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POST REMEDIATION ENVIRONMENTAL MONITORING PROGRAM - MACHIAS GRAVEL PIT SITE

MACHIAS, NEW YORK

12/02

ENVIRONMENTAL CONSULTATION & REMEDIATION

KRIKAU PYLES RYSIEWICZ AND ASSOCIATES, INC.

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POST REMEDIATION ENVIRONMENTAL MONITORING PROGRAM - MACHIAS GRAVEL PIT SITE

MACHIAS, NEW YORK

PREPARED BY:

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December 12, 2002

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1.0 INTRODUCTION

1.1 Site Description/History

The Machias Gravel Pit site is located on Very Road approximately 2 miles west of the Town of Machias, New York in Cattaraugus County. The site owned by the Town of Machias and is approximately 20-acres in size. It consists of an active gravel pit operation in the southern portion of the site and an inactive gravel pit in the northern portion (Figure 1). The inactive gravel pit was reportedly used for the storage of approximately 600 drums of waste material from the former Motorola, Inc. (Motorola) plant in Arcade, New York between March and September of 1978. There are currently no drums remaining on site. The drums were suspected to contain wastes such as epoxy resins, acids, flammable and non-flammable solvents and cutting oils. The drummed wastes were allegedly stacked on the ground surface along the inactive gravel pit wall. Based on available background information, it is estimated that the contents of approximately 300 drums were released directly on the ground surface. The oils received at the site were reportedly spread on local roads for dust control by town personnel.

The New York State Department of Environmental Conservation (NYSDEC) initiated an investigation of the site in 1985. In 1986 and 1987, approximately 184 drums were removed from the site for proper disposal by the Town of Machias, under the direction/oversight of the NYSDEC. No drums remained on site after the removal. In 1988, the NYSDEC documented impacts to ground water beneath the site. The compounds of concern were trichloroethene (TCE) and 1,1,1-trichloroethane (TCA).

In 1990, Motorola voluntarily assumed responsibility for completing the site investigation and subsequent remediation in conjunction with the Town of Machias. Two phases of site investigation work were completed resulting in the following conclusions:

- There were no buried drums on the site. The source removal performed by the Town of Machias was complete.

- The inactive gravel pit was confirmed to be the source area of ground water impacts.
- There were little to no residual impacts of TCE and TCA remaining in the unsaturated zone soils.
- Ground water impacts were limited to TCE and TCA with the impacted ground water plume extending approximately 1,000 feet downgradient of the source area with a curvilinear trend to the east-notheast.
- The impacted ground water plume was discharging to an unnamed tributary to Ischua Creek. There were no ground water impacts detected east of the tributary.
- There were no ecological risks associated with modeled, worst-case estimates of the impacted ground water plume discharge to the tributary.

Based on the results of the site investigation, a feasibility study (FS) was completed for the site. The selected/approved remedial option was air sparging/soil vapor extraction (AS/SVE) within the source area of the inactive gravel pit in conjunction with monitored natural attenuation for the remaining portion of the impacted ground water plume. A Record of Decision was issued by the NYSDEC in November 1992 identifying AS/SVE as the preferred remedial alternative.

The AS/SVE system included 39 air sparging wells, 17 soil vapor extraction wells, a 480 scfm SVE blower and a 130 scfm AS compressor. The system was started and fully on-line in December 1993. The AS/SVE system operated continuously until 1998 and then in a pulsed mode until December 1999. Throughout the system operation, environmental monitoring was performed to evaluate system performance on a quarterly, followed by a semi-annual basis (semi-annual monitoring is still ongoing). A total of approximately 207 pounds of volatile organic compound mass (as TCE) were removed from the ground water. The environmental and AS/SVE system operational monitoring indicated that a level of diminishing returns had been reached. After successfully completing a series of additional monitoring and verification soil sampling requirements established by the NYSDEC, approval was received to formally decommission the AS/SVE system. The AS/SVE system was decommissioned between October and December of 2001. Semi-annual environmental monitoring has been continuing to monitor post-remediation conditions. All data available to

date are provided in summary tables in Appendix A.

1.2 Objective

The objective of the post-remediation environmental sampling program is to monitor the concentrations of the primary constituents of concern (TCE and 1,1,1-TCA) and associated daughter products over time to monitor plume stability and/or reduction of the residual ground water impacts after remedial system decommissioning. This plan formally provides the specifications for the post-remediation monitoring program being implemented at the site to fulfill the submittal requirements set forth by the NYSDEC in their letter dated July 16, 2002.

1.3 Organization of Post-Remediation Environmental Monitoring Plan

The remainder of this document provides the ground water monitoring specifications. The basic monitoring program is detailed in Section 2.0. A sampling and analysis plan is provided in Section 3.0. Section 4.0 defines the quality assurance/quality control requirements and Section 5.0 defines the system maintenance requirements along with contact names of responsible individuals for the management and implementation of the program.

2.0 ENVIRONMENTAL MONITORING PROGRAM

Ground water, surface water and sediment monitoring at the site have been ongoing since 1993. A formal monitoring program will continue as part of post-remediation activities. The general monitoring program is described below.

2.1 Environmental Monitoring Program

The purpose of the environmental monitoring program will be to monitor the continued effectiveness of remedial activities. The program will consist of the collection of ground water samples, and surface water/sediment samples. The identified sampling locations are the same as under the current monitoring program that has been in place since November, 1993. Each set of samples is discussed separately below.

Ground Water Monitoring

The wells proposed for use in the monitoring program are summarized on Table 2-1 along with the rationale used for choosing each well. A well construction summary is provided on Table 2-2. The well locations are shown on Figure 1 and copies of boring logs and well construction summaries are provided in Appendix B. All samples collected will be analyzed for VOCs. Specific analytical protocols are provided in Section 3.6. The proposed monitoring well network will provide continued monitoring of the effectiveness of the AS/SVE remediation performed at the site. Monitoring has been ongoing through 2002 on a semi-annual basis.

Surface Water/Sediment Monitoring

One surface water/sediment sample will be collected as part of each sampling event from the unnamed tributary to Ischua Creek. The surface water/sediment sample location is provided on Figure 1. All samples collected will be analyzed for VOCs. Specific analytical protocols are provided in Section 3.6. The proposed sampling will provide continued monitoring of the effectiveness of the AS/SVE remediation performed at the site and that natural attenuation discharge concentrations to the creek surface water and sediment remain below predicted concentrations based on ground water/surface water analytical modeling performed as part of the Feasibility Study dated May, 1991. Monitoring has been ongoing through 2002 on a quarterly and/or semi-annual basis.

Frequency and Reporting

The proposed sampling network will provide continued monitoring of the effectiveness of the AS/SVE remediation performed at the site. Due to the large volume of data already generated for the site documenting stable plume geometry and conditions, and in accordance with the NYSDEC letter dated July 16, 2002, monitoring/sampling will be performed on an annual basis starting in 2003.

All monitoring data will be provided to the NYSDEC in annual reports. The reports will include a summary of all data and an evaluation of time versus concentration trends for the target parameters (TCE and 1,1,1-TCA). In addition, a water table map will be generated with the most recent water levels to monitor for any potential changes in the flow system.

3.0 SAMPLING AND ANALYSIS PLAN

This section provides details regarding the sampling, sample handling and analytical procedures to be used as part of the environmental monitoring program. A summary of the sampling program is provided on Table 3-1.

3.1 Sample Collection Procedures

3.1.1 Ground Water Samples

Ground water samples will be collected from all monitoring wells specified for use on Table 2-1. Boring logs for the monitoring wells are provided in Appendix B. The following procedures will be used for on-site monitoring well sampling:

- Depth to water will be determined using an electric water level indicator. The bottom of each well will be sounded for the potential buildup of sediment in the well. The volume of water in the well casing will then be calculated.

- A minimum of three well volumes of water will be purged from the well with a PVC or Teflon bailer prior to sampling. The purge water will be released on the ground at the well location.

- Purging will continue until three successive pH, specific conductance and temperature measurements show stable conditions to ensure that the sample is representative of formation water. Successive measurements of indicator parameters should be within 10 percent of each other to indicate stable conditions. If the well bails dry before removing three complete well volumes, the well will be allowed to recharge for up to 30 minutes, and sample collection will be initiated. If the well is found to be "dry", no sample will be collected from the well during that sampling event.

- The sample will be collected using a PVC or Teflon bailer. Sample water will be poured directly into laboratory prepared containers.

- The bailers will be decontaminated between each use by scrubbing with an Alconox solution, followed by thoroughly rinsing the bailer with distilled water. Dedicated or disposable sampling equipment may also be used precluding the need for cleaning between samples.

The sampling contractor will place all used, disposable sampling equipment into plastic garbage bags and handle/dispose of the materials properly.

3.1.2 Surface Water/Sediment Samples

Surface water and sediment samples will be collected from the approximate location shown on Figure 1. Surface water samples will be collected by directly dipping a laboratory prepared container into the creek within three feet of the western bank. The water will be collected from approximately six-inches below the surface. Sediment samples will be collected from the bottom of the creek channel within three feet of the western bank. The sample will be collected with a stainless steel spatula or trowel and placed directly into laboratory prepared containers.

3.2 Field QC Samples

Two types of QC samples will be collected and analyzed as part of the monitoring program. These are:

- Field blanks; and
- Duplicates

The purpose behind each QC sample is explained in Section 4.0. The sample collection procedures for each QC sample type are detailed below.

3.2.1 Field Blanks

For this monitoring program, one field blank will be collected during each round of sampling. The field blank will be analyzed for VOCs. It will be prepared by pouring Ultra-Pure water (HPLC-grade water) from a

decontaminated bailer directly into laboratory prepared containers.

3.2.2 Duplicates

One duplicate will be collected for each sampling event for field QA/AC purposes. Sampling procedures for duplicate samples will be identical to those used to collect the monitoring samples. Additionally, for laboratory QA/QC purposes, extra sample volume will be collected for matrix spike, matrix spike duplicate and matrix spike blank analysis.

3.3 Sample Numbering System

All samples for chemical analysis, including QC samples, will be given a unique sample number. A listing of samples numbers will be maintained on the chain-of-custody and in the field logbook.

Each sample will be identified by a sample number. This project sample number will highlight the sample matrix and location. The project sample numbers will be composed of three components, which are described below:

- Project Identifier. A three-character designation will be used to identify the site where the sample is collected. For this project, it will be MGP (Machias Gravel Pit); and
- Sample Type and Location. A two character type code followed by a two-digit location code will indicate sample type and location.

Some examples of the project sample numbering system are as follows:

- MGP-GW05: Machias Gravel Pit ground water, monitoring well location 5.
- MGP-SDO1: Machias Gravel Pit sediment sample, location 1.
- MGP-SW01: Machias Gravel Pit surface water sample, location 1.

QC samples will be assigned a specific sample number and submitted to the laboratory blind.

3.4 Sample Handling

3.4.1 Sample Containers and Sample Preservation

Samples will be handled and shipped as low-concentration environmental samples. The containers used to collect samples for chemical analysis will be provided by the contracted laboratory. These containers will be specific to the analysis and volume requirements of a particular sample matrix. Table 3-2 summarizes the sample containers to be utilized, a preservation techniques and holding time requirements.

3.4.2 Sample Packaging and Shipment

Sample packaging and shipping procedures are based on U.S. EPA specifications, as well as Department of Transportation (DOT) regulations. The procedures vary according to samples concentration and matrix, and are designed to provide optimum protection of samples and the public.

All samples will be shipped within 48 hours of collection. Following collection, the exterior of sample bottles will be cleaned by wiping the outer surface with a moist cloth. In preparation for shipment, the following procedures will be followed:

Low-Concentration Environmental Samples

1. Prepare cooler(s) for shipment.
   - Tape drain plug of cooler shut;
   - Affix "This Side Up" arrow labels on all four sides, and "Fragile" labels on at least two sides of each cooler; and
   - Place mailing label with laboratory address on top of cooler(s)
2. Arrange sample containers in groups by sample number.
3. Mark volume levels on bottles with a grease pencil.
4. Ensure that all bottle labels are completed correctly. Place clear tape over bottle labels to prevent moisture accumulation from causing the label to peel off.
5. Arrange containers in front of assigned coolers.

6. Seal sample containers within plastic zip-lock bags to prevent vermiculite from contacting samples.
7. Place approximately 2 inches of vermiculite at the bottom of the cooler to act as a cushion for the sample containers.
8. Arrange containers in the cooler so that they do not touch.
9. Fill remaining spaces with vermiculite (VOA vials should be placed in cooler suspended in vermiculite.)
10. Ensure all containers are firmly packed in vermiculite. If ice is required to preserve the samples, cubes should be repackaged in double zip-lock bags and placed on top of the vermiculite.
11. Sign chain-of-custody (COC) form (or obtain signature) and indicate the time and date it was relinquished to Federal Express or other carrier, as appropriate.
12. Separate copies of COC forms. Seal proper copies within a large zip-lock bag and tape to inside lid of cooler. Retain copies of all COC forms in-house.
14. Close lid and latch.
15. Tape cooler shut on both ends, making several complete revolutions with strapping tape.
16. Relinquish to Federal Express or other courier service. Retain airbill receipt for project records. (Note: All samples will be shipped for "NEXT DAY" delivery.)
17. Telephone laboratory contact and provide him/her with the following shipment information:
    - Your name;
    - Project name;
    - Number of samples sent according to matrix and concentration; and
    - Airbill number.

The above packaging and shipping procedures do not apply if the samples are to be delivered directly to the laboratory by the sampling team. Strict COC procedures, however, will be maintained.

3.5 Sample Documentation

Field observations and other information pertinent to the collection of samples will be recorded in the field. All entries will be made in a field notebook or on field sampling sheets. The data to be recorded for each sample will include date, time, sample number, sample description, field measurements and the person collecting the sample. Notes and documentation will also be made relative to the integrity and condition of the monitoring well and the site in general (e.g., condition of protector casing, runoff apron, etc.). A general site inspection will also be made during each sampling. The inspection will be focused on the condition of the monitoring wells including the runoff aprons and locks. The field logbook/notes will be maintained by the sampling contractor and copies will be provided to Motorola and/or its designated consultant. The field notes will be included in the monitoring reports to be submitted to the NYSDEC.

3.6 Analytical Program

All samples collected as part of this monitoring program will be analyzed for Target Compound List (TCL) VOCs in accordance with the method 8240 specified in the NYSDEC Analytical Services Protocol (ASP) dated June, 2000.

4.0 DATA QUALITY ASSURANCE PLAN

This data quality assurance plan focuses on the QA/QC to be performed as part of the proposed ground water monitoring program.

4.1 Quality Assurance Objectives for Measurement Data

The overall QA objective is to develop and implement procedures for field sampling, chain-of-custody (COC), laboratory analysis and reporting that will provide defensible and reproducible results. This section defines the goals for the level of QA effort; accuracy, precision and sensitivity of analyses and completeness, representativeness, and comparability of measurement data. QA objectives for field measurements are also discussed as well as COC, calibration, laboratory analysis, reporting internal quality control and corrective actions.

4.1.1 Level of QA Effort

For water samples, field duplicates and field blanks will be taken and submitted to the analytical laboratory to provide the means to assess the quality of the data resulting from the field sampling program. Field duplicate samples are analyzed to check for sampling and analytical reproducibility. Field blank samples are analyzed to check for procedural contamination and/or ambient conditions at the site which may be affecting sample results. The general level of the QA effort for this project will be at least one field duplicate and one field blank for every round of monitoring.

Water samples will be analyzed for TCL VOCs. The level of laboratory QA effort for TCL analyses will be consistent with the NYSDEC ASP dated 2000.

4.1.2 Accuracy, Precision and Sensitivity of Analyses

Accuracy, precision and sensitivity (detection limit) criteria for analytical services for organics will be consistent with the corresponding NYSDEC ASP dated 2000. In addition, the analytical laboratory used will have a

current New York State Department of Health Environmental Laboratory Approval Program (DOH ELAP) certification in all categories of CLP.

4.1.3 Completeness, Representativeness and Comparability

The analytical laboratory will provide analytical results with the completeness required in the NYSDEC ASP dated 2000. Full ASP deliverable packages will not be required with standard reporting, but will be able to be generated in the future (retroactively), if needed. The sampling network was designed to provide data representative of site conditions for the intended objectives of the project as defined in Section 2.0.

4.1.4 Field Measurements

Measurement data will be generated during field activities that are incidental to collecting samples for analytical testing or unrelated to sampling. These activities include, but are not limited to, determining pH, specific conductance and temperature of ground water samples.

The general QA objective for field measurement data is to obtain reproducible and comparable measurements to a degree of accuracy consistent with the intended use of the data through standardized procedures.

4.2 Implementation

4.2.1 Chain-of-Custody Procedures

COC procedures document the history of sample containers and samples from the time of preparation of sample containers through sample collection, shipment, and analysis. A sample is considered in custody if:

- The sample is in the sampler's physical possession;
- The sample is secured by the sampler to prevent tampering; or

- The sample is secured by the sampler in an area that is restricted to authorized personnel.

To maintain a record of sample collection, transfer between personnel, shipment, and receipt by the laboratory, a COC record will be completed for each sample at each sampling location. Each time the samples are transferred, signatures of the person relinquishing and receiving the samples, as well as the date and time, will be documented.

4.2.2 Decontamination Program

All sampling equipment will be decontaminated prior to each use by the following protocol:

- Scrub equipment thoroughly in a low-sudsing detergent solution (e.g., Alconox);
- Rinse with distilled water; and
- Wrap equipment in plastic or aluminum foil for handling and/or storage until next use.

Dedicated bailers may also be used precluding the need for cleaning equipment between sample locations/events.

4.2.3 Calibration Procedures and Frequency

The calibration procedures and frequency of calibration for analysis of specified TCL parameters to be followed are specified in the NYSDEC ASP dated 2000.

Calibration of the field pH meter will be checked prior to the collection of each water sample. The field pH meter will be calibrated using two reference solutions as appropriate to the pH of the sample. The calibration of the specific-conductance/temperature meter will be checked using a reference solution of 0.01 N KC1 (specific conductance 1413 umhos/cm at 25^0 C.) on a daily basis. Calibration readings must be within 5 percent to be acceptable.

4.2.4 Quality Control Samples

Field duplicates and field blanks will be submitted for analysis to provide the means to assess the quality of the data from the field sampling program. Field duplicate samples are analyzed to check for sampling and analytical reproducibility. Field blanks are analyzed to check for any procedural contamination that could adversely affect the integrity of the sample. The level of QC effort for this project is summarized in Section 4.1.1.

One set of trip blank samples will also accompany each sample shipment. Trip blanks will only be analyzed if it is suspected that custody was breached, or if one of the investigative sample containers was broken during shipment.

4.3 Analytical Procedures

All samples collected for chemical analysis will be tested for TCL organics using analytical method 8240 specified in the NYSDEC ASP dated 2000.

4.3.1 Data Reduction, Validation and Reporting

Analytical data from the laboratory will be evaluated by the Organics Laboratory Supervisor for conformance to NYSDEC ASP requirements for accuracy, precision and completeness. Qualifications for approval, if appropriate, will be addressed in case narratives. In addition to the summarized forms for precision and accuracy of the analyses, the laboratory will provide the analytical results for blanks and duplicates and the recovery data for matrix and surrogate spikes.

4.3.2 Internal Quality Control Procedures

Internal quality control procedures for analysis of specified TCL parameters by the analytical laboratory will be in accordance with the NYSDEC ASP dated 2000. These specification include the types of audits required (surrogate spikes, reference samples, controls, blanks), the

frequency of each audit, the compounds to be used for surrogate spikes, and the quality control acceptance criteria for these audits.

Quality control procedures for field measurements are limited to checking the reproducibility of the measurement in the field by obtaining multiple readings and by routine calibration of the instruments, where appropriate.

4.3.3 Data Assessment Procedures

Analytical data from the laboratory will be assessed for accuracy, precision, and conformance with QC criteria by the laboratory section supervisors with overview by the Quality Assurance manager in accordance with the NYSDEC ASP 2000.

Data from the field measurements will be assessed by thorough review of documentation of analytical procedures that were adhered to, and results of systems audits. All data will be reviewed for completeness by the oversight project manager as appropriate to his operational responsibilities.

4.3.4 Corrective Action Procedures

If a quality control audit results in detection of unacceptable conditions or data, the oversight project manager will be responsible for developing and initiating corrective actions. The laboratory will be notified if the nonconformance is of program significance. Corrective action may include:

- Reanalyzing the samples, if holding time criteria permit;
- Resampling and analyzing;
- Evaluating and amending sampling and analytical procedures; and
- Accepting the data and acknowledging its level of uncertainty.

4.3.5 Quality Assurance Reports

No separate QA report is planned for the post-remediation ground water monitoring program. Semi-annual/Annual reports will contain a separate QA/QC section summarizing the quality of the data collected and/or used as appropriate to the project.

5.0 MAINTANENCE AND RESPONSIBILITIES

5.1 Monitoring Well Maintenance

As part of sampling documentation (see Section 3.5) notes will be kept relative to the integrity and physical condition of each monitoring well. The wells will be maintained to assure continued sample integrity. Standard maintenance may include:

- Repair/replacement of concrete runoff aprons.
- Repair/replacement of damaged protector casings or bumper guards.
- Redevelopment of a monitoring well to remove excessive siltation.
- Replacement of damaged locks.

If a well is found to be completely damaged to where its sample integrity is in question, the well will be properly abandoned and/or replaced, as appropriate.

5.2 Contacts

The following persons are responsible for the management and implementation of the post-remediation monitoring program:

TASK	CONTACT
Program Management and Emergency Contact	Michael E. Loch Motorola, Inc. 1303 E. Algonquin Rd., 6th Floor Schaumburg, IL 60196 847-538-4493
Program Implementation	Richard R. Gnat, P.G. Krikau, Pyles, Rysiewicz & Associates, Inc. 14665 W. Lisbon Rd., Suite 2B Brookfield, WI 53005 262-781-0475
Nearest Hospital	Bertrand Chaffee Hospital 224 E. Main Street Springville, New York

Hospital (cont.)	716-592-2871
Sheriff	1-800-443-3403
Fire Dept.	1-716-353-8500
Ambulance	1-716-353-8500

TABLES

TABLE 2-1. POST - REMEDIATION MONITORING NETWORK

Well No.	Location Rationale
GW-03	Downgradient well in center portion of plume at the gravel pit property boundary.
GW-05	Former source area well.
GW-06	Downgradient monitoring well east of Very Rd. monitoring north fringe of plume.
GW07	Downgradient monitoring well east of Very Rd. monitoring south fringe of plume.
GW-09	Well immediately downgradient of former source area on Gravel Pit property.
GW-10	Downgradient monitoring well east of Very Rd. monitoring north fringe of plume.
GW-16	Downgradient monitoring well located in the center of the plume between source area and discharge point.
GW-20	Downgradient monitoring well in center of plume immediately prior to surface water discharge.
GW-21	Downgradient monitoring well in center of plume immediately prior to surface water discharge.
GW-22/22D	Downgradient well cluster in center portion of plume at the gravel pit property boundary.
RW-3	Former cabin water well loacted in center of plume east of Very Rd.
SW-1	Surface water sample from Ischua Creek Tributary in center of discharge area.
SD-1	Sediment sample from Ischua Creek Tributary in center of discharge area.

TABLE 2-2. MONITORING WELL CONSTRUCTION SUMMARY

WELL ID	NORTHING	EASTING	APPROX. DEPTH (ft)	DEPTH TO WATER (ft.;most recent)	TOP OF PVC CASING ELEV. (ft; MSL)	SCREEN LENGTH (ft)
GW-03	4896.8913	5179.7347	58.7	48.58	1740.02	10
GW-05	4681.8632	4987.5591	54.2	48.24	1741.5	10
GW-06	4979.3388	5282.4722	56.5	49.10	1739.88	10
GW-07	4825.4459	5420.2126	46.9	39.61	1729.16	10
GW-09	4821.6118	5097.9695	62.6	56.74	1748.63	10
GW-10	5069.3390	5500.7285	18.7	11.91	1701.58	10
GW-16	4942.2727	6121.7607	15.0	5.00	1691.54	10
GW-20	4846.8038	6348.5239	12.6	3.45	1680.92	10
GW-21	4724.4003	6284.7214	12.7	7.34	1683.58	10
GW-22	4849.4573	5276.1403	58.5	48.96	1740.08	10
GW-22D	4844.3067	5275.4080	79.3	48.75	1739.72	5
RW-3	4958.8229	5805.4236	15.5 (est.)	5.56	1693.51	U

Note: All monitoring wells are constructed of 2-inch, Schedule 40 PVC.
U - Unknown. No documentation available.
est. - Estimated based on depth to the top of the pump plus 2 feet. May be deeper.
Most recent water level taken August, 2002 for all wells except GW-16. For this well the most recent water level data was from January, 2000.

TABLE 3-1. SUMMARY OF MONITORING PROGRAM MATRIX

MEDIA	MONITORING SAMPLES	Field QC Samples		Lab QC Samples			Total
		DUPLICATE	FIELD BLANK	MS	MSD	MSB	
Ground Water	11	1	1	1	1	1	16
Surface Water	1	0	0	1	1	1	4
Sediment	1	0	0	1	1	1	4

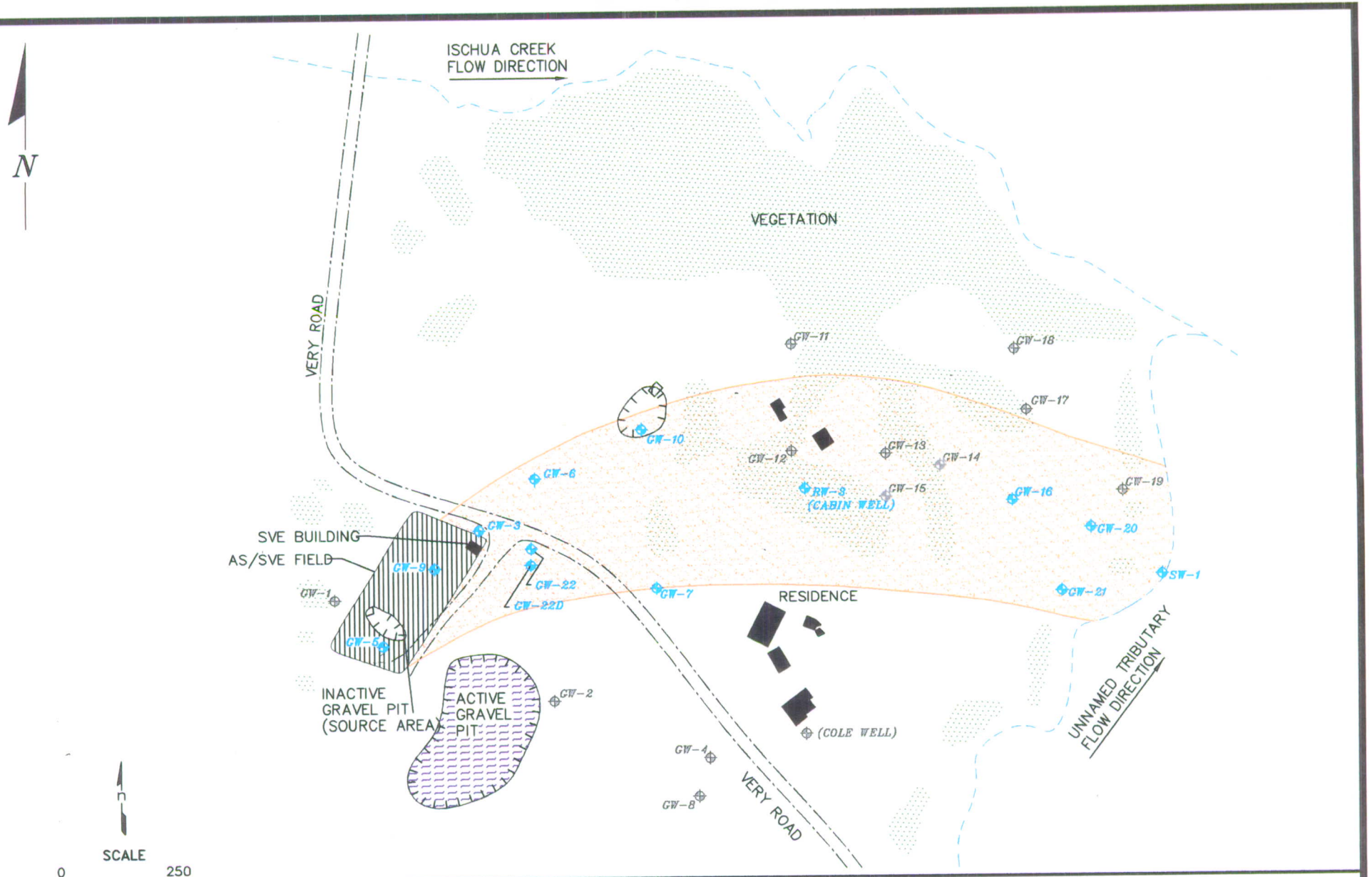
MS Matrix Spike
MSD Matrix Spike Duplicate
MSB Matrix Spike Blank

TABLE 3-2. SAMPLING CONTAINERS, PRESERVATIVES AND HOLDING TIMES

MATRIX	PARAMETERS	CONTAINER (NUMBER, SIZE, TYPE)	PRESERVATION	HOLDING TIME
Ground Water	TCL VOCs	2 - 40 ml glass, TLC	Cool to 4^0 C 2 drip of 1:1 HCl	7 days
Surface Water	TCL VOCs	2 - 40 ml glass, TLC	Cool to 4^0 C 2 drip of 1:1 HCl	7 days
Sediment	TCL VOCs	1 - 4 oz. glass	Cool to 4^0 C	7 days

TCL - Target Compound List
VOC - Volatile Organic Compound
TLC - Teflon Lined Cap

FIGURE



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MONITORING WELL LOCATION DIAGRAM

Motorola, Inc.
Machias Gravel Pit

Scale: 1" = 250'	Date: December 4, 2002
KPR Project No. 10502	FIGURE 1

APPENDIX A

Existing Monitoring Data

Table A.1
Summary of Sampling Data
at Machias Gravel Pit Site

		Parameters (ug/L)												
	DATE	Acetone	Carbon Disulfide	Chlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Toluene	1,2-Dichloroethene (Total)	Ethyl Benzene	Methylene Chloride	Chloroform
GW-3	Nov-93	--	--	--	--	3 J	310	200	--	--	--	--	--	--
	Jan-94	--	--	--	1 J	5	270	33	--	--	--	--	--	--
	Feb-94	--	--	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
	Mar-94	--	--	--	2 J	2 J	180	57	--	--	--	(2 J)	--	--
	Apr-94	--	--	--	2 J	3 J	200	58	--	--	--	--	--	--
	Jul-94	--	--	--	.9 J	--	170	100	--	--	--	--	--	--
	Oct-94	--	--	--	2 J	--	52	160	--	--	--	--	--	--
	Jan-95	--	--	--	--	1 J	190	95	--	--	--	--	--	--
	Apr-95	--	--	--	--	--	150	17	--	--	--	--	--	--
	Jul-95	--	--	--	11	--	85	560	--	--	--	--	--	--
	Oct-95	--	--	--	0.9 J	2 J	120	170	--	--	--	--	--	--
	Jan-96	--	--	--	--	--	160	220	--	--	--	--	--	--
	Apr-96	--	--	--	--	--	110	94	--	--	--	--	--	--
	Jul-96	--	--	--	--	--	180	84	--	--	--	--	--	--
	Oct-96	--	--	--	--	--	19	8	--	--	--	--	--	--
	Jan-97	--	--	--	--	--	130	39	--	--	--	--	2 JB	--
	Apr-97	--	--	--	--	--	110	24	--	--	--	--	--	--
	Jul-97	--	--	--	--	--	87	40	--	--	--	--	--	--
	Oct-97	--	--	--	--	--	83	59	--	--	--	--	--	--
	Jan-98	--	--	--	--	--	15	3J	--	--	--	--	--	--
	Apr-98	--	--	--	--	--	70	52	--	--	--	--	--	--
	Jul-98	--	--	--	--	--	38	16	--	--	--	--	--	--
	Jan-99	--	--	--	--	1J	83	68	--	--	--	--	--	--
	Aug-99	--	--	--	--	--	38	26	--	--	--	--	--	--
	Jan-00	--	--	--	2J	--	100	240E	--	--	--	--	--	--
	Aug-00	--	--	--	--	--	51	53	--	--	--	--	--	--
	Jan-01	--	--	--	--	--	72	71	--	--	--	--	--	--
	Aug-01	--	--	--	--	--	70	80	--	--	--	--	--	--
	Jan-02	--	--	--	4J	--	120	180	--	--	--	--	--	--

Notes appear at end of data

Table A.1
Summary of Sampling Data
at Machias Gravel Pit Site

		Parameters (ug/L)												
	DATE	Acetone	Carbon Disulfide	Chlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Toluene	1,2-Dichloroethene (Total)	Ethyl Benzene	Methylene Chloride	Chloroform
GW-5	Nov-93	--	--	--	9	0.7 J	250	1500	0.7 J	--	3 J	--	--	--
	Jan-94	--	--	--	11	--	190	1300	0.4 J	--	--	--	--	--
	Feb-94	--	--	--	14	--	180	1500	0.5 J	--	14	--	--	--
	Mar-94	--	--	--	13 J	--	150	1200	--	--	--	(22 J)	--	--
	Apr-94	--	--	--	12 J	--	150	1200	--	--	--	--	--	--
	Jul-94	--	--	--	9 J	--	110	1200	--	--	--	--	--	--
	Oct-94	--	--	--	6 J	--	16	280	--	--	--	--	--	--
	Jan-95	--	--	--	--	--	16	260	--	--	--	--	--	--
	Apr-95	--	--	--	5	--	21	310	--	--	--	--	--	--
	Jul-95	--	--	--	11	--	29	450	--	--	--	--	--	--
	Oct-95	--	--	--	9	--	27	400	--	--	2 J	--	--	--
	Jan-96	--	--	--	4 J	--	17	410	--	--	--	--	--	--
	Apr-96	--	--	--	4 J	--	24	430	--	--	--	--	--	--
	Jul-96	--	--	--	--	--	22	400	--	--	--	--	--	--
	Oct-96	--	--	--	4J	1J	24	330 D	--	--	--	--	--	--
	Jan-97	--	--	--	--	--	20	420	--	--	--	--	--	--
	Apr-97	--	--	--	--	--	11	210	--	--	--	--	--	--
	Jul-97	--	--	--	--	--	15	280D	--	--	--	--	--	--
	Oct-97	--	--	--	--	--	18	310D	--	--	--	--	--	--
	Jan-98	--	--	--	--	--	15	280	--	--	--	--	--	--
	Apr-98	--	--	--	--	--	6	150	--	--	--	--	--	--
	Jul-98	--	--	--	--	--	12	190	--	--	--	--	--	--
	Jan-99	--	--	--	--	--	11	230E	--	--	--	--	--	--
	Aug-99	--	--	--	--	--	6	140	--	--	--	--	--	--
	Jan-00	--	--	--	--	--	11	200E	--	--	--	--	--	--
	Aug-00	--	--	--	--	--	6	180	--	--	--	--	--	--
	Jan-01	--	--	--	--	--	5	150	--	--	--	--	--	--
	Aug-01	--	--	--	--	--	6	130	--	--	--	--	--	--
	Jan-02	--	--	--	--	--	7	160	--	--	--	--	--	--

Notes appear at end of data

Table A.1
Summary of Sampling Data
at Machias Gravel Pit Site

		Parameters (ug/L)												
	DATE	Acetone	Carbon Disulfide	Chlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Toluene	1,2-Dichloroethene (Total)	Ethyl Benzene	Methylene Chloride	Chloroform
GW-6	Nov-93	--	--	(0.5 J)	--	--	75	(3 J)	--	(0.6 J)	--	--	--	--
	Jan-94	--	--	--	--	--	62	0.9 J	--	--	--	--	--	--
	Feb-94	--	--	--	--	--	76	1 J	--	--	--	--	--	--
	Mar-94	--	--	--	--	--	88	4 J	--	--	--	(2 J)	--	--
	Apr-94	--	--	--	--	--	42	--	--	--	--	--	--	--
	Jul-94	--	--	--	--	--	37	2 J	--	--	--	--	--	--
	Oct-94	--	--	--	--	--	23	0.8 J	--	--	--	--	--	--
	Jan-95	--	--	--	--	--	38	2 J	--	--	--	--	--	--
	Apr-95	--	--	--	--	--	20	4J	--	--	--	--	--	--
	Jul-95	--	--	--	--	--	18	4BJ	--	--	--	--	--	--
	Oct-95	--	--	--	--	--	26	6	--	--	--	--	--	--
	Jan-96	--	--	--	--	--	18	--	--	--	--	--	--	--
	Apr-96	--	--	--	--	--	6	4 J	--	--	--	--	--	--
	Jul-96	--	--	--	--	--	8	3 J	--	--	--	--	--	--
	Oct-96	--	--	--	--	--	11	2J	--	--	--	--	--	--
	Jan-97	--	--	--	--	--	11	2J	--	--	--	--	0.8 BJ	--
	Apr-97	--	--	--	--	--	2J	2J	--	--	--	--	0.8 BJ	--
	Jul-97	--	--	--	--	--	6	--	--	--	--	--	--	--
	Oct-97	--	--	--	--	--	11	1J	--	--	--	--	--	--
	Jan-98	--	--	--	--	--	4J	--	--	--	--	--	--	--
	Apr-98	--	--	--	--	--	5	1J	--	--	--	--	--	--
	Jul-98	--	--	--	--	--	2J	2J	--	--	--	--	--	--
	Jan-99	--	--	--	--	--	10	1J	--	--	--	--	--	--
	Aug-99	--	--	--	--	--	10	1J	--	--	--	--	--	--
	Jan-00	--	--	--	--	--	8	1J	--	--	--	--	--	--
	Aug-00	--	--	--	--	--	4J	--	--	--	--	--	--	--
	Jan-01	--	--	--	--	--	3 J	--	--	--	--	--	--	--
	Aug-01	--	--	--	--	--	3 J	1J	--	--	--	--	--	--
	Jan-02	--	--	--	--	--	4J	1J	--	--	--	--	--	--

Notes appear at end of data

Table A.1
Summary of Sampling Data
at Machias Gravel Pit Site

		Parameters (ug/L)												
	DATE	Acetone	Carbon Disulfide	Chlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Toluene	1,2-Dichloroethene (Total)	Ethyl Benzene	Methylene Chloride	Chloroform
GW-7	Nov-93	--	--	--	--	--	13	39	--	--	--	--	--	--
	Jan-94	--	--	--	--	--	12	39	--	--	--	--	--	--
	Feb-94	--	--	--	--	--	11	37	--	--	--	--	--	--
	Mar-94	--	--	--	--	--	15	39	--	--	--	(2 J)	--	--
	Apr-94	--	--	--	--	--	7	23	--	--	--	--	--	--
	Jul-94	--	--	--	--	--	10	37 B	--	--	--	--	--	--
	Oct-94	--	--	--	--	--	8	35	--	--	--	--	--	--
	Jan-95	--	--	--	--	--	7	31	--	--	--	--	--	--
	Apr-95	--	--	--	--	--	4J	20	--	--	--	--	--	--
	Jul-95	--	--	--	--	--	5	26 B	--	--	--	--	--	--
	Oct-95	--	--	--	--	--	6	24	--	--	--	--	--	--
	Jan-96	--	--	--	--	--	1 J	10	--	--	--	--	--	--
	Apr-96	--	--	--	--	--	2 J	13	--	--	--	--	--	--
	Jul-96	--	--	--	--	--	4 J	18	--	--	--	--	--	--
	Oct-96	--	--	--	--	--	3 J	19	--	--	--	--	--	--
	Jan-97	--	--	--	--	--	3 J	15	--	--	--	--	2 BJ	--
	Apr-97	--	--	--	--	--	2 J	8	--	--	--	--	--	--
	Jul-97	--	--	--	--	--	2J	12	--	--	--	--	--	--
	Oct-97	--	--	--	--	--	2J	12	--	--	--	--	--	--
	Jan-98	--	--	--	--	--	--	3 J	--	--	--	--	--	--
	Apr-98	--	--	--	--	--	1J	8	--	--	--	--	--	--
	Jul-98	--	--	--	--	--	2J	10	--	--	--	--	--	--
	Jan-99	--	--	--	--	--	--	9	--	--	--	--	--	--
	Aug-99	--	--	--	--	--	--	5	--	--	--	--	--	--
	Jan-00	--	--	--	--	--	--	6	--	--	--	--	--	--
	Aug-00	--	--	--	--	--	--	5	--	--	--	--	--	--
	Jan-01	--	--	--	--	--	--	4 J	--	--	--	--	--	--
	Aug-01	--	--	--	--	--	1J	7	--	--	--	--	--	--
	Jan-02	--	--	--	--	--	2J	6	--	--	--	--	--	--

Notes appear at end of data

Table A.1
Summary of Sampling Data
at Machias Gravel Pit Site

		Parameters (ug/L)												
	DATE	Acetone	Carbon Disulfide	Chlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Toluene	1,2-Dichloroethene (Total)	Ethyl Benzene	Methylene Chloride	Chloroform
GW-9	Nov-93	--	--	(3 J)	--	3 J	390	250	--	(3 J)	--	--	--	--
	Jan-94	--	--	--	0.8 J	3 J	310	220	--	--	--	--	--	--
	Feb-94	--	--	--	--	2 J	280	230	--	--	3 J	--	--	--
	Feb-94	--	--	--	--	2 J	260	240	--	--	--	(2 J)	--	--
	Apr-94	--	--	--	--	2 J	290	260	--	--	--	--	--	--
	Jul-94	--	--	--	--	--	310	360	--	--	--	--	--	--
	Oct-94	--	--	--	--	1 J	270	270	--	--	--	--	--	--
	Jan-95	--	--	--	--	2 J	310	340	--	--	--	--	--	--
	Apr-95	--	--	--	--	--	250	290	--	--	--	--	--	--
	Jul-95	--	--	--	--	--	220 B	240 BD	--	--	--	--	--	--
	Oct-95	--	--	--	--	2 J	250	310	--	--	--	--	--	--
	41/96	--	--	--	--	--	220	320	--	--	--	--	--	--
	Apr-96	--	--	--	--	--	200	290	--	--	--	--	--	--
	Jul-96	--	--	--	--	--	250	280	--	--	--	--	--	--
	Oct-96	--	--	--	--	--	210 D	270 D	--	--	--	--	--	--
	Jan-97	--	--	--	--	--	230 D	280 D	--	--	--	--	2 BJ	--
	Apr-97	--	--	--	--	--	200	240	--	--	--	--	--	--
	Jul-97	--	--	--	--	--	140	200D	--	--	--	--	--	--
	Oct-97	--	--	--	--	--	130	170D	--	--	--	--	--	--
	Jan-98	--	--	--	--	--	170	190	--	--	--	--	--	--
	Apr-98	--	--	--	--	--	120	200	--	--	--	--	--	--
	Jul-98	--	--	--	--	--	110	180	--	--	--	--	--	--
	Jan-99	--	--	--	--	--	100	180	--	--	--	--	--	--
	Aug-99	--	--	--	--	--	69	140	--	--	--	--	--	--
	Jan-00	--	--	--	--	--	91	180	--	--	--	--	--	--
	Aug-00	--	--	--	--	--	67	150	--	--	--	--	--	--
	Jan-01	--	--	--	--	--	62	140	--	--	--	--	--	--
	Aug-01	--	--	--	--	--	42	100	--	--	--	--	--	--
	Jan-02	--	--	--	--	--	55	130	--	--	--	--	--	--

Notes appear at end of data

Table A.1
Summary of Sampling Data
at Machias Gravel Pit Site

		Parameters (ug/L)												
	DATE	Acetone	Carbon Disulfide	Chlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Toluene	1,2-Dichloroethene (Total)	Ethyl Benzene	Methylene Chloride	Chloroform
GW-10**	Jan-95	--	--	--	--	1J	160	71	--	--	--	--	--	--
	Apr-95	--	--	--	--	--	130	69	--	--	--	--	--	--
	Jul-95	--	--	--	--	--	120	72	--	--	--	--	--	--
	Oct-95	6 J	--	--	--	2 J	120	78	--	--	--	--	--	--
	Jan-96	--	--	--	--	--	88	72	--	--	--	--	--	--
	Apr-96	--	--	--	--	--	88	65	--	--	--	--	--	--
	Jul-96	14	--	--	--	--	150	87	--	--	--	--	--	--
	Oct-96	--	--	--	--	--	79	68	--	--	--	--	--	--
	Jan-97	--	--	--	--	--	84	64	--	--	--	--	--	--
	Apr-97	--	--	--	--	--	70	46	--	--	--	--	--	--
	Jul-97	--	--	--	--	--	87	60	--	--	--	--	--	--
	Oct-97	--	--	--	--	--	90	61	--	--	--	--	--	--
	Jan-98	--	--	--	--	--	69	43	--	--	--	--	--	--
	Apr-98	--	--	--	--	--	75	57	--	--	--	--	--	--
	Jul-98	--	--	--	--	--	78	49	--	--	--	--	--	--
	Jan-99	--	--	--	--	--	58	60	--	--	--	--	--	--
	Aug-99	--	--	--	--	--	49	44	--	--	--	--	--	--
	Jan-00	--	--	--	--	--	41	56	--	--	--	--	--	--
	Aug-00	--	--	--	--	--	27	46	--	--	--	--	--	--
	Jan-01	--	--	--	--	--	21	40	--	--	--	--	--	--
	Aug-01	--	--	--	--	--	20	42	--	--	--	--	--	--
	Jan-02	--	--	--	--	--	23	39	--	--	--	--	--	--

Notes appear at end of data

Table A.1
Summary of Sampling Data
at Machias Gravel Pit Site

		Parameters (ug/L)												
	DATE	Acetone	Carbon Disulfide	Chlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Toluene	1,2-Dichloroethene (Total)	Ethyl Benzene	Methylene Chloride	Chloroform
GW-20	Nov-93	--	--	NS	NS	NS	NS	NS	NS	NS	NS	--	--	--
	Jan-94	--	--	--	3 J	0.9 J	48	5	--	--	--	--	--	--
	Feb-94	--	--	--	3 J	0.7 J	58	5	--	--	--	--	--	--
	Mar-94	--	--	--	3 J	1 J	52	6	--	--	--	(1 J)	--	--
	Apr-94	--	--	--	3 J	0.7 J	46	4 J	--	--	--	--	--	--
	Jul-94	--	--	--	4 J	--	46	4 JB	--	--	--	--	--	--
	Oct-94	--	--	--	6	2 J	48	8	--	--	--	--	--	--
	Jan-95	--	--	--	4 J	--	48	7	--	--	--	--	--	--
	Apr-95	--	--	--	4 J	--	48	8	--	--	--	--	--	--
	Jul-95	--	--	--	6	--	51	12	--	--	--	--	--	--
	Oct-95	--	--	--	7	2 J	59	16	--	--	--	--	--	--
	Jan-96	--	--	--	4 J	--	35	10	--	--	--	--	--	--
	Apr-96	--	--	--	3 J	--	26	8	--	--	--	--	--	--
	Jul-96	--	--	--	5	--	42	11	--	--	--	--	--	--
	Oct-96	--	--	--	6	--	42	20	--	--	--	--	--	--
	Jan-97	--	--	--	4 J	--	30	12	--	--	--	--	--	--
	Apr-97	--	--	--	3 J	--	28	10	--	--	--	--	--	--
	Jul-97	--	--	--	4J	--	28	12	--	--	--	--	--	--
	Oct-97	--	--	--	6	--	34	18	--	--	--	--	--	--
	Jan-98	--	--	--	--	--	23	12	--	--	--	--	--	--
	Apr-98	--	--	--	4J	--	25	14	--	--	--	--	--	--
	Jul-98	--	--	--	5	--	26	15	--	--	--	--	--	--
	Jan-99	--	--	--	6	--	34	26	--	--	--	--	--	--
	Aug-99	--	--	--	2J	--	21	18	--	--	--	--	--	--
	Jan-00	--	--	--	5	--	25	24	--	--	--	--	--	--
	Aug-00	--	--	--	4J	--	16	19	--	--	--	--	--	--
	Jan-01	--	--	--	3 J	--	15	17	--	--	--	--	--	--
	Aug-01	--	--	--	6	--	20	20	--	--	--	--	--	--
	Jan-02	--	--	--	8	--	26	31	--	--	--	--	--	--

Notes appear at end of data

Table A.1
Summary of Sampling Data
at Machias Gravel Pit Site

		Parameters (ug/L)												
	DATE	Acetone	Carbon Disulfide	Chlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Toluene	1,2-Dichloroethene (Total)	Ethyl Benzene	Methylene Chloride	Chloroform
GW-21	Nov-93	--	--	NS	NS	NS	NS	NS	NS	NS	NS	--	--	--
	Jan-94	--	--	--	6	2 J	100	30	--	--	--	--	--	--
	Feb-94	--	--	--	5	2 J	120	33	--	--	--	--	--	--
	Mar-94	--	--	--	5	1 J	83	30	--	--	--	(1 J)	--	--
	Apr-94	--	--	--	4 J	0.8 J	77	28	--	--	--	--	--	--
	Jul-94	--	--	--	6	--	96	36 B	--	--	--	--	--	--
	Oct-94	--	--	--	9	2 J	100	55	--	--	--	--	--	--
	Jan-95	--	--	--	6	1 J	96	45	--	--	--	--	--	--
	Apr-95	--	--	--	6	--	83	40	--	--	--	--	--	--
	Jul-95	--	--	--	10	--	100	51	--	--	--	--	--	--
	Oct-95	--	--	--	10	2 J	98	58	--	--	--	--	--	--
	Jan-96	--	--	--	7	--	57	38	--	--	--	--	--	--
	Apr-96	--	--	--	5	--	44	32	--	--	--	--	--	--
	Jul-96	--	--	--	10	--	100	66	--	--	--	--	--	--
	Oct-96	--	--	--	7	--	58	56	--	--	--	--	--	--
	Jan-97	--	--	--	7	--	65	48	--	--	--	--	0.8 BJ	--
	Apr-97	--	--	--	5	--	45	35	--	--	--	--	--	--
	Jul-97	--	--	--	11	--	68	61	--	--	--	--	--	--
	Oct-97	--	--	--	8	--	52	60	--	--	--	--	--	--
	Jan-98	--	--	--	4 J	--	34	38	--	--	--	--	--	--
	Apr-98	--	--	--	5	--	37	41	--	--	--	--	--	--
	Jul-98	--	--	--	10	--	60	61	--	--	--	--	--	--
	Jan-99	--	--	--	13	--	61	80	--	--	--	--	--	--
	Aug-99	--	--	--	10	--	54	54	--	--	--	--	--	--
	Jan-00	--	--	--	5	--	22	31	--	--	--	--	--	--
	Aug-00	--	--	--	8	--	36	65	--	--	--	--	--	--
	Jan-01	--	--	--	5	--	24	42	--	--	--	--	--	--
	Aug-01	--	--	--	14	1J	56	77	--	--	--	--	--	--
	Jan-02	--	--	--	10	1J	35	63	--	--	--	--	--	--

Notes appear at end of data

Table A.1
Summary of Sampling Data
at Machias Gravel Pit Site

		Parameters (ug/L)												
	DATE	Acetone	Carbon Disulfide	Chlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Toluene	1,2-Dichloroethene (Total)	Ethyl Benzene	Methylene Chloride	Chloroform
GW-22	Nov-93	--	--	--	8	7	520	1000	--	--	--	--	--	--
	Jan-94	--	--	--	4 J	3 J	470	150	--	--	5	--	--	--
	Feb-94	--	--	--	5	3J	150	270	--	--	5	--	--	--
	Mar-94	--	--	--	8	2 J	84	130	--	--	--	2 J	--	--
	Apr-94	--	--	--	4 J	1 J	74	120	--	--	--	--	--	--
	Jul-94	--	--	--	4 J	2 J	160	310	--	--	--	--	--	--
	Oct-94	--	--	--	--	--	57	130	--	--	--	--	--	--
	Jan-95	--	--	--	0.9 J	--	61	110	--	--	--	--	--	--
	Apr-95	--	--	--	1 J	--	72	140	--	--	--	--	--	--
	Jul-95	--	--	--	--	--	43	96	--	--	--	--	--	--
	Oct-95	--	--	--	3 J	1 J	79	150	--	--	--	--	--	--
	Jan-96	--	--	--	--	--	74	190	--	--	--	--	--	--
	Apr-96	--	--	--	2 J	2 J	160	400	--	--	--	--	--	--
	Jul-96	--	--	--	--	3J	360	850	--	--	--	--	--	--
	Oct-96	--	--	--	2J	--	18	78	--	--	--	--	--	--
	Jan-97	--	--	--	--	--	30	82	--	--	--	--	2 BJ	--
	Apr-97	--	--	--	--	--	66	130	--	--	--	--	--	--
	Jul-97	--	--	--	2J	1J	100	280D	--	--	--	--	--	--
	Oct-97	--	--	--	2J	1J	190	350D	--	--	--	--	--	--
	Jan-98	--	--	--	--	--	12	88	--	--	--	--	--	--
	Apr-98	--	--	--	3J	--	44	150	--	--	--	--	--	--
	Jul-98	--	--	--	1J	--	27	90	--	--	--	--	--	--
	Jan-99	--	--	--	--	--	22	83	--	--	--	--	--	--
	Aug-99	--	--	--	--	--	9	64	--	--	--	--	--	--
	Jan-00	--	--	--	--	--	6	30	--	--	--	--	--	--
	Aug-00	--	--	--	--	--	24	210D	--	--	--	--	--	--
	Jan-01	--	--	--	3 J	--	12	180D	--	--	--	--	--	--
	Aug-01	--	--	--	3 J	--	67	290D	--	--	--	--	--	--
	Jan-02	--	--	--	--	--	67	500	--	--	--	--	--	--

Notes appear at end of data

Table A.1
Summary of Sampling Data
at Machias Gravel Pit Site

		Parameters (ug/L)												
	DATE	Acetone	Carbon Disulfide	Chlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Toluene	1,2-Dichloroethene (Total)	Ethyl Benzene	Methylene Chloride	Chloroform
GW-22D	Apr-94	--	--	--	12	0.8 J	43	2 J	--	--	--	--	--	--
	Jul-94	--	--	--	13	2 J	100	12 B	--	--	--	--	--	0.6 J
	Oct-94	--	--	--	8	3 J	180	14	--	--	--	--	--	0.6 J
	Jan-95	--	--	--	5	0.8 J	100	23	--	--	--	--	--	--
	Apr-95	--	--	--	3 J	--	150	90	--	--	--	--	--	--
	Jul-95	--	--	--	--	--	100	130	--	--	--	--	--	--
	Oct-95	--	--	--	3 J	1 J	71	100	--	--	--	--	--	--
	Jan-96	--	--	--	2 J	--	59	95	--	--	--	--	--	--
	Apr-96	--	5	--	3 J	--	76	140	--	--	--	--	--	--
	Jul-96	--	--	--	4 J	2 J	90	160	--	--	--	--	--	--
	Oct-96	--	--	--	4 J	1 J	60	83	--	--	--	--	--	--
	Jan-97	--	--	--	3 J	--	44	64	--	--	--	--	2 BJ	--
	Apr-97	--	--	--	8	--	130	180	--	--	--	--	--	--
	Jul-97	--	--	--	4J	5J	250D	310D	--	--	--	--	--	--
	Oct-97	--	--	--	4J	5J	240	370	--	--	--	--	--	--
	Jan-98	--	--	--	--	1J	120	180	--	--	--	--	--	--
	Apr-98	--	--	--	3J	--	44	150	--	--	--	--	--	--
	Jul-98	--	--	--	4J	--	30	160	--	--	--	--	--	--
	Jan-99	--	--	--	--	--	53	280E	--	--	--	--	--	--
	Aug-99	--	--	--	--	--	11	180	--	--	--	--	--	--
	Jan-00	--	--	--	--	--	8	130	--	--	--	--	--	--
	Aug-00	--	--	--	1J	--	18	200	--	--	--	--	--	--
	Jan-01	--	--	--	--	--	20	190D	--	--	--	--	--	--
	Aug-01	--	--	--	16	3J	29	140D	--	--	--	--	--	--
	Jan-02	--	--	--	12	3J	56	130	--	--	--	--	--	--

Notes appear at end of data

Table A.1
Summary of Sampling Data
at Machias Gravel Pit Site

		Parameters (ug/L)												
	DATE	Acetone	Carbon Disulfide	Chlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Toluene	1,2-Dichloroethene (Total)	Ethyl Benzene	Methylene Chloride	Chloroform
Cabin Well (RW-3)	Nov-93	--	--	--	--	--	--	(2 J)	--	--	--	--	--	--
	Jan-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Feb-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Mar-94	--	--	--	--	--	1 J	(0.7 J)	--	--	--	(2 J)	0.9 J	--
	Apr-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-95	--	--	--	--	--	--	--	--	--	--	--	--	--
	Apr-95	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-95	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-95	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-96	--	--	--	--	--	--	--	--	--	--	--	--	--
	Apr-96	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-96	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-96	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-97	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Apr-97	--	--	--	--	--	--	2 J	--	--	--	--	--	--
	Jul-97	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-97	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-98	--	--	--	--	--	--	--	--	--	--	--	--	--
	Apr-98	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-98	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-99	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Aug-99	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Jan-00	--	--	--	--	--	--	--	--	--	--	--	--	--
	Aug-00	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-01	--	--	--	--	--	--	--	--	--	--	--	--	--
	Aug-01	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-02	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes appear at end of data

Table A.1
Summary of Sampling Data
at Machias Gravel Pit Site

		Parameters (ug/L)												
	DATE	Acetone	Carbon Disulfide	Chlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Toluene	1,2-Dichloroethene (Total)	Ethyl Benzene	Methylene Chloride	Chloroform
SW-1	Nov-93	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Feb-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Mar-94	--	--	--	--	--	2 J	(2 J)	--	--	--	(1 J)	--	--
	Apr-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-95	--	--	--	--	--	--	--	--	--	--	--	--	--
	Apr-95	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-95	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-95	--	--	--	--	--	2 J	1 J	--	--	--	--	--	--
	Jan-96	--	--	--	--	--	--	--	--	--	--	--	--	--
	Apr-96	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-96	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-96	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-97	--	--	--	--	--	--	--	--	--	--	--	2 BJ	--
	Apr-97	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-97	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-97	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-98	--	--	--	--	--	--	--	--	--	--	--	--	--
	Apr-98	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-98	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-99	--	--	--	--	--	--	--	--	--	--	--	--	--
	Aug-99	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-00	--	--	--	--	--	--	--	--	--	--	--	--	--
	Aug-00	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-01	--	--	--	--	--	--	--	--	--	--	--	--	--
	Aug-01	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-02	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes appear at end of data

Table A.1
Summary of Sampling Data
at Machias Gravel Pit Site

		Parameters (ug/L)												
	DATE	Acetone	Carbon Disulfide	Chlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Toluene	1,2-Dichloroethene (Total)	Ethyl Benzene	Methylene Chloride	Chloroform
SD-1	Nov-93	--	--	(1 J)	--	--	--	--	--	(2 J)	--	--	--	--
	Jan-94	--	--	--	--	--	9	4	--	--	--	--	--	--
	Feb-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Mar-94	53	--	--	--	--	--	--	--	--	--	--	--	3 J
	Apr-94	--	--	--	--	--	7	2 J	--	--	--	--	--	--
	Jul-94	--	--	--	--	--	--	--	--	--	--	--	18 B	--
	Oct-94	56	--	--	--	--	--	7 J	--	--	--	--	--	--
	Jan-95	--	--	--	--	--	--	--	--	--	--	--	--	--
	Apr-95	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-95	--	--	--	4J	--	--	5	--	--	--	--	--	--
	Oct-95	41	--	--	--	--	7	12	--	--	--	--	--	--
	Jan-96	--	--	--	--	--	--	--	--	--	--	--	--	--
	Apr-96	--	--	--	--	--	9	8	--	--	--	--	--	--
	Jul-96	--	--	--	--	--	4J	5	--	--	--	--	--	--
	Oct-96	--	--	--	8	--	4J	12	--	--	--	--	--	--
	Jan-97	--	--	--	--	--	--	--	--	--	--	--	--	--
	Apr-97	--	--	--	--	--	11	11	--	--	--	--	2 BJ	--
	Jul-97	--	--	--	--	--	--	--	--	--	--	--	3J	--
	Oct-97	--	--	--	10	--	11	18	--	--	10	--	9B	--
	Jan-98	37	--	4J	--	--	--	7	--	--	2J	--	2J	--
	Apr-98	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-98	--	--	--	--	--	--	--	--	--	--	--	3J	--
	Jan-99	--	--	--	--	--	--	--	4J	--	--	--	--	--
	Aug-99	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-00	--	--	--	3J	--	19	33	--	--	--	--	3BJ	--
	Aug-00	--	--	--	7	--	--	--	--	--	--	--	--	--
	Jan-01	--	--	--	27	--	17	68	--	--	8	--	4 BJ	--
	Aug-01	54B	--	--	21	--	--	3J	--	3J	15	--	--	--
	Jan-02	59	--	--	19	5	7	26	--	--	--	--	6	--

Notes appear at end of data

Table A.1
Summary of Sampling Data
at Machias Gravel Pit Site

		Parameters (ug/L)												
	DATE	Acetone	Carbon Disulfide	Chlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Toluene	1,2-Dichloroethene (Total)	Ethyl Benzene	Methylene Chloride	Chloroform
Field Blank	Nov-93	--	--	--	--	--	--	0.6 J	--	--	--	--	--	--
	Jan-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Feb-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Mar-94	--	--	--	--	--	--	--	--	(0.5 J)	--	(1 J)	--	--
	Apr-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-94	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-95	--	--	--	--	--	--	--	--	--	--	--	--	--
	Apr-95	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-95	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-95	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-96	--	--	--	--	--	--	--	--	--	--	--	--	16
	Apr-96	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-96	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-96	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-97	--	--	--	--	--	--	--	--	--	--	--	2 BJ	--
	Apr-97	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-97	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-97	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-98	--	--	--	--	--	--	--	--	--	--	--	--	--
	Apr-98	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jul-98	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-99	--	--	--	--	--	--	--	--	--	--	--	--	--
	Aug-99	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-00	--	--	--	--	--	--	--	--	--	--	--	--	--
	Aug-00	--	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-01	--	--	--	--	--	--	--	--	--	--	--	3 BJ	--
	Aug-01	13	--	--	--	--	--	--	--	--	--	--	--	--
	Jan-02	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes appear at end of data

Table A.1
Summary of Sampling Data
at Machias Gravel Pit Site

DATE	Parameters (ug/L)												
	Acetone	Carbon Disulfide	Chlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Toluene	1,2-Dichloroethene (Total)	Ethyl Benzene	Methylene Chloride	Chloroform

Notes:
-- Not Detected
J Detected below method detection limit. Value shown is therefore estimated.
(3) Values in parentheses are less than 10 times that found in the field blank or Laboratory method blanks and therefore are not representative of actual site conditions (i.e., artifacts or attributable to laboratory introduced
GW-22 Ground water well sample (water table)
GW-22D Ground water well sample (deep)
RW-2 Cabin well sample
SW Surface water sample
SD Sediment Sample
Dup Duplicate Sample
NS No Sample
B Sample was also detected in the associated method blank.
E Compound was detected above the instruments calibration range thus a secondary dilution was performed.
D Analysis performed at a secondary dilution factor.
** GW-10 was not part of the initial ground water monitoring program established in the RD/RA Work Plan. This monitoring point was added in the first quarter of 1995 to start monitoring remedial effects downgradient of well GW-6 which is already showing a decreasing trend of contaminants. The last sampling of well GW-10 in the 4th quarter of 1992 showed TCE and 1,1,1-TCA concentrations of 160 ug/l and 160 ug/l, respectively.
* Reference: U.S. EPA, 1988. Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses.

APPENDIX B

Boring Logs and Well Construction Summaries

FIELD LOG - SOIL BOREHOLE

ME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split spoon

BORING NO. GW-3D

SHEET 1 OF 7

WATER LEVEL				
TIME				
DATE				
CASING DEPTH				

DRILLING START	DRILLING FINISH
TIME 08:20	TIME 09:45
DATE 12/11/90	DATE 12/12/90

: N4905.05, E5168.97 Top of PVC: 1742.21

RIG: ATV

SURFACE CONDITIONS: silt and clay, cloudy, 25°F

LE: Vertical BEARING N/A

PLE HAMMER TORQUE FT.-LBS

DRILLING CONTR

BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
1 1 2 3		Silt: some clay and pebbles, well sorted, moist, brown (ML).						
		Silty Clay: some pebbles, wet (CL).						
		as above with trace pebbles						
4 4 5 6		Silt: some clay, trace pebbles, wet, brown (ML).						1.5' recovery
3 3 3 3		as above						1.0' recovery
2 3 3 3		as above with some pebbles						.3' recovery HNu = background

LOGGED BY Larry Gardiner

DATE

ydro-Search, Inc.

HYDROLOGISTS · GEOLOGISTS · ENGINEERS

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split Spoon

BORING NO. GW-3D

SHEET 2 OF 7

WATER LEVEL					DRILLING START	DRILLING FINISH
TIME					08:20	09:45
DATE					12/11/90	12/12/90
CASING DEPTH						

DATUM: N4905.05, E5168.97 Top of PVC: 1742.21

DRILL RIG: ATV

SURFACE CONDITIONS: silt and clay, cloudy, 25°F

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
13	1 3 6 4		Sand: fine to medium, some gravel, fair sorting, moist (SP).						.7' recovery
14	7 4		Sand and Gravel: very fine to coarse, poorly sorted, subangular, moist (SW).						
15	6 6		as above						HNU = background
16	5 5								
17	6 4		as above with very fine to medium sand						.5' recovery
18	3 3								
19	5 3		as above						1.0' recovery
20									HNU = background
21	1 6 7 5		Sand: fine to medium, angular to subangular, trace pebbles, fair sorting, moist, brown (SP).						
22	7 7		Sandy Silt: some very fine sand (ML).						
23	7 7		Sand: medium to coarse, moist, brown (SP).						1.5' recovery
24									

DRILLING CONTR.

LOGGED BY Larry Gardner

DATE

FIELD LOG - SOIL BOREHOLE

TE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split spoon

BORING NO. GW-30

SHEET 3 OF 7

WATER LEVEL		DRILLING START	DRILLING FINISH
TIME		TIME 08:20	TIME 09:45
DATE		DATE 12/11/90	DATE 12/12/90
CASING DEPTH			

DATUM: N4905.05, E5168.97 Top of PVC: 1742.21

SURFACE CONDITIONS: silt and clay, cloudy, 25°F

DRILL RIG: ATV

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

DRILLING CONTR

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
25	3 6 7 5		Sand and Silt: very fine to coarse, interbedded, well sorted, moist, brown (SM).						1.2' recovery
26	7 8 10 15		Sand: fine, angular, well sorted (SP).						1.3' recovery
28	7 9 9 10		Sand: fine to medium, poorly sorted, moist, brown (SW).						1.5' recovery
30	9 10 11 12		as above						1.0' recovery
32	6 6 9 6		as above with very fine sand, dry						1.4' recovery
34	6 8 9 10		as above						.9' recovery
36									

LOGGED BY Larry Gardiner

DATE

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split Spoon

BORING NO. GW-3D

SHEET 4 OF 7

WATER LEVEL		DRILLING START	DRILLING FINISH
TIME		TIME 08:20	TIME 09:45
DATE		DATE 12/11/90	DATE 12/12/90
CASING DEPTH			

DATUM: N4905.05, E5168.97 Top of PVC: 1742.21

DRILL RIG: ATV

SURFACE CONDITIONS: silt and clay, cloudy, 25°F

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
37	7 13 13 10		as above						1.1' recovery
38	9 10		Silty Sand: very fine to fine, some silt, dry, brown (SM).						HNu = background
39	10 8								1.4' recovery
40	12 14								
41	16 20		as above with trace pebbles						1.3' recovery
42	9 10								
43	20 15		as above						.6' recovery
44	10 10								
45	10 11		as above						.9' recovery
46	8 14								
47	16 20		as above, becoming moist						1.3' recovery
48									HNu = background

DRILLING CONTR

LOGGED BY Larry Gardiner

DATE

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split spoon

BORING NO. GW-30

SHEET 5 OF 7

WATER LEVEL				
TIME				
DATE				
CASING DEPTH				

DRILLING: START TIME 08:20, FINISH TIME 09:45; START DATE 12/11/90, FINISH DATE 12/12/90

DATUM: N4905.05, E5168.97 Top of PVC: 1742.21

DRILL RIG: ATV

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

SURFACE CONDITIONS: silt and clay, cloudy, 25°F

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
49	6 6 8 8		as above, wet						approximate water table
50	7 7 9 6		Silt: wet, brown (ML).						1.5' recovery
52	3 3 4 7		as above						
54	6 6 7 8		as above						1.8' recovery
56	9 13 17 17		as above						2.0' recovery
58	10 8 16 16		as above, trace clay						HNu = background 2.0' recovery
60									

DRILLING CONTR

LOGGED BY Larry Gardiner

DATE

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split Spoon

BORING NO. GW-30

SHEET 6 OF 7

WATER LEVEL			
TIME			
DATE			
CASING DEPTH			

DRILLING: START TIME 08:20, DATE 12/11/90; FINISH TIME 09:45, DATE 12/12/90

DATUM: N4905.05, E5168.97 Top of PVC: 1742.21

DRILL RIG: ATV

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

SURFACE CONDITIONS: silt and clay, cloudy, 25°F

DRILLING CONTR

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
61	10 14 14 6		as above, without clay						2.0' recovery
62	5 5 11 16		as above						2.0' recovery
63									
64	7 9 12 16		as above						HNU = background 2.0' recovery
65									
66	12 11 13 14		as above						2.0' recovery
67									
68	6 9 12 15		as above						2.0' recovery
69									
70	4 12 13 15		as above, trace clay						2.0' recovery
71									
72									

LOGGED BY Larry Gardiner

DATE

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split spoon

WATER LEVEL TIME / DATE / CASING DEPTH

BORING NO. GW-3D

SHEET 7 OF 7

DRILLING START TIME 08:20 DATE 12/11/90 | FINISH TIME 09:45 DATE 12/12/90

DATUM: N4905.05, E5168.97 Top of PVC: 1742.21

DRILL RIG: ATV

SURFACE CONDITIONS: silt and clay, cloudy, 25°F

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

DRILLING CONTR

ELEVATION IN	BLOWS/6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
73	4 5 7 9		Clayey Silt: some clay, wet, gray-brown (ML).					HNu = background 2.0' recovery
74	6 5 5 10		as above, with 2" sand stringer					2.0' recovery
76	5 6 10 6		Sand and Gravel: fine, to coarse sand and pebbles, subangular to subrounded, trace silt, gray (GW).					2.0' recovery
78			T.D. = 77.8 feet					HNu = background

LOGGED BY Larry Gardiner

DATE

Hydro-Search, Inc.

HYDROLOGISTS · GEOLOGISTS · ENGINEERS

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split spoon

BORING NO. GW-5

SHEET 1 OF 5

WATER LEVEL			
TIME			
DATE			
CASING DEPTH			

DRILLING START	DRILLING FINISH
TIME 08:40	TIME 14:10
DATE 12/10/90	DATE 12/10/90

DATUM: N4681.86, E4987.56 Top of PVC: 1741.50

DRILL RIG: ATV

SURFACE CONDITIONS: sand and gravel

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

DRILLING CONTR

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
1	3 5 13 10		Sand and Gravel: coarse sand to pebbles, some fine sand, angular to subangular grains, moist to slightly moist, brown (GW).						1.0' recovery
2									
3	4 25 30 16		as above						.5' recovery
4									HNu = background
5	5 8 10 12		Sand: very coarse to fine, trace pebbles, poorly sorted, angular, moist, brown (SW).						1.5' recovery
6									
7	1 7 8 10		as above without pebbles						1.4' recovery
8									
9	3 10 12 13		Silty Sand: coarse to fine, some silt, poorly sorted, moist, brown (SM).						1.5' recovery
10									HNu = background
11	2 7 12 12		as above						1.6' recovery
12									

LOGGED BY Sandra Haws

DATE

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split Spoon

BORING NO. GW-5

SHEET 2 OF 5

WATER LEVEL		
TIME		
DATE		
CASING DEPTH		

DRILLING START	DRILLING FINISH
TIME 08:40	TIME 14:10
DATE 12/10/90	DATE 12/10/90

DATUM: N4681.86, E4987.56 Top of PVC: 1741.50

DRILL RIG: ATV

SURFACE CONDITIONS: sand and gravel

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

DRILLING CONTR

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
13	3, 12, 15, 16		as above, slightly coarser						1.4' recovery
14									
15	1, 9, 14, 17		as above						1.8' recovery HNU = background
16									
17	2, 7, 11, 17		as above Sand and Silt: fine sand and silt, gradational fining downward from upper silty sand unit, trace clay, moist, yellow-brown (SM).						1.6' recovery
18									
19	4, 13, 24, 18		as above						1.9' recovery
20									HNU = Background
21	3, 10, 15, 16		as above, coarsening to medium sand and silt						2.0' recovery
22									
23	2, 15, 24, 28		as above, fining to fine sand and silt						1.9' recovery
24									

LOGGED BY Sandra Haws

DATE

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split spoon

BORING NO. GW-5

SHEET 3 OF 5

WATER LEVEL	DRILLING START	DRILLING FINISH
TIME	08:40	14:10
DATE	12/10/90	12/10/90
CASING DEPTH		

DATUM: N4681.86, E4987.56 Top of PVC: 1741.50

DRILL RIG: ATV

SURFACE CONDITIONS: sand and gravel

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
25	2 13 27 26		as above, coarsening to medium sand and silt						1.7' recovery
26									HNu = background
27	4 15 21 27		as above, fining to fine sand and silt						1.6' recovery
28	3 17 26 35		Sandy Silt: some very fine sand, trace clay, moist, yellow-brown (ML).						2.0' recovery
30									HNu = background
31	5 32 52 62		as above						1.9' recovery
32	2 26 29 30		as above						1.1' recovery
34			Sand and Gravel: fine sand and pebbles, some silt, slightly moist, brown (GM).						HNu = background
35	10 100/ 5"		as above with trace clay						.1' recovery
36									

DRILLING CONTR

LOGGED BY Sandra Haws

DATE

FIELD LOG - SOIL BOREHOLE

E AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split Spoon

WATER LEVEL
TIME
DATE

BORING NO. GW-5

SHEET 4 Of 5

DRILLING START	DRILLING FINISH
TIME 08:40	TIME 14:10
DATE 12/10/90	DATE 12/10/90

4681.86, E4987.56 Top of PVC: 1741.50 CASING DEPTH

SURFACE CONDITIONS: sand and gravel

RIG: ATV

Vertical BEARING N/A

AMMER TORQUE FT.-LBS

6 I ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
10 40 34 40		as above						1.0' recovery
6 32 40 46		as above						1.2' recovery HNu = background
7 50		as above						1.4' recovery
60 36		Sandy Silt: some fine sand, some clay, moist, brown (ML).						
4 19 26 37		as above, becoming very moist						1.9' recovery collected sample GWSB01-01 at 13:15
3 12 22 25		as above, wet at 45'						1.6' recovery approximate water table 45' HNu = background
2 9 11 12		Silty Sand: fine to medium sand, some silt, trace clay, wet, brown (SM).						1.8' recovery

DRILLING CONTR

LOGGED BY Sandra Haws

DATE

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split spoon

BORING NO. GW-5

SHEET 5 OF 5

WATER LEVEL		
TIME		
DATE		
CASING DEPTH		

DRILLING START	DRILLING FINISH
TIME 08:40	TIME 14:10
DATE 12/10/90	DATE 12/10/90

DATUM: N4681.86, E4987.56 Top of PVC: 1741.50

DRILL RIG: ATV

SURFACE CONDITIONS: sand and gravel

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
49	3 13 17 21		as above						2.0' recovery
50									
51	1 6 11 12		as above						2.0' recovery
52			T.D. = 51 feet						

DRILLING CONTR.

LOGGED BY Sandra Haws

DATE

MONITOR WELL CONSTRUCTION SUMMARY

Well No. GW-5

Boring No. X-Ref: _____

Survey Coords: N4681.86, E4987.56

Elevation Ground Level _____

Top of PVC 1741.5

SITE NAME _____

LOCATION _____

Drilling Summary:
Total Depth: 52.0 feet
Borehole Diameter: 8.25 inches
Casing Stick-up Height: ±2 feet
Driller: Empire Soils (Art)
Rig: ATV
Drilling Fluid: none
Protective Casing: steel locking

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	12/10	8:40	12/10	14:10
Casing:	12/10	15:35	12/10	15:45
Filter Placement:	12/10	15:55	12/10	17:00
Cementing:	12/11	9:00	12/11	11:30
Development:	12/13	9:10	12/13	9:50

Well Design & Specifications

Basic: Geologic Log X Geophysical Log ___
Casing String(s): C = Casing S = Screen

Depth	String(s)	Elevation
+2 - 41	C	_____ - _____
41 - 51	S	_____ - _____
___ - ___	_____	_____ - _____
___ - ___	_____	_____ - _____
___ - ___	_____	_____ - _____

Casing: C1: 2", schedule 40 PVC
Casing: C2:
Screen: S1: 2", 0.010 continuous slot PVC
Filter Pack: silica sand (51-39')
Grout Seal: cement-bentonite (36-0')
Bentonite Seal: pellets (39-36')

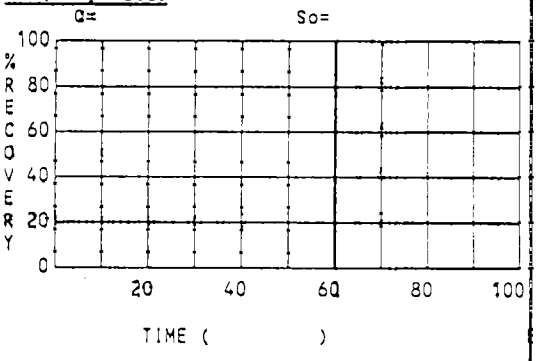
Well Development:

12/13/90 - 5 gallons, bailer

Stabilization Test Data: 12/14/90

Time	pH	Spec. Cond.	Temp (C)
10:30	6.65	199	6.5
10:33	6.90	200	8.0
10:35	6.70	200	7.5
10:38	6.80	199	7.5

Recovery Data:



SUPERVISED BY _____

DATE _____

Comments: cement runoff apron

Motorola - Machias, New York

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split spoon

BORING NO. GW-6

SHEET 1 OF 5

DRILLING	START	FINISH
TIME	10:00	11:00
DATE	12/07/90	12/10/90

WATER LEVEL
TIME
DATE
CASING DEPTH

DATUM: N4979.34, E5282.47 Top of PVC: 1739.88

DRILL RIG: ATV

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

SURFACE CONDITIONS: corn field, 1' snow, cloudy to partly cloudy, 35°F

DRILLING CONTR

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
1	1 2 2 2		Silt: some clay, trace pebbles, brown (ML).					1.2' recovery
2								
3	3 4 6 6		as above					.9' recovery
4								
5	3 7 6 4		as above					.9' recovery
6								
7	7 8 5 5		as above					1.2' recovery
8								
9	2 3 2 2		as above					.3' recovery
10								
11	3 1 2 2		Sand: fine, some pebbles, medium sorting, wet, brown (SW).					.5' recovery
12								

LOGGED BY Larry Gardiner

DATE

Hydro-Search, Inc.

HYDROLOGISTS · GEOLOGISTS · ENGINEERS

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: **Motorola**, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split Spoon

BORING NO. GW-6

SHEET 2 OF 5

WATER LEVEL				DRILLING START	DRILLING FINISH
TIME				TIME 10:00	TIME 11:00
DATE				DATE 12/07/90	DATE 12/10/90
CASING DEPTH					

DATUM: N4979.34, E5282.47 Top of PVC: 1739.88

DRILL RIG: ATV

SURFACE CONDITIONS: corn field, 1' snow, cloudy to partly cloudy, 35°F

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN: ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
13	12 32 13 12		Sand: very fine to pebbles, poorly sorted, brown (SW).						.9' recovery
14									
15	10 11 12 20		as above, trace silt						.6' recovery
16									
17	15 12 11 11		large cobble jammed in split spoon, no recovery						0.0' recovery
18									
19	9 6 6 6		Sand: fine to medium, medium sorting, subangular, brown (SW).						.8' recovery
20									
21	11 9 8 8		as above with very fine sand						.6' recovery
22									
23	6 7 9 10		Sand: fine, well sorted, subangular, slightly moist, brown (SP).						.8' recovery
24									

DRILLING CONTR

LOGGED BY Larry Gardiner

DATE

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split spoon

BORING NO. GW-6

SHEET 3 OF 5

WATER LEVEL				DRILLING START	DRILLING FINISH
TIME				TIME 10:00	TIME 11:00
DATE				DATE 12/07/90	DATE 12/10/90
CASING DEPTH					

DATUM: N4979.34, E5282.47 Top of PVC: 1739.88

DRILL RIG: ATV

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

SURFACE CONDITIONS: corn field, 1' snow, cloudy to partly cloudy, 35°F

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
25	10 10 10 11		as above						1.5' recovery
26	14 16 19 17		Sand and Gravel: some silt, poorly sorted, angular to subangular, brown (GM).						.9' recovery
28	11 15 19 17		as above						.8' recovery
30	13 22 17 14		as above, clay stringer at 31.5'						1.2' recovery
32	16 18 16 13		Sand: fine, some cobbles, well sorted, subangular, brown (SP).						.8' recovery
34	17 15 15 16		Sand and Gravel: very fine to pebbles, poorly sorted, angular to subangular, brown (GW).						1.0' recovery
36									

DRILLING CONTR

LOGGED BY Larry Gardiner

DATE

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split Spoon

BORING NO. GW-6

SHEET 4 OF 5

WATER LEVEL				
TIME				
DATE				
CASING DEPTH				

DRILLING START	DRILLING FINISH
TIME 10:00	TIME 11:00
DATE 12/07/90	DATE 12/10/90

DATUM: N4979.34, E5282.47 Top of PVC: 1739.88

DRILL RIG: ATV

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

SURFACE CONDITIONS: corn field, 1' snow, cloudy to partly cloudy, 35°F

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
37	16 13 15 18		Sand: medium to coarse, trace pebbles, medium sorting, dry, brown (SW).						.8' recovery
38	16 15 14 13		as above						.8' recovery
40	15 18 26 32		as above						1.2' recovery
42	15 27 20 8		as above with fine sand						
44	14 16 16 18		Silt: trace pebbles, brownish gray (ML).						
46	10 12 18 20		Sand and Gravel: very fine sand to pebbles, poorly sorted, brown (GW).						
48									

DRILLING CONTR

LOGGED BY Larry Gardiner

DATE

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split spoon

BORING NO. GW-6

SHEET 5 OF 5

WATER LEVEL				DRILLING START	DRILLING FINISH
TIME				TIME 10:00	TIME 11:00
DATE				DATE 12/07/90	DATE 12/10/90
CASING DEPTH					

DATUM: N4979.34, E5282.47 Top of PVC: 1739.88

DRILL RIG: ATV

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

SURFACE CONDITIONS: corn field, 1' snow, cloudy to partly cloudy, 35°F

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
49	12 14 17 26		no sample					approximate water table 48'
50	12 17 14 21		Silt: well sorted, wet, brown (ML).					
52	10 10 13 15		Sand: fine, well sorted, wet, brown (SP).					
54	12 14 14 17		no sample					
56			T.D. = 56 feet					

DRILLING CONTR

LOGGED BY Larry Gardiner

DATE

MONITOR WELL CONSTRUCTION SUMMARY

Well No. GW-6

Boring No. X-Ref:

Survey Coords: N4979.34, E5282.47

Elevation Ground Level

Top of PVC 1739.88

Drilling Summary:
Total Depth: 54.5 feet
Borehole Diameter: 8.25 inches
Casing Stick-up Height: ±2 feet
Driller: Empire Soils (Kenny)

Rig: ATV

Drilling Fluid: none

Protective Casing: steel locking

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	12/7	10:00	12/10	11:00
Casing:	12/10	11:45	12/10	11:55
Filter Placement:	12/10	12:35	12/10	12:55
Cementing:	12/10	13:40	12/10	14:15
Development:	12/13	10:20	12/13	10:45

Well Design & Specifications

Basic: Geologic Log X Geophysical Log ___
Casing String(s): C = Casing S = Screen

Depth	String(s)	Elevation
+2 - 44.5	C	-
44.5 - 54.5	S	-
-		-
-		-
-		-

Casing: C1: 2", schedule 40 PVC

Casing: C2:

Screen: S1: 2", 0.010 continuous slot PVC

Filter Pack: silica sand (54.5-44.5')

Grout Seal: cement-bentonite (39-0')

Bentonite Seal: pellets (44.5-39')

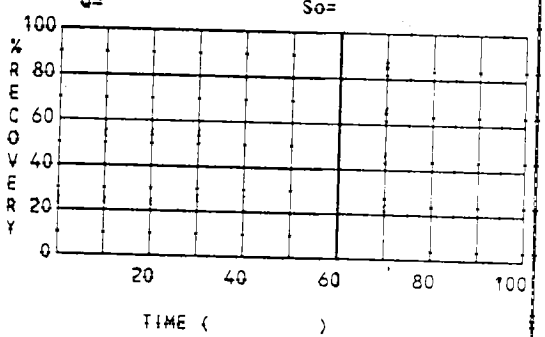
Well Development:

12/13/90 - 6 gallons, bailer

Stabilization Test Data:

Time	pH	Spec. Cond.	Temp (C)
14:00	6.50	278	7.0
14:10	7.25	300	6.5
14:16	7.40	300	7.0
14:20	7.45	310	6.5

Recovery Data:



Comments: cement runoff apron

Motorola - Machias, New York

SITE NAME

LOCATION

SUPERVISED BY

DATE

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split spoon

BORING NO. GW-7

SHEET 1 OF 4

WATER LEVEL				
TIME				
DATE				
CASING DEPTH				

DRILLING

START	FINISH
TIME 15:00	TIME 17:00
DATE 12/03/90	DATE 12/04/90

DATUM: N4825.45, E5420.21 Top of PVC: 1729.16

DRILL RIG: ATV

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

SURFACE CONDITIONS: grassy field, 3" snow, 35°F, windy

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
1	2 2 3 7		Silt: some sand and clay, roots near surface, coarsening downward, slightly moist, tan to brown (OL).						1.5' recovery
2									
3	8 7 6 6		Sand and Gravel: some silt and clay, pebbles, subrounded, moist, brown (GM).						1.0' recovery
4									
5	3 2 11 9		as above with increasing sand, very moist						.6' recovery HNu = background
6									
7	13 15 10 8		as above with pebbles and cobbles						.3' recovery
8									
9	3 11 17 16		as above with trace clay, slightly moist						.6' recovery
10									HNu = background
11	8 18 24 10		as above						.9' recovery
12									

DRILLING CONTR

LOGGED BY Sandra Haws

DATE

Hydro-Search, Inc.

HYDROLOGISTS · GEOLOGISTS · ENGINEERS

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split Spoon

BORING NO. GW-7

SHEET 2 OF 4

WATER LEVEL				
TIME				
DATE				

DRILLING

START	FINISH
TIME 15:00	TIME 17:00
DATE 12/03/90	DATE 12/04/90

DATUM: N4825.45, E5420.21 Top of PVC: 1729.16 | CASING DEPTH

DRILL RIG: ATV | SURFACE CONDITIONS: grassy field, 3" snow, 35°F, windy

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
13	22 15 18 36		as above with only pebbles						.8' recovery
14									HNu = background
	9 11		Silty Sand: some silt, trace pebbles, slightly moist, brown (SM).						
15	16 57								1.0' recovery
16	67		Sand and Gravel: coarse sand and pebbles, some silt, poorly sorted, slightly moist, light brown (GM).						
17	31 26 32								.9' recovery
18	12								
19	32 62 30		as above, dry						1.0' recovery
20									HNu = background
	22 50								
21	65 100/ 4"		no recovery						0.0' recovery
22	10								
23	20 26		as above with small pebbles, moist						1.5' recovery
24	29								HNu = background

DRILLING CONTR

LOGGED BY Sandra Haws

DATE

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split spoon

BORING NO. GW-7

SHEET 3 OF 4

WATER LEVEL TIME DATE

CASING DEPTH

DRILLING START TIME 15:00 DATE 12/03/90 FINISH TIME 17:00 DATE 12/04/90

DATUM: N4825.45, E5420.21 Top of PVC: 1729.16

DRILL RIG: ATV

ANGLE: Vertical BEARING N/A

SURFACE CONDITIONS: grassy field, 3" snow, 35°F, windy

SAMPLE HAMMER TORQUE FT.-LBS

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
25	26 40 55 62		as above with large pebbles, trace clay						1.7' recovery
26	54 80 100/3"		as above						.9' recovery
28	18 33 34 42		as above with trace cobbles						1.3' recovery
30	18 30 30 30		Sand: coarse to medium, trace silt, trace pebbles, some sorting, slightly moist, brown (SP).						HNu = background 1.4' recovery
32	9 24 26 29		as above						1.4' recovery
34	10 27 32 38		as above						HNu = background 1.6' recovery
36									

DRILLING CONTR

LOGGED BY Sandra Haws

DATE

Hydro-Search, Inc.

HYDROLOGISTS · GEOLOGISTS · ENGINEERS

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Motorola, Machias, New York

DRILLING METHOD: Auger

SAMPLE METHOD: Split Spoon

BORING NO. GW-7

SHEET 4 OF 4

WATER LEVEL		DRILLING START	DRILLING FINISH
TIME		TIME 15:00	TIME 17:00
DATE		DATE 12/03/90	DATE 12/04/90
CASING DEPTH			

DATUM: N4825.45, E5420.21 Top of PVC: 1729.16

DRILL RIG: ATV

ANGLE: Vertical BEARING N/A

SAMPLE HAMMER TORQUE FT.-LBS

SURFACE CONDITIONS: grassy field, 3" snow, 35°F, windy

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
37	23 30 40 43		as above with some pebbles						1.8' recovery
38	14 27 29 42		as above, wet at 39.8'						1.35' recovery approximate water table HNu = 7 above background - steam emitting, probably moisture influence
40	14 19 24 24		Sand and Gravel: coarse sand, trace silt, pebbles rounded to subangular, wet, brown (GP).						1.7' recovery HNu = background
42	3 16 33 30		as above						.7' recovery, 1' sluff from running sands HNu = background
44	5 19 42 37		as above as above with large pebbles						1.6' recovery HNu = background
46	9 26 82		as above T.D. = 47 feet						.6' recovery
48									

DRILLING CONTR

LOGGED BY Sandra Haws

DATE

MONITOR WELL CONSTRUCTION SUMMARY

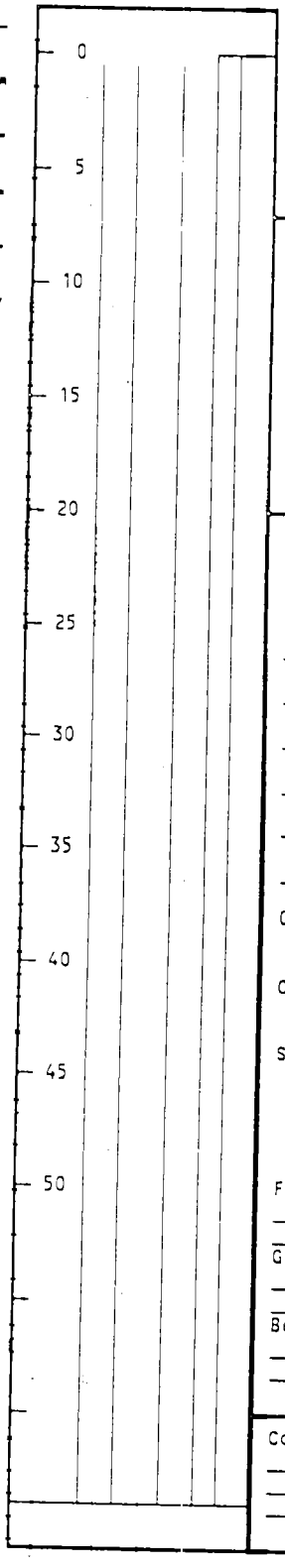
Well No. GW-7

Boring No. X-Ref:

Survey Coords: N4825.45, E5420.21

Elevation Ground Level

Top of PVC 1729.16



Drilling Summary:
Total Depth: 46.5 feet
Borehole Diameter: 8.25 inches
Casing Stick-up Height: 0 feet
Driller: Empire Soils (Kenny)
Rig: ATV
Drilling Fluid: water
Protective Casing: steel locking

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	12/3	15:00	12/4	17:00
Casing:	12/6	11:20	12/6	11:30
Filter Placement:	12/6	11:30	12/6	12:15
Cementing:	12/7	8:15	12/7	10:00
Development:	12/12	16:00	12/12	17:00

Well Design & Specifications

Basic: Geologic Log X Geophysical Log ___
Casing String(s): C = Casing S = Screen

Depth	String(s)	Elevation
0 - 36.5	C	-
36.5 - 46.5	S	-
-	-	-
-	-	-
-	-	-

Casing: C1: 2", schedule 40 PVC

Casing: C2:

Screen: S1: 2", 0.010 continuous slot PVC

Filter Pack: silica sand and natural (46.5-34.5')

Grout Seal: cement-bentonite (30.5-0')

Bentonite Seal: pellets (34.5-30.5')

Well Development:

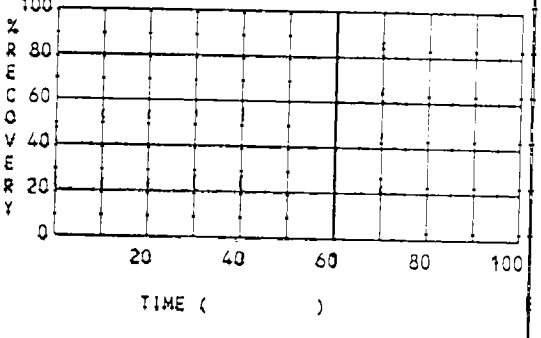
12/12/90 - 7 gallons, bailer

Stabilization Test Data: 12/13/90

Time	pH	Spec. Cond.	Temp (C)
16:35	7.6	259	6.5
16:37	7.9	271	6.5
16:39	8.1	270	6.5
16:41	8.0	275	7.0

Recovery Data:

Q= So=



Comments:

Motorola - Machias, New York

SITE NAME

LOCATION

SUPERVISED BY

DATE

FIELD LOG - SOIL BOREHOLE

TE NAME AND LOCATION:

Machias Gravel Pits (MGP)

DRILLING METHOD: HSA Hollow Stem Auger

SAMPLE METHOD: Split Spoon

BORING NO. GW-9

SHEET 1 OF 5

WATER LEVEL			
TIME			
DATE			
CASING DEPTH			

DRILLING START TIME 9:00 DATE 11/14/91 | FINISH TIME 1:30 DATE 11/14/91

DATUM: ELEVATION:

RILL RIG:

NGLE: 90° Vertical BEARING ---

SAMPLE HAMMER TORQUE FT.-LBS

SURFACE CONDITIONS: Overcast/40-50°F

TH (ELEVATION)	BLOWS/6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
1	3-7 5-4		Fill - Sandy with clay and silt. Some gravel. (Dry) (SP)	SS					Recovery 7"
2									
3									
4									
5	7-8 8-8		Silty Sand grading to a fine sand with some gravel and clay. (Dry) (SP)	SS					Recovery- 12"
6									
7									
8									
9									
10	8-4 3-2		Gravely Sand. (Dry) (SW)	SS					Recovery 3"
11									
12									
13									

DRILLING CONTR

LOGGED BY

DATE

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION:
Machias Gravel Pits (MGP)

DRILLING METHOD: HSA Hollow Stem Auger
SAMPLE METHOD: Split Spoon
WATER LEVEL TIME / DATE / CASING DEPTH
DATUM: ELEVATION:
DRILL RIG:
ANGLE: 90° Vertical BEARING ---
SAMPLE HAMMER TORQUE FT.-LBS
SURFACE CONDITIONS: Overcast/40-50°F

BORING NO. GW-9
SHEET 2 OF 5
DRILLING START TIME 9:00 DATE 11/14/91
DRILLING FINISH TIME 1:30 DATE 11/14/91

DRILLING CONTR

LOGGED BY

DATE

DEPTH (ELEVATION)	BLOWS/6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
14									
15	3-3 2-4		Angular to subrounded sand, (Moist) (SP)	SS					Recovery 3"
16									
17									
18									
19									
20	14-9 9-9		Angular Sand with some gravel, trace cobbles (Moist) (SW)	ss					Recovery 12-14" Sample collected: MG-SB03-02.
21									
22									
23									
24									
25									

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Machias Gravel Pits (MGP)

DRILLING METHOD: HSA Hollow Stem Auger

SAMPLE METHOD: Split Spoon

BORING NO. GW-9

SHEET 3 OF 5

WATER LEVEL		DRILLING START	DRILLING FINISH
TIME		TIME 9:00	TIME 1:30
DATE		DATE 11/14/91	DATE 11/14/91
CASING DEPTH			

DATUM: ELEVATION:

DRILL RIG:

SURFACE CONDITIONS: Overcast/40-50°F

ANGLE: 90° Vertical BEARING ---

SAMPLE HAMMER TORQUE FT.-LBS

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
26	8-13 8-13		Medium to course-grained sand with some gravel. Fine sand grades to gravel (¼-1" subrounded), trace silt. (Dry) (SW)	SS					Recovery - 14"
27									
28									
29									
30	3-9 7-9		Sandy Gravel grading to sand. (Dry) (SW)	SS					Recovery - 6"
31									
32									
33									
34									
35			Medium to course-grained sand with some gravel. Gravel subrounded to angular. (Moist) (SW)	SS					Recovery - 12"
36									
37									

DRILLING CONTR

LOGGED BY

DATE

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION:
Machias Gravel Pits (MGP)

DRILLING METHOD: HSA Hollow Stem Auger
SAMPLE METHOD: Split Spoon
WATER LEVEL TIME / DATE / CASING DEPTH
DATUM: ELEVATION:
DRILL RIG:
ANGLE: 90° Vertical BEARING ---
SAMPLE HAMMER TORQUE FT.-LBS
SURFACE CONDITIONS: Overcast/40-50°F

BORING NO. GW-9
SHEET 4 OF 5
DRILLING START: TIME 9:00, DATE 11/14/91
DRILLING FINISH: TIME 1:30, DATE 11/14/91

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
38									
39									
40	8-14 17-16		Well sorted sand with trace silt. (Dry) (SM)	SS					Recovery 18"
41									
42									
43									Gravels encountered.
44									
45	8-18 14-20		Fine grained sand with silt. (Moist) (SM)	SS					Recovery 12"
46									
47									
48									
49									

DRILLING CONTR

LOGGED BY

DATE

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Machias Gravel Pits (MGP)

DRILLING METHOD: HSA Hollow Stem Auger

SAMPLE METHOD: Split Spoon

BORING NO. GW-9

SHEET 5 OF 5

WATER LEVEL				
TIME				
DATE				
CASING DEPTH				

DRILLING START	DRILLING FINISH
TIME 9:00	TIME 1:30
DATE 11/14/91	DATE 11/14/91

DATUM: ELEVATION:

DRILL RIG:

SURFACE CONDITIONS: Overcast/40-50°F

ANGLE: 90° Vertical BEARING ---

SAMPLE HAMMER TORQUE FT.-LBS

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
50	9-16 14-12		Silty Sand grading to sand with some silt (Moist) (SM)	SS					Recovery 20"
51									
52									
53									
54									
55	6-11 14-15		Silty sand. (Wet) (SM)	SS					Water level encountered 55'. Recovery 20"
56									
57									
58									
59									
60			E.O.B = 60 ft.						

DRILLING CONTR

LOGGED BY

DATE

MONITOR WELL CONSTRUCTION SUMMARY

Well No. GW-9

Boring No. X-Ref:

Survey Coords: 4825N, 5100E

Elevation Ground Level

Top of Casing 1749.15

Drilling Summary:

Total Depth: 60 feet
Borehole Diameter: 8.25 inches
Casing Stick-up Height: ± 2 feet
Driller: Empire Soils Company of Hamburg, New York
Rig: HSA Rig
Bit(s): 10' Hollow Stem Auger (HSA)
Protective Casing: Steel locking

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	11/14	9:00	11/14	1:30
Casing:	11/14	2:00	11/14	2:15
Filter Placement:	11/14	2:20	11/14	2:50
Cementing:	11/14	3:00	11/14	4:00
Development:	11/15	2:45	11/15	3:45

Well Design & Specifications

Basic: Geologic Log X Geophysical Log ___
Casing String(s): C = Casing S = Screen

Depth	String(s)	Elevation
+2 - 50	C	-
50 - 60	S	-
-	-	-
-	-	-
-	-	-

Casing: C1: 2", Schedule 40 PVC

Casing: C2:

Screen: S1: 2", 0.010 continuous slot PVC

Filter Pack: Silica Sand (60' - 48')

Grout Seal:

Bentonite Seal: Pellets (48' - 45')

Well Development:

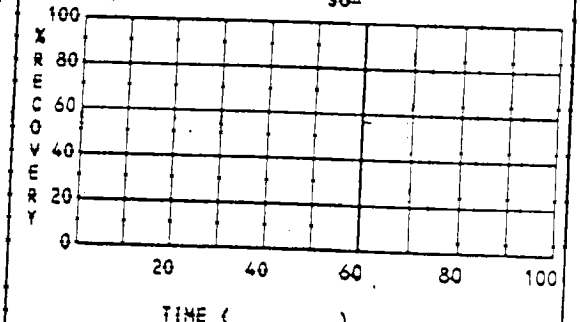
11/15/91 4 gallons, baiter

Stabilization Test Data:

Time	pH	Spec. Cond.	Temp (C)
3:50	6.73	400 µMHOs	9.1
4:00	6.88	390 µMHOs	9.0
4:10	6.79	390 µMHOs	8.9

Recovery Data:

Q= So=



Comments: Natural formation case in (45' - 10'). Cement runoff apron.

Motorola - Machias, New York

FIELD LOG - SOIL BOREHOLE

SITE NAME AND LOCATION: Machias Gravel Pits (MGP)

DRILLING METHOD: HSA Hollow Spoon Auger

SAMPLE METHOD: Split Spoon

BORING NO. GW-10

SHEET 1 OF 1

WATER LEVEL				
TIME				
DATE				
CASING DEPTH				

DRILLING START TIME 8:00 DATE 11/15/91 FINISH TIME 10:00 DATE 11/15/91

DATUM: ELEVATION:

DRILL RIG:

SURFACE CONDITIONS: Clear/ 40°-50° F

ANGLE: 90° BEARING ---

SAMPLE HAMMER TORQUE FT.-LBS

DEPTH IN FEET (ELEVATION)	BLOWS/ 6 IN. ON SAMPLER (RECOVERY)	SOIL GRAPH	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION OF OPERATION AND REMARKS
1	2-2 6-5		Fill - Silt and Clay. (Dry) (ML)	SS					Recovery 4"
2									
3									
4									
5	6-10 10-12		Silty Sand, subangular to well rounded. (Dry) (SM)	SS					Recovery 12"
6									
7									
8									
9									
10	4-6 8-8		Silty Sand grading to sand. (Wet) (SM)	SS					Recovery 20"
11									
12									

DRILLING CONTR

LOGGED BY

DATE

MONITOR WELL CONSTRUCTION SUMMARY

Well No. GW-10

Boring No. X-Ref:

Survey Coords: 5075N, 5500E

Elevation Ground Level

Top of Casing 1701.58

Drilling Summary:

Total Depth: 20 feet
Borehole Diameter: 8.25 inches
Casing Stick-up Height: ± 2 feet
Driller: Empire Soils Company of Hamburg, New York
Rig: HSA Rig
Bit(s): 10' Hollow Stem Auger (HSA)
Protective Casing: Steel locking

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	11/15	8:00	11/15	8:30
Casing:	11/15	8:30	11/15	8:45
Filter Placement:	11/15	8:45	11/15	9:00
Cementing:	11/15	9:05	11/15	9:30
Development:	11/17	11:20	11/17	12:18

Well Design & Specifications

Basic: Geologic Log X Geophysical Log ___
Casing String(s): C = Casing S = Screen

Depth	String(s)	Elevation
+2 - 10	C	-
10 - 20	S	-
-	-	-
-	-	-
-	-	-

Casing: C1: 2", Schedule 40 PVC

Casing: C2:

Screen: S1: 2", 0.010 continuous slot PVC

Filter Pack: Silica Sand (20' - 8')

Grout Seal: (4' - 0')

Bentonite Seal: Pellets (8' - 4')

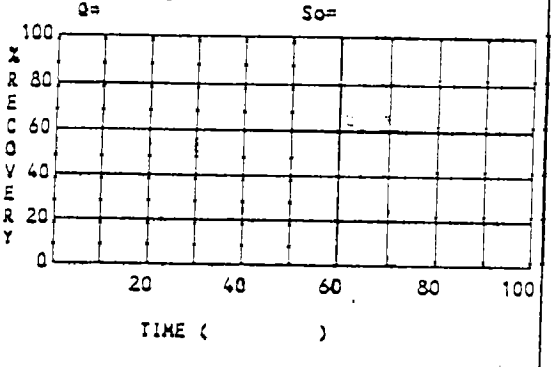
Well Development:

11/17/91 4½ gallons, bailer

Stabilization Test Data:

Time	pH	Spec. Cond.	Temp (C)
11:50	7.17	680 µMHOs	8.9
11:58	7.06	650 µMHOs	8.8
12:10	6.99	650 µMHOs	8.0

Recovery Data:



Comments: Cement runoff apron.

Motorola - Machias, New York

SOIL BOREHOLE LOG

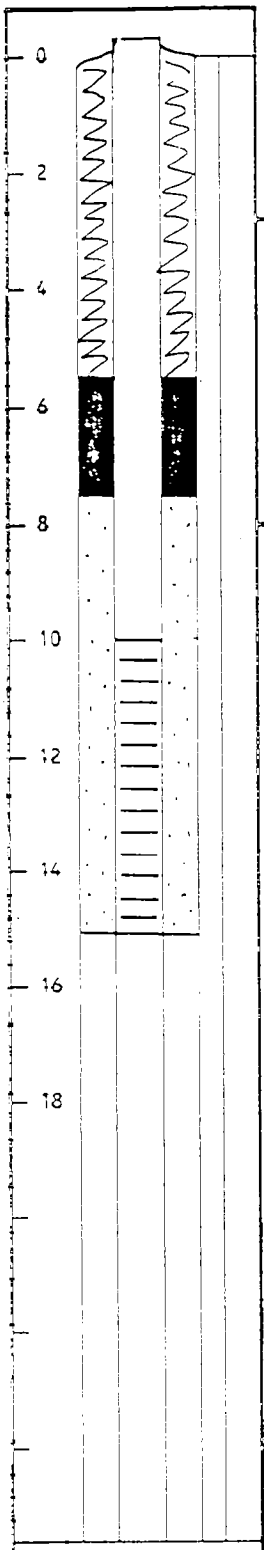
SITE NAME AND LOCATION: Motorola, Machias	DRILLING METHOD: 4 1/4" ID HSA		BORING NO. GW-16
	SAMPLE METHOD: SS		SHEET 1 OF 1
	WATER LEVEL		DRILLING START / FINISH
	TIME		TIME 1610 / TIME 1630
	DATE		DATE 11/03/92 / DATE 11/03/92
DATUM: MSL ELEVATION: 1689.54	CASING DEPTH		
DRILL RIG: CME 45, tracked	SURFACE CONDITIONS:		
ANGLE: 90° Vertical BEARING ---			
SAMPLE HAMMER TORQUE FT.-LBS			

	BLOW COUNTS (RECOVERY)	USCS SYMBOL	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	PID (ppm)	DESCRIPTION OF OPERATION AND REMARKS
2	3, 6 6, 5 (6/24)	OH	Dark Brown SILT and CLAY, trace fine sand, soft, slightly plastic, moist.	0	
4	6, 11 13, 14 (11/24)	GP	Light Brown GRAVEL to 1", subangular, some sand, trace to little silt, poorly sorted, loose, damp.	0	Blocked off, cuttings are as in 0-2. OH.
6	22, 32 100/4 (5/24)	GP-SP	Yellowish Brown SAND and GRAVEL; subangular to subrounded, some silt, poorly sorted, loose, dry.	0	Blocked off with 1" gravel clast.
8	14, 13 15, 7 (4/24)	GP-SP	As above, damp, Dark Brown.	0	1504 auger refusal at 6 ft, offset 4 ft N and blind drill to 6'.
10	1,1,1,1 (2/24)	GP-SP	Dark Brown as above, moist.	0	1523 Resume @ 6', offset.
12	2, 2 12, 5 (4/24)	GM	Med. Brown SILT and SAND, little gravel to 1/2"; subangular, poorly sorted, loose, wet.	0	
14	1, 1 4, 3 (6/24)	GM	GRAVEL, some sand, some silt, poorly sorted, loose, gravel subangular to 1" wet.	0	
16	2, 2 7, 4 (6/24)	GM	As above; WL 10.0 GS; gravel to 3/4".	0	
18					

MONITOR WELL CONSTRUCTION SUMMARY

Well No. GW-16

Boring No. X-Ref: _____



Survey Coords: N4942.27 E6121.7607

Elevation Ground Level 1689.54

Top of Casing 1692.16

Drilling Summary:
Total Depth: 15.0
Borehole Diameter: 8 inches
Casing Stick-up Height: 2.0
Driller: Empire Soils, Inc. Hamburg, NY
Rig: ATV Track Rig, CME 45
Bit(s): Hollow Stem Auger
Protective Casing: Lockable Steel

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling HSA	11/3	1610	11/3	1630
Casing: Riser & Screen	11/3	1635	11/3	1640
Bentonite Seal	11/3	1700	11/3	1705
Filter Placement:	11/3	1640	11/3	1700
Cementing:	11/4	0730	11/4	0740
Development:	11/7	0900	11/7	0945

Well Design & Specifications

Basic: Geologic Log X Geophysical Log ___
Casing String(s): C = Casing S = Screen

Depth	String(s)	Elevation
+2.0 - 10.0	C	1691.54 - 1679.54
10.0 - 15.0	S	1679.54 - 1674.54
___ - ___	___	___ - ___
___ - ___	___	___ - ___
___ - ___	___	___ - ___

Casing: C1: 2-inch, FJT, Sch. 40, PVC riser

Casing: C2:

Screen: S1: 4-inch, FJT, Sch. 40, PVC screen with 0.01-inch slot

Filter Pack: Clean Silica Sand (10-20), 15.0 feet to 7.5 feet BGS

Grout Seal: Portland, type II cement and bentonite powder, surface to 5.5 feet BGS

Bentonite Seal: Volclay 1/4" Bentonite pellets, 5.5 to 7.5 feet BGS

Well Development:

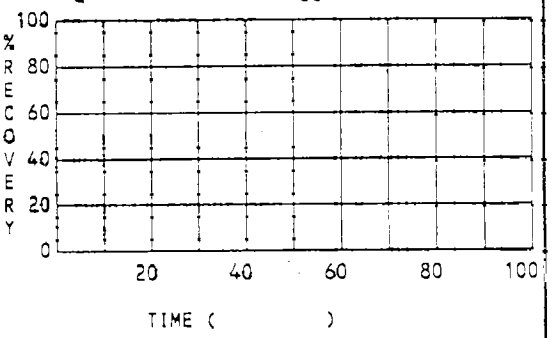
Bail and surge method. A total of 5.5 gallons bailed.

Stabilization Test Data:

Time	pH	Spec. Cond.	Temp (C)
1030	7.43	474	9.1
1038	7.36	477	8.7
1041	7.47	479	8.5

Recovery Data:

Q= So=



Comments: _____

SOIL BOREHOLE LOG

SITE NAME AND LOCATION: Motorola, Machias

DRILLING METHOD: 4 1/4" ID HSA

SAMPLE METHOD: SS

BORING NO. GW-20

SHEET 1 OF 1

WATER LEVEL				
TIME				
DATE				
CASING DEPTH				

DRILLING START	DRILLING FINISH
TIME 0807	TIME 0840
DATE 11/05/92	DATE 11/05/92

DATUM: MSL ELEVATION: 1678.42

DRILL RIG: CME 45, tracked

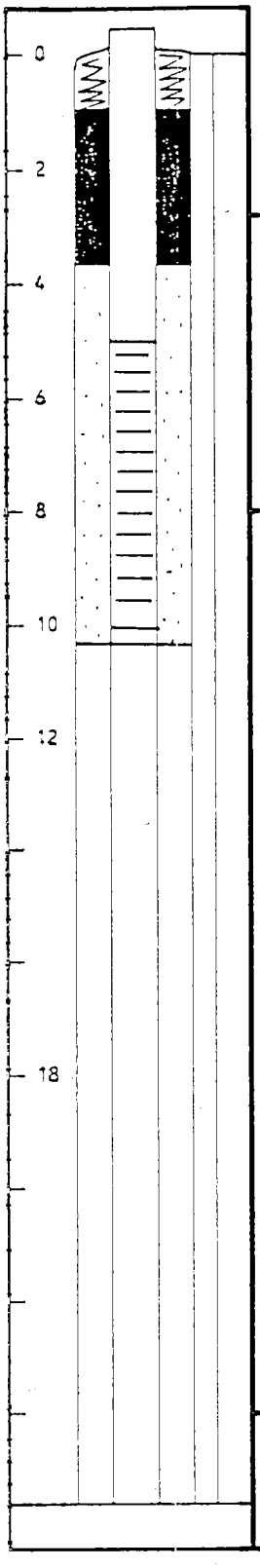
SURFACE CONDITIONS: Bench above flood plain.

ANGLE: 90° Vertical BEARING ---

SAMPLE HAMMER TORQUE FT.-LBS

	BLOW COUNTS (RECOVERY)	USCS SYMBOL	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	PID (ppm)	DESCRIPTION OF OPERATION AND REMARKS
	1/12, 1/12 (12/24)	PT	Very Dark Brown, very rich organic soil - peat, moist.	0	
2	12, 12 11, 19 (14/24)	PT-SM	2-3. As above - peat, moist. 3-4. Gray SAND, subangular, some silt, little gravel, med. dense, wet.	0	
4	10, 15 19, 12 (8/24)	GW	Brown GRAVEL to 1", angular to subrounded, little sand, trace silt, med. sorted, non plastic, loose, wet.	0	Water ~ 8" bgs
6	17, 18 17, 14 (8/24)	GP	As above with some sand, little silt, wet, p. sorted.	0	
8	25, 17 39, 15 (12/24)	GM	Brown Gravel, some silt, subang, p. sort, wet, loose.	0	
10					

MONITOR WELL CONSTRUCTION SUMMARY



Well No. GW-20

Boring No. X-Ref: _____

Survey Coords: N4846.8038 E6348.5239

Elevation Ground Level 1678.42

Top of Casing 1681.56

Drilling Summary:
Total Depth: 10.4 feet
Borehole Diameter: 8 inches
Casing Stick-up Height: 2.5 feet
Driller: Empire Soils, Inc. Hamburg, NY
Rig: ATV Track Rig, CME 45

Bit(s): Hollow Stem Auger

Protective Casing: Lockable Steel

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling HSA	11/5	0807	11/5	0840
Casing: Riser & Screen	11/5	0840	11/5	0845
Bentonite Seal	11/5	0910	11/5	0915
Filter Placement:	11/5	0845	11/5	0910
Cementing:	11/5	1005	11/5	1010
Development:	11/7	1212	11/7	1238

Well Design & Specifications

Basic: Geologic Log X Geophysical Log ___
Casing String(s): C = Casing S = Screen

Depth	String(s)	Elevation
+2.5 - 5.0	C	1680.92 - 1675.92
5.0 - 10.0	S	1675.92 - 1670.92
___ - ___	___	___ - ___
___ - ___	___	___ - ___
___ - ___	___	___ - ___

Casing: C1: 2-inch, FJT, Sch. 40, PVC riser

Casing: C2: _____

Screen: S1: 4-inch, FJT, Sch. 40, PVC screen with 0.01-inch slot

Filter Pack: Clean Silica Sand (10-20), 10.4 feet to 3.8 feet BGS

Grout Seal: Portland, type II cement and bentonite powder, surface to 1.0 feet BGS

Bentonite Seal: Volclay 1/4" Bentonite pellets 3.8 to 1.0 feet BGS

Well Development:

Bail and surge method. A total of 8.0 gallons bailed.

Stabilization Test Data:

Time	pH	Spec. Cond.	Temp (C)
1228	7.82	397	8.3
1230	7.76	402	8.5
1235	7.73	408	8.6

Recovery Data:

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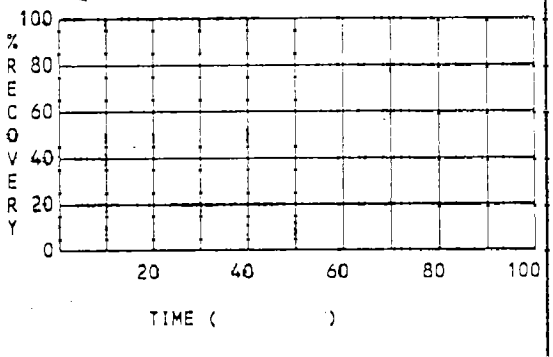


Comments: _____

SOIL BOREHOLE LOG

SITE NAME AND LOCATION: Motorola, Machias

DRILLING METHOD: 4 1/4" ID HSA

SAMPLE METHOD: SS

BORING NO. GW-21

SHEET 1 OF 1

WATER LEVEL		DRILLING START	DRILLING FINISH
TIME		TIME 1030	TIME 1115
DATE		DATE 11/05/92	DATE 11/05/92
CASING DEPTH			

DATUM: MSL ELEVATION: 1681.08

DRILL RIG: CME 45, tracked

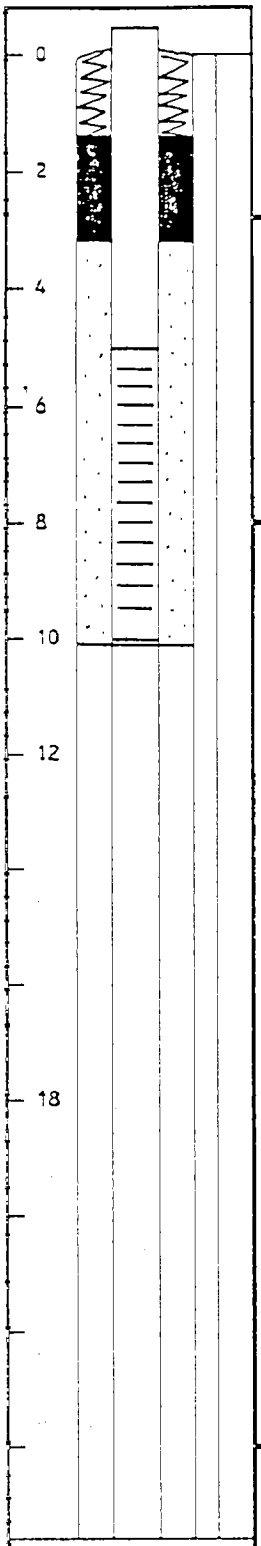
SURFACE CONDITIONS: Bench above flood plain.

ANGLE: 90° Vertical BEARING ---

SAMPLE HAMMER TORQUE FT.-LBS

	BLOW COUNTS (RECOVERY)	USCS SYMBOL	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	PID (ppm)	DESCRIPTION OF OPERATION AND REMARKS
	4, 3 11, 12 (10/24)	OL	0-6". Brown organic silt, soft, plastic, damp. 6"-2'. Light Brown Clay and Silt, v. soft, plastic, moist	0	Snow
2	12, 14 10, 8 (12/24)	ML	Light Brown SILT, some sand, trace gravel, angular to subangular, soft, plastic, moist.	0	
4	5, 3 7, 2 (NR)	ML	Cuttings as above.	0	WL = 5' bgs
6	6, 6 10, 16 (10/24)	GM	Light Brown Gravel, Silt and Sand, med. to subrounded, poorly sorted, loose, wet.	0	
8	10, 6 9, 6 (12/24)	ML	8-9. Brown silt, soft, slightly plastic, moist. 9-10. Gray silt, soft, slightly plastic, moist.	0	
10					

MONITOR WELL CONSTRUCTION SUMMARY



Well No. GW-21

Boring No. X-Ref:

Survey Coords: N4724.4003 E6284.7214

Elevation Ground Level 1681.08

Top of Casing 1684.27

Drilling Summary:

Total Depth: 10.1 feet
Borehole Diameter: 8 inches
Casing Stick-up Height: 2.5 feet
Driller: Empire Soils, Inc. Hamburg, NY
Rig: ATV Track Rig, CME 45

Bit(s): Hollow Stem Auger

Protective Casing: Lockable Steel

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling HSA	11/5	1030	11/5	1115
Casing: Riser & Screen	11/5	1115	11/5	1120
Bentonite Seal	11/5	1140	11/5	1215
Filter Placement:	11/5	1120	11/5	1140
Cementing:	11/5	1215	11/5	1220
Development:	11/7	1240	11/7	1315

Well Design & Specifications

Basic: Geologic Log X Geophysical Log ___
Casing String(s): C = Casing S = Screen

Depth	String(s)	Elevation
+2.5 - 5.0	C	1683.58 - 1676.08
5.0 - 10.0	S	1676.08 - 1671.08
___ - ___	___	___ - ___
___ - ___	___	___ - ___
___ - ___	___	___ - ___

Casing: C1: 2-inch, FJT, Sch. 40, PVC riser

Casing: C2:

Screen: S1: 4-inch, FJT, Sch. 40, PVC screen with 0.01-inch slot

Filter Pack: Clean Silica Sand (10-20), 10.1 feet to 3.6 feet BGS

Grout Seal: Portland, type II cement and bentonite powder, surface to 1.5 feet BGS

Bentonite Seal: Volclay 1/4" Bentonite pellets 3.6 to 1.5 feet BGS

Well Development:

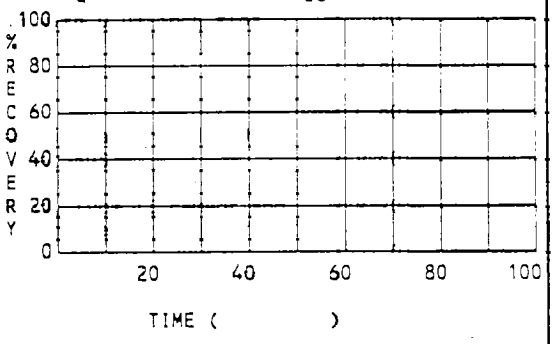
Bail and surge method. A total of 6.0 gallons bailed.

Stabilization Test Data:

Time	pH	Spec. Cond.	Temp (C)
1300	7.68	374	8.6
1305	7.73	348	8.5
1315	7.78	354	8.5

Recovery Data:

Q= So=



Comments:

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