-1443 in Lansdale, Pa.

Tests in well Mg-1443 were conducted on April 9-11, 1997. On the basis of results of geophysical logging, four intervals were selected for testing (fig. 27) including below 296 ft bls (90.2 m) (zone D); 276-296 ft bls (84.1-90.2 m) (zone C); 90.5-110.5 ft bls (27.6-33.7 m) (zone B); and above 90.5 ft bls (27.6 m) (zone A).

In the test of zone A, the pre-pumping level in the pumped zone was about 2.4 ft (0.73 m) higher than the level in the interval immediately below (90.5-110.5 ft), indicating a downward vertical gradient between these intervals. The pre-pumping level in zone A was about 1 ft (0.3 m) lower than the interval below 110.5 ft, indicating an upward gradient between these intervals. Because testing of zone A was done soon after testing of zone B, water levels may not have fully recovered from the test of zone B. When zone A was pumped, drawdown was measured in the interval between 90.5 and 110.5 ft (27.6-33.7 m) but not in the interval below 110.5 ft (33.7 m) (fig. 28).

In the test of zone B, the pre-pumping water level in the isolated interval was almost equal to the level in the overlying interval and 0.52 ft (0.16 m) lower than the level in the underlying interval zone; the latter head difference was similar to the head difference [0.36 ft (0.11 m)] between the isolated zone C and the interval above zone C (table 8). When zone B was pumped, no drawdown was measured in the underlying interval, and about 1 ft (0.3 m) of drawdown was measured in the overlying interval (fig. 29), indicating some hydraulic connection between zone B and the interval above zone B.

In the test of zone C, the water level in the isolated interval before pumping was 4.79 ft (1.46 m) lower than the level in the underlying interval and 0.56 ft (0.17 m) higher than the level in the overlying interval, also indicating an upward vertical gradient. When pumped, small but measurable drawdown in intervals above and below zone C were observed (fig. 30), suggesting an incomplete seal by packers or hydraulic connection outside the borehole.

In the test of zone D, the water level in the isolated interval before pumping was 9.07 ft (2.76 m) higher than in the interval above 296 ft bls (90.2 m), indicating an upward vertical gradient. When zone D was pumped at a rate of about 0.2 gal/min (0.76 L/min), a large drawdown was observed in the pumped interval and very little drawdown was observed in the overlying interval (fig. 31). Zone D appeared to be hydraulically isolated from other intervals and to produce little water. Thus, water-bearing zones near the bottom of the well appear hydraulically isolated from the water-bearing zones near the top of the well.

The calculated specific capacities for zones A and C are lower than the specific capacity of zone B (table 8), which is consistent with the relative yields of these zones determined by heatpulse-flowmeter measurements while pumping (Conger, 1999). The specific capacity of zone D determined from the isolated-interval tests is probably higher than the actual specific capacity. In addition to the apparent hydraulic connection between zone D and adjacent intervals, the short duration of pumping and variable pumping rates may have affected the test. Specific capacity commonly tends to decrease with increases in pumping time. The sum of specific capacities of individual isolated zones is greater than the specific capacity determined for the open borehole in summer 1996 (Conger, 1999), possibly because of the over-estimated specific capacity of zone D (table 8).

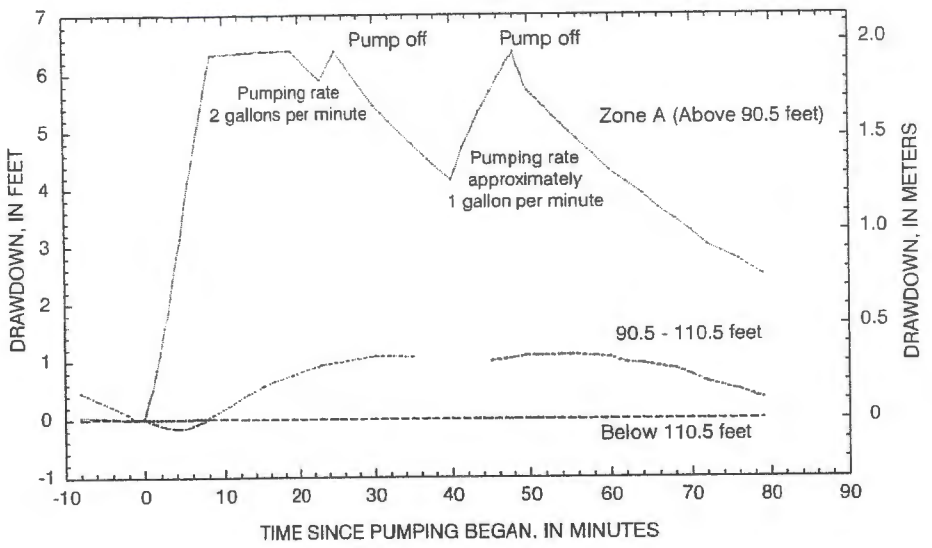


Figure 28. Drawdown as a function of time in aquifer-interval-isolation test of zone A of borehole Mg-1443 in Lansdale, Pa., April 11, 1997.

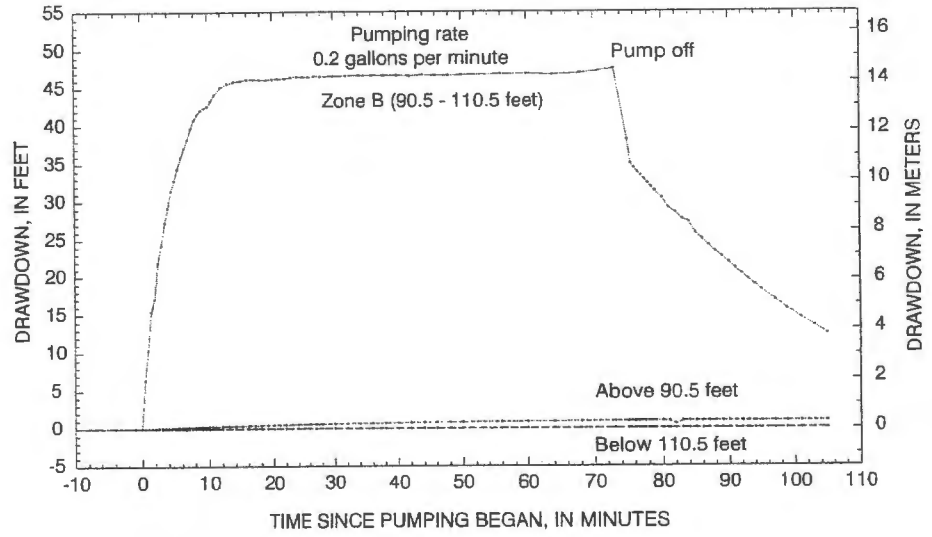


Figure 29. Drawdown as a function of time in aquifer interval-isolation test of zone B of borehole Mg-1443 in Lansdale, Pa., April 11, 1997.

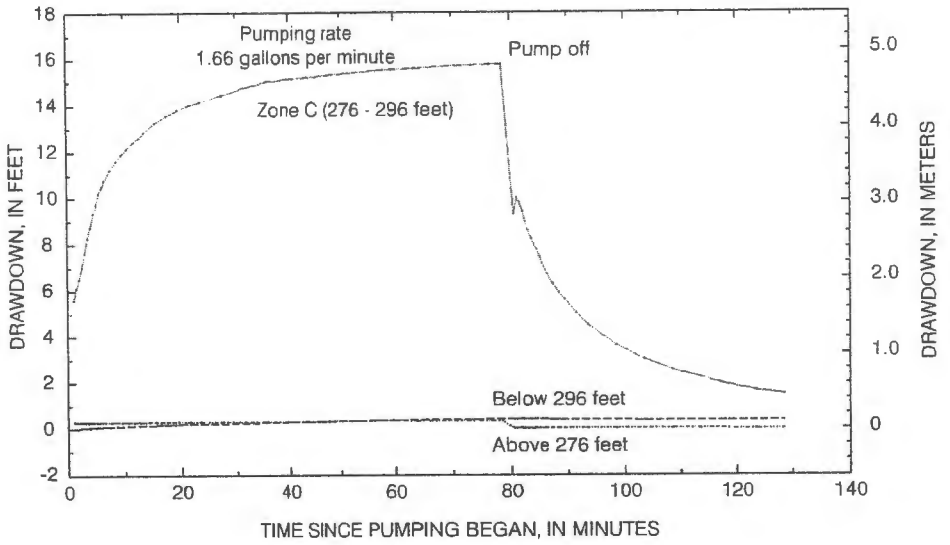


Figure 30. Drawdown as a function of time in aquifer-interval-isolation test of zone C of borehole Mg-1443 in Lansdale, Pa., April 10, 1997.

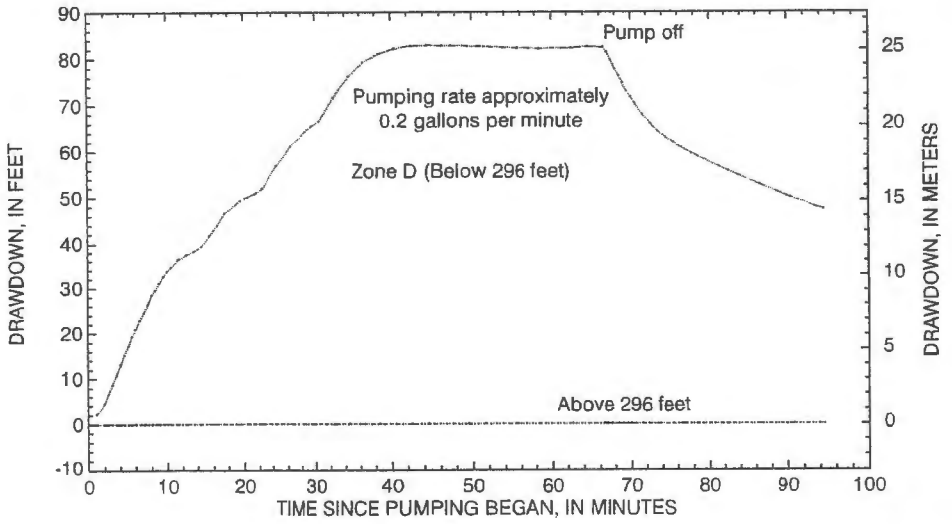


Figure 31. Drawdown as a function of time in aquifer-interval-isolation test of zone D of borehole Mg-1443 in Lansdale, Pa., April 9, 1997.

Table 8. Depths, water levels, specific capacity, and transmissivity of aquifer intervals isolated by packers and of the open hole for well Mg-1443 in Lansdale, Pa., April 1997, May 1996, and October 1997

[ft bls, feet below land surface; ft, feet; gal/min, gallons per minute; min, minutes; (gal/min)/ft, gallons per minute per foot; NA, not applicable]

Depth of isolated interval (ft bls)	Date of test	Pre-pumping depth to water in zone[1] (ft bls)	Depth to water in zone at end of test[2] (ft bls)	Drawdown at end of test (ft)	Pumping rate (gal/min)	Pumping duration (min)	Specific capacity [(gal/min/ft]	Trans-missivity[3] (ft^2/d)
			Zone A (above 90.5 ft bls)					
Above 90.5 (pumped)	4-11-97	42.90	49.27	6.37	[4] 1	21	[5] 0.16	[6] 34.4
90.5 - 110.5	4-11-97	45.29	46.34	1.05	NA	NA	NA	NA
Below 110.5	4-11-97	41.91	41.91	0	NA	NA	NA	NA
			Zone B (90.5-110.5 ft bls)					
Above 90.5	4-11-97	42.39	43.32	.93	NA	NA	NA	NA
90.5 - 110.5 (pumped)	4-11-97	42.41	89.95	47.54	.2	73	.004	.86
Below 110.5	4-11-97	41.89	41.91	.02	NA	NA	NA	NA
			Zone C (276-296 ft bls)					
Above 276	4-10-97	42.40	42.72	.32	NA	NA	NA	NA
276 - 296 (pumped)	4-10-97	42.04	57.80	15.76	1.7	78.5	.108	22.6
Below 296	4-10-97	37.25	37.65	.40	NA	NA	NA	NA
			Zone D (below 296 ft bls)					
Above 296	4-9-97	41.95	42.00	.05	NA	NA	NA	NA
Below 296 (pumped)	4-9-97	32.88	115.43	82.55	.2	65	.002	.54
Sum of specific capacities or transmissivities for zones tested							.274	58.4
			Open hole tests					
Open hole	5-22-97	42.09	47.35	[7] 5.26	1	98	.19	39.8
Open hole	10-23-97	51.61	94.2	42.59	5.5	150	.13	26.9

[1] Stabilized water levels after packers were inflated.

[2] Depth to water at end of pumping at a constant rate before pump was shut off.

[3] Calculated using Thiem equation, assuming radius of influence, r_0, is 328 feet (100 meters).

[4] Estimated time-weighted average of variable pumping rates ranging from 0.18 to 2.2 gallons/minute.

[5] Calculated specific capacity for zone greater than actual specific capacity because of contributions of flow from other intervals, short duration of pumping, and variable pumping rates.

[6] Calculated transmissivity for zone greater than actual transmissivity because of contributions of flow from other intervals, short duration of pumping, and variable pumping rates.

[7] Drawdown did not stabilize during this test.

Well Mg-1444

Logging of well Mg-1444 identified producing fractures and vertical hydraulic head differences (Conger, 1999). The caliper log indicated major fractures at 70-72 ft bls (21.3-21.9 m), 138-141 ft bls (42.1-43 m), 153 ft bls (46.6 m), 260-265 ft bls (79.2-80.8 m) and numerous minor fractures along the open interval of the 294-ft (89.6-m) deep, 6-in.- (0.15 m) diameter borehole (fig. 32). During heatpulse-flowmeter measurements of the borehole under nonpumping conditions in summer 1996, upward borehole flow of about 1 gal/min (3.785 L/min) was measured, with inflow through fractures below 270 ft bls (82.3 m), at 260-265 ft bls (79.2-80.8 m), and possibly at 138-141 ft bls (42.1-43 m), and outflow through fractures at 70-72 ft bls (21.3-21.9 m). The observed upward flow indicated a difference in hydraulic heads in the borehole.

Tests in well Mg-1444 were conducted on April 3-7, 1997. On the basis of results of geophysical logging, five intervals were selected for testing (fig. 32) including below 268 ft bls (81.7 m) (zone E); 248-269 ft bls (75.6-82 m) (zone D); 136.5-157.5 ft bls (41.6-48 m) (zone C); 64-85 ft bls (19.5-25.9 m) (zone B); and above 64 ft bls (19.5 m) (zone A).

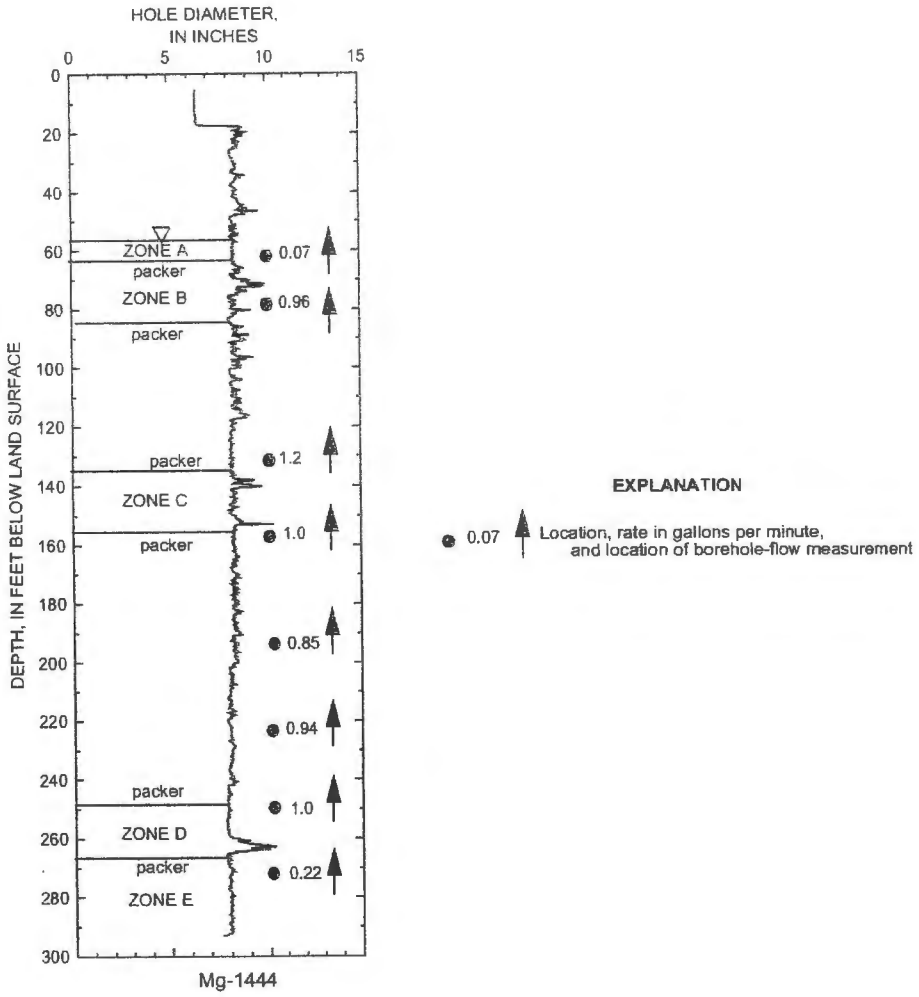


Figure 32. Depth of packers for aquifer-interval-isolation tests and direction of nonpumping flow in well Mg-1444 in Lansdale, Pa.

In the test of zone A, the pre-pumping water level in zone A was 0.28 ft (0.9 m) above the level in the interval between 64-85 ft bls (19.5-25.9 m) and 14.1 ft bls (4.30 m) lower than in the interval below 85 ft bls (25.9 m), similar to head differences measured in the test of zone B. Pumping of zone E was short in duration and at small, variable rates because the zone produced little water and dewatered rapidly. Little drawdown was measured in the interval immediately underlying zone E, and no drawdown was measured in the interval below 85 ft bls (25.9 m) **(fig. 33).**

In the test of zone B, the pre-pumping water level in zone B was 1.01 ft (0.31 m) lower than the level in the overlying interval and 12.12 ft (3.69 m) lower than the level in the underlying interval; these head differences indicate a downward vertical gradient from above and upward vertical gradient from below the isolated interval. Geophysical logging indicated fractures at 70-72 ft bls (21.3-21.9 m) were receiving, consistent with the lower heads measured in zone B compared to adjacent intervals. When zone B was pumped, gradual drawdown of up to 3 ft (0.91 m) in the interval above zone B and minor drawdown in the interval below zone B were measured **(fig. 34).** These results indicate leakage around packers or hydraulic connection outside the borehole between the zone B and the overlying interval and near hydraulic isolation between zone B and the underlying interval.

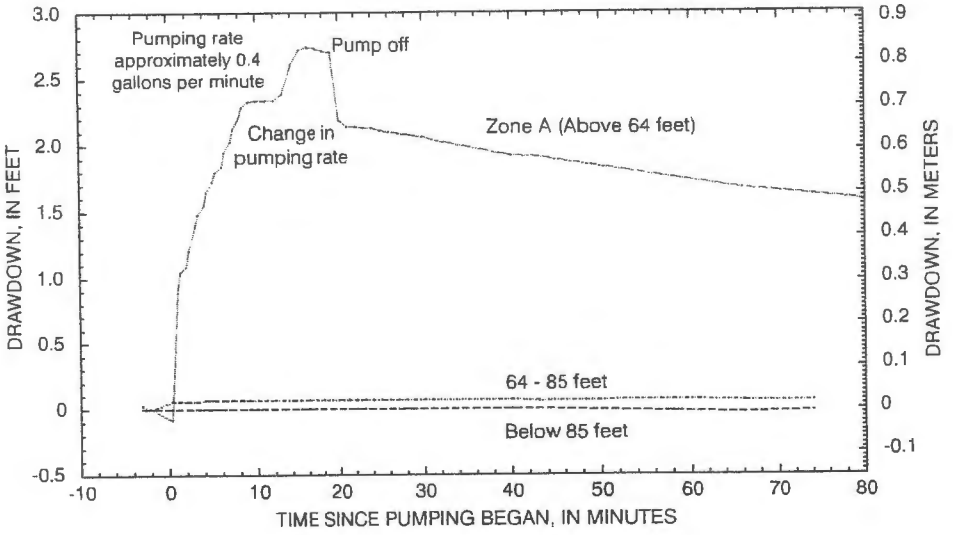


Figure 33. Drawdown as a function of time in aquifer-interval isolation test of zone A of borehole Mg-1444 in Lansdale, Pa., April 7, 1997.

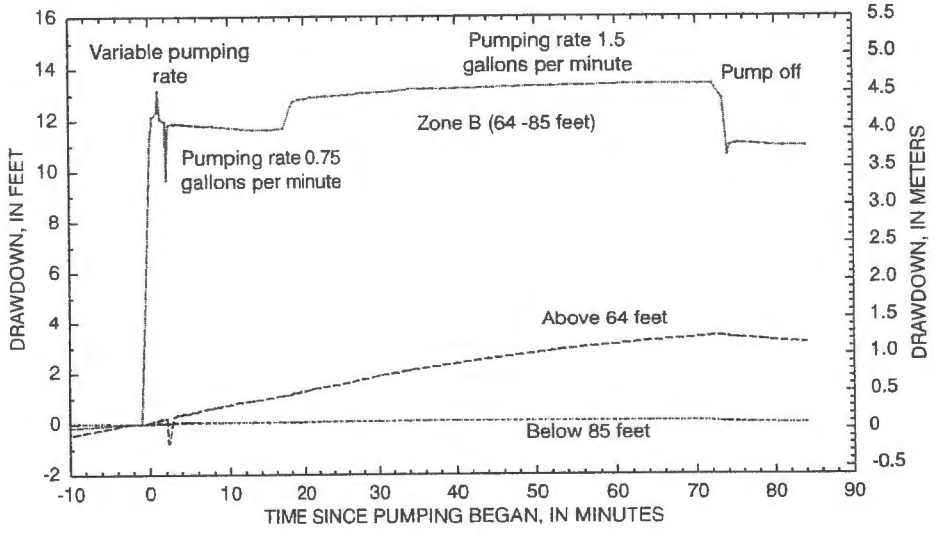


Figure 34. Drawdown as a function of time in aquifer-interval isolation test of zone B of borehole Mg-1444 in Lansdale, Pa., April 4, 1997.

In the test of zone C, the pre-pumping water level in zone C was 16.71 ft (5.09 m) higher than the level in the overlying interval and 1.06 ft (0.32 m) lower than the level in the underlying interval. These head differences are consistent with the upward flow measured with the heatpulse-flowmeter at 160 ft bls (48.8 m) and 130 ft bls (39.6 m) in summer 1996 (Conger, 1999). When zone C was pumped, very little drawdown was measured in the interval above zone C and virtually no drawdown was measured in the interval below zone C (fig. 35), suggesting hydraulic isolation between these intervals.

In the test of zone D, the pre-pumping water level in the isolated interval was 15.35 ft (4.68 m) higher than in the level in the overlying interval and 0.88 ft (0.27 m) higher than the level in the underlying interval. These head differences indicate upward and downward vertical gradients between zone D and adjacent intervals. The upward vertical gradient is consistent with the upward flow measured earlier with the heatpulse flowmeter at and above 256 ft bls (78 m) (Conger, 1999). Drawdown of more than 2 ft (0.61 m) was measured in the interval below zone D when zone D was pumped (fig. 36). These results suggest leakage around packers or a hydraulic connection outside the borehole between the isolated zone D and the underlying interval. In the test of zone D, little drawdown measured in the overlying interval indicates that zone D and the overlying interval were hydraulically isolated.

In the test of zone E, the pre-pumping water level in zone E was 6.45 ft (1.97 m) lower than the level in the overlying interval. Although upward flow was observed during heatpulse-flowmeter measurements in summer 1996, the observed head differences for zone E in April 1997 indicate a downward vertical gradient between the isolated interval and the overlying interval. Drawdown of less than 1 ft was measured in the interval above zone E during pumping of zone E (fig. 37, table 9), suggesting either leakage around packers or a hydraulic connection outside the borehole similar to the test results of zone D.

The total specific capacity of 0.89 (gal/min)/ft [11.1 (L/min)/m] determined from the interval-isolation tests was less than the specific capacity of 1.56 (gal/min)/ft [19.4 (L/min)/m] determined from an open-hole test (table 9). Results of heatpulse-flowmeter measurements in summer 1996 suggest that the zone between 248-269 ft bls (75.6-82 m) is the most productive (Conger, 1999), which is consistent with the results of the interval-isolation tests.

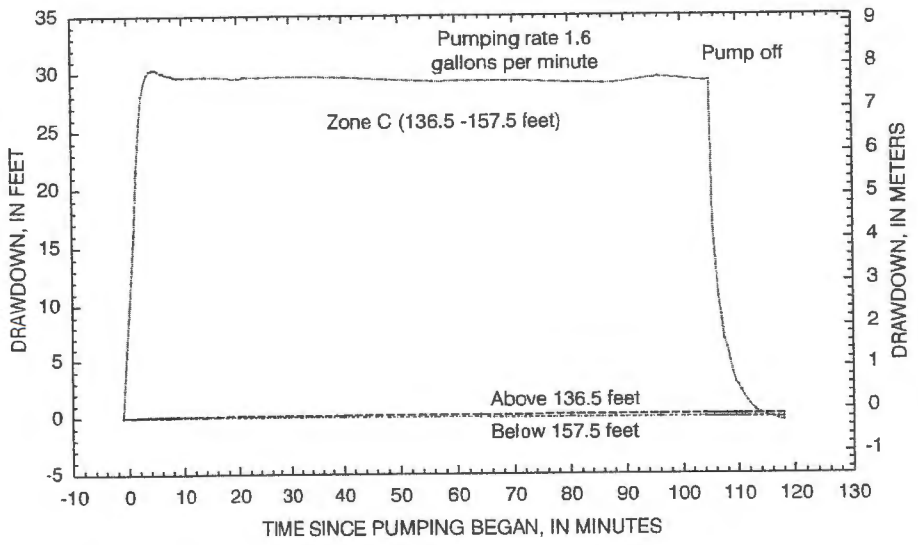


Figure 35. Drawdown as a function of time in aquifer-interval-isolation test of zone C of borehole Mg-1444 in Lansdale, Pa., April 4, 1997.

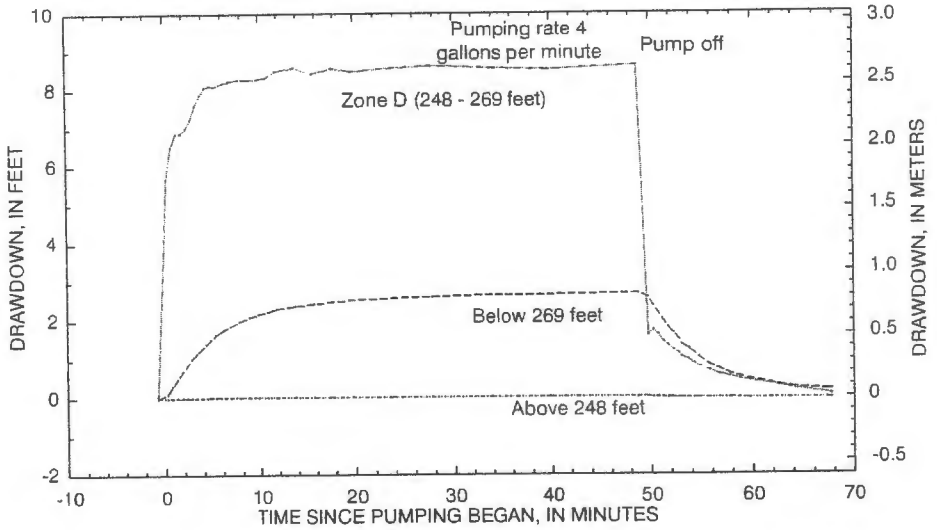


Figure 36. Drawdown as a function of time in aquifer-interval-isolation test of zone D of borehole Mg-1444 in Lansdale, Pa., April 3, 1997.

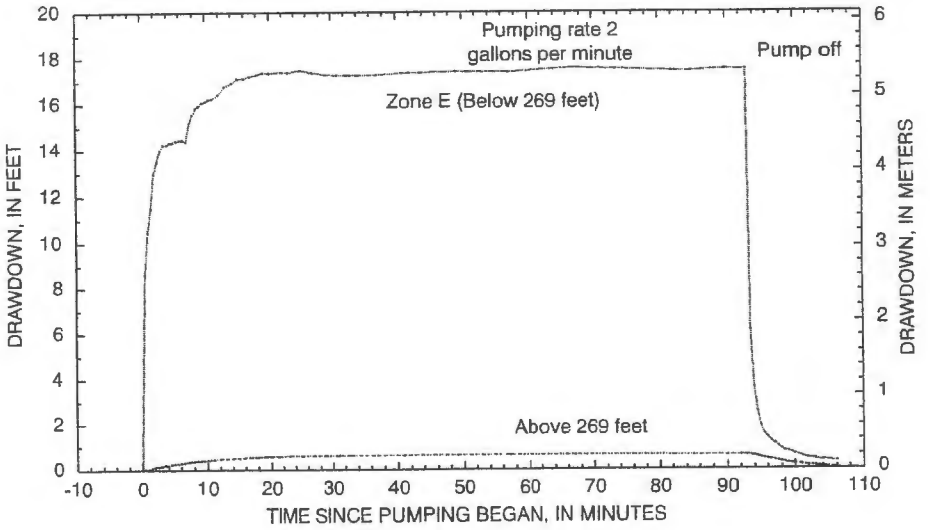


Figure 37. Drawdown as a function of time in aquifer-interval-isolation test of zone E of borehole Mg-1444 in Lansdale, Pa., April 3, 1997.

Table 9. *Depths, water levels, specific capacity, and transmissivity of aquifer intervals isolated by packers and of the open hole for well Mg-1444 in Lansdale, Pa., April 1997 and October 1997*

[ft bls, feet below land surface; ft, feet; gal/min, gallons per minute; min, minutes; (gal/min)/ft, gallons per minute per foot; ft^2/d, square feet per day; NA, not applicable]

Depth of isolated zone in borehole (ft bls)	Date of test	Pre-pumping depth to water in interval[1] (ft bls)	Depth to water in interval at end of test[2] (ft bls)	Drawdown (ft)	Pumping rate (gal/min)	Pumping duration (min)	Specific capacity [(gal/min)/ft]	Trans-missivity[3] (ft^2/d)
			Zone A (above 64 ft bls)					
Above 64 (pumped)	4-7-97	56.34	59.04	2.7	0.4	19	0.15	32.5
64-85	4-7-97	56.62	57.32	.7	NA	NA	NA	NA
Below 64	4-7-97	42.52	42.52	0	NA	NA	NA	NA
			Zone B (64-85 ft bls)					
Above 64	4-4-97	54.31	57.78	3.47	NA	NA	NA	NA
64-85 (pumped)	4-4-97	55.32	68.72	13.40	1.5	72	[4] .11	[5] 24.1
Below 85	4-4-97	43.20	43.31	.11	NA	NA	NA	NA
			Zone C (136.5-157.5 ft bls)					
Above 136.5	4-4-97	58.15	58.38	.24	NA	NA	NA	NA
136.5-157.5 (pumped)	4-4-97	41.44	70.73	29.29	1.67	105	.057	12.5
Below 157.5	4-4-97	40.38	40.36	-.02	NA	NA	NA	NA
			Zone D (248-269 ft bls)					
Above 248	4-3-97	54.58	54.60	.02	NA	NA	NA	NA
248 - 269 (pumped)	4-3-97	39.23	47.85	8.62	4	49	.46	102
Below 269	4-3-97	40.11	42.81	2.7	NA	n	NA	NA
			Zone E (below 268 ft bls)					
Above 268	4-3-97	41.54	42.12	.61	NA	NA	NA	NA
Below 268 (pumped)	4-3-97	47.99	65.50	17.51	2	93	.11	25.1
Sum of specific capacities or transmissivities for zones tested							.89	196
			Open-hole tests					
Open hole	10-1-97	58.8	65.85	7.05	11	130	1.56	342

[1] Stabilized water levels after packers were inflated.

[2] Depth to water at end of pumping at a constant rate before pump was shut off.

[3] Calculated using Thiem equation, assuming radius of influence, r_0, is 328 feet (100 meters).

[4] Calculated specific capacity for zone greater than actual specific capacity because of contributions of flow from other intervals.

[5] Calculated transmissivity for zone greater than actual transmissivity because of contributions of flow from other intervals.