File

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MEMORANDUM / TRANSMITTAL

DATE: September 15, 2003 ☐ DRAFT

FROM: Richard L. Crouch, Jr.
Senior Hydrogeologist ☐ FINAL

TO: David G. Pratt, P.E.
Environmental Engineer II

FIRM: NYSDEC, Region 8

TEL. NO.: (585) 226-5355

FAX NO.: (585) 226-8696

RE: Monitoring Well Installation, Sampling and Analysis and Sewer Bedding Investigation Report, Erdle Perforating, 100 Pixley Industrial Parkway, Gates, NY 14264 (NYSDEC Inactive Hazardous Waste Site #828072)

Job No.: 02-555

P.O. No.: N/A

David,

I received Craig Slater's review comments and have finalized the above referenced report.

ATTACHMENTS: one copy of the above referenced report.

SINCERELY,

Richard L. Crouch
Senior Hydrogeologist

RECEIVED
SEP 16 2003
DER/HAZ. WASTE REMED
REGION 8

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September 10, 2003 Job No.: 02-555

Harter, Secrest & Emery LLP
Twelve Fountain Plaza, Suite 400
Buffalo, New York 14202-2228

Attn: Craig A. Slater, Esq.

Re: ***Submittal:*** *Monitoring Well Installation, Sampling and Analysis and Sewer Bedding Investigation Report, Erdle Perforating, 100 Pixley Industrial Parkway, Gates, NY 14264 (NYSDEC Inactive Hazardous Waste Site #828072)*

Gentlemen:

Barron & Associates, P.C. (B&A) is pleased to submit this report discussing the field methodology that was utilized and presenting the data generated during the above referenced investigation at Erdle Perforating, 100 Pixley Industrial Parkway, Gates, NY (Figure 1, Attachment #1).

The investigative scope of services included the following activities:

- Installed three top of bedrock monitoring well. Test borings were advanced at each monitoring well location. Continuous split spoon samples were obtained through the unconsolidated material to the top of bedrock (i.e., auger refusal). The soil samples were visually characterized and screened with a photoionization detector (PID). This field information was recorded in a waterproof field book and, subsequently, transcribed to test boring logs. During the test borings, soils exhibiting elevated PID readings (i.e., greater than 20 ppm) were to be placed in drums. No PID readings were detected during the monitoring well test borings or the sewer bedding test borings.
- At the completion of each test boring, a two-inch I.D. of varying lengths (i.e., 2 @ 5-foot and 1 @ 10-foot), Sch. 40 PVC, #10 slot screen with attached riser were installed. A sand pack was placed around the screen and above the screen. A one and a half to two-foot bentonite seal was placed above the sand pack and each well was completed to ground surface with cement/bentonite grout. Each monitoring well was completed with a J-plug and a locking protective casing with a cement pad at ground surface.
- Between each test boring and monitoring well installation, the drilling equipment and split spoons were steam cleaned in the decon area and the decon waters were drummed and staged on-site for subsequent disposal by others. Between split spoon samples, the split spoon will be cleaned using potable water and alconox detergent and subsequently rinsed with potable water. The waters generated during this cleaning process were also drummed.
- In addition to the test borings and installation of three monitoring wells, a sewer line bedding investigation was conducted. The areas that were investigated along the Monroe County sanitary sewer line were selected in the field by a NYSDEC representative. This portion of the investigation consisted of advancing the split spoon at three locations on both sides of the sewer line The soil samples were visually characterized and screened with a photoionization detector (PID). This field information was recorded in a waterproof field book and subsequently transcribed

to test boring logs. Two discrete soil samples were prepared for laboratory analysis. The same decon procedures were followed as discussed above for the monitoring wells.

- During the above intrusive field activities, breathing zone monitoring was performed for VOCs and particulates to comply with the NYSDOH CAMP.
- Following installation of the monitoring wells, B&A personnel returned to the site to develop the newly installed wells. Development activities occurred a minimum of 48-hours following completion of well installation. Development activities were performed using a separate, pre-cleaned PVC bailer that was sealed in plastic at each monitoring well. Waters generated during the development activities were placed in drums for disposal by others.
- Following development of the monitoring wells, B&A personnel returned to the site to sample the newly installed wells. Sampling activities occurred a minimum of one week following completion of well development. Sampling activities were performed using a separate, pre-cleaned PVC bailer that was sealed in plastic at each monitoring well. The waters that were removed from each monitoring well prior to sampling were placed in drums for disposal by others.
- All field activities were performed in modified Level D PPE which includes tyvex and nitrile gloves. The aforementioned breathing zone monitoring program did not result in upgrading PPE.
- Analysis of the soil samples were performed for USEPA Method 8260 TCL compounds and total organic carbon and reported in a NYS ASP B-like deliverable package. Analysis of the groundwater samples were performed for USEPA Method 8260 TCL compounds, iron, manganese, COD, alkalinity and sulfate and reported in a NYS ASP B-like deliverable package. The contracted laboratory was Severn Trent Laboratories, Inc., Amherst, NY, a NYSDOH ELAP-approved laboratory.

Test Borings/Monitoring Wells

The field activities that were associated with the installation of three monitoring wells, MW-10 through MW-13 were conducted on April 22 and 23. 2003. *B&A's* affiliate company, *Buffalo Drilling Company, Inc.* (*BDC*), mobilized a track mounted ATV drill rig to the site.

Three monitoring wells were constructed at the locations identified as MW-10 through MW-13 (refer to Figures #2 and #3, Attachment #1). Before constructing the monitoring wells at MW-10 through MW-13, continuous split-spoon samples were obtained from ground surface down to auger refusal.

The soil samples were visually characterized in the field and screened for total volatile organics using a photoionization detector (PID) by a *B&A* senior hydrogeologist. This information was placed in a waterproof field book and subsequently transcribed on to Monitoring Well Schematics (Attachment #2). The resultant PID readings are presented on Table 1, Attachment #1.

Each monitoring well (refer to Monitoring Well Schematics, Attachment #2) consisted of pre-cleaned, two-inch ID, flush-jointed, threaded, Schedule 40, PVC screen and riser with J-plug. The well screens were No. 10 slot (i.e., 0.010-inch wide). At each monitoring well location, the annulus between the borehole wall and the screen to above the screen were backfilled with uniform graded, silicon sand (i.e., Ricci Bros. #00N). The annulus above the sand was sealed with a bentonite seal. The remaining annulus was then backfilled with cement grout to ground surface. The wells were completed with a six-inch ID, locking, protective steel casing that was set in the grout. Two further

protect the integrity of the well, a concrete collar was constructed around the protective casing. Refer to the Monitoring Well Schematics, Attachment #2, for the specific monitoring well construction details

In order to avoid potential cross-contamination between samples, the split-spoon samplers were cleaned between samples using Alconox detergent and potable water with a final potable water rinse. Between borings, the drill rig, drilling equipment and split-spoons were steam cleaned in the decontamination area. The waters generated during the cleaning of the split spoons and in the decontamination area were containerized in 55-gallon drums and staged on-site for characterization and disposal by others.

During the drilling and sampling of the test borings associated with the monitoring wells, provisions for monitoring worker's breathing zone upwind and downwind for total volatile organic compounds and particulates were implemented. The on-site equipment included a RAE Systems Inc., MiniRAE Plus, Model PGM-761 S and two MIE DataRam Portable Real-Time Aerosol Monitor and DataRam Accessories for real time PM-10 sampling. As a result of rain on April 22, 2003 and snow on April 23, 2003, this precipitation negated the use of the above air monitoring equipment during the drilling of the test borings for MW-10 through MW-12. The PID, however, was used to monitor for total volatile organics compounds at the top of the hollow stem augers. As presented on the Worker's Breathing Zone Data Sheet, Attachment #1, no PID readings were detected at the top of the hollow stem augers during drilling.

Sanitary Sewer Bedding Test Borings

Upon completion of the aforementioned monitoring well installation, six test borings, SL-1 through SL-6, were drilled in close proximity to a Monroe County sanitary sewer (refer to Figures #2 and #3) on April 23 and 24, 2003. At the recommendation of the Monroe County Water Department, the test borings were located 10 feet from the sanitary line stake out. Initially, it was proposed that the sanitary sewer bed test borings would be six feet in depth. However, upon receipt of information concerning the depth of the inverts of the sanitary sewer line in the areas to be investigated, the total depth of the test borings were modified in the field to coincide with the depth of the sanitary sewer inverts.

During the drilling of test borings SL-1 through SL-6, continuous split-spoon samples were obtained from ground surface down to auger refusal at SL-1 through SL-4. At test borings SL-5 and SL-6, the total depth at these borings was 24 feet below ground surface. Due to the presence of two piezometers, GPZ-5S and GPZ-5D, which had previously been sampled and logged, in close proximity to SL-5 and 6, continuous soil sampling was initiated at 14 feet below ground surface to boring termination at 24 feet. The soil samples were visually characterized in the field and screened for total volatile organics using a photoionization detector (PID) by a *B&A* senior hydrogeologist. This information was placed in a waterproof field book and subsequently transcribed on to Test Boring Logs (Attachment #2). The resultant PID readings are presented on Table 1, Attachment #1.

The purpose of the test borings in close proximity to the sanitary sewer was to obtain information to assess the potential of the sanitary sewer bedding being a contaminate migration route off-site from the Erdle Perforating property. To accomplish this assessment, it was initially proposed that two soil samples would be submitted for analysis. Two the soil samples to be selected for analysis were to be based on elevated PID readings. As presented in Table #1, the resultant PID readings

for the samples from test borings SL-1 through SL-6 were not detectable. The two soil samples selected were SL-3 (9' - 11') and SL-5 (18' - 23'). These two samples were selected because their respective sample interval coincided with the adjacent sewer line invert; and, the relative moisture contents of the two samples were saturated and wet, respectively. The selected soil samples, were placed directly into pre-cleaned, laboratory containers provided by the analytical laboratory. The samples were labeled, chain-of-custody initiated, and placed in a cooler and transported to Severn Trent Laboratories, Inc., Amherst, New York.

During the drilling and sampling of the test borings associated with the sanitary sewer bedding investigation, provisions for monitoring worker's breathing zone upwind and downwind for total volatile organic compounds and particulates were implemented. The on-site equipment included a RAE Systems Inc., MiniRAE Plus, Model PGM-761 S and two MIE DataRam Portable Real-Time Aerosol Monitor and DataRam Accessories for real time PM-10 sampling. As a result of snow on April 23, 2003, this precipitation negated the use of the above air monitoring equipment during the drilling of test borings SL-1 through SL-4 The PID, however, was used to monitor for total volatile organics compounds at the top of the hollow stem augers during the drilling of these test borings. As presented on the Worker's Breathing Zone Data Sheet, Attachment #1, no PID readings were detected at the top of the hollow stem augers during drilling.

On April 24, 2003, air monitoring for particulates was implemented. The results of this air monitoring in presented on the Workers Breathing Zone Data Sheet, Attachment #1. Unsuccessful attempts were made to program the PID unit in the industrial hygiene model, hence continuous downwind PID readings could not be obtained. Discrete PID readings were obtained at the top of the hollow stem augers when drilling test boring SL-5 and SL-6. As presented on the Worker's Breathing Zone Data Sheet, Attachment #1, no PID readings were detected at the top of the hollow stem augers during drilling.

In order to avoid potential cross-contamination between samples, the split-spoon samplers were cleaned between samples using Alconox detergent and potable water with a final potable water rinse. Between borings, the drill rig, drilling equipment and split-spoons were steam cleaned in the decontamination area. The waters generated during the cleaning of the split spoons and in the decontamination area were containerized in 55-gallon drums and staged on-site for characterization and disposal by others.

Monitoring Well Development and Sampling

B&A personnel mobilized to the site on May 8, 2003 to develop the three newly installed monitoring wells, MW-10 through MW-13 using a separate, pre-cleaned PVC bailer at each well. Before the development process, depth to static water level and total depth of the wells were obtained using an electronic water level indicator. The water level indicator was cleaned between wells using soap, potable water and a final distilled water rinse. The monitoring wells were developed by removing seven to ten static-water, well volumes. The evacuated waters during development were placed into 55-gallon drums and staged on site for subsequent disposal by others. During the development process at each monitoring well, an initial and final pH, conductivity and temperature readings were obtained. The reader is requested to refer to the Field Development and Sampling Data Sheet, Attachment #1, for the information recorded during well development.

On May 21, 2003, B&A personnel returned to the site to sample the aforementioned three monitoring wells. Prior to sampling the monitoring wells, a static water level was obtained at each well using the same cleaning procedure for the electronic water level indicator as discussed above between monitoring wells. Once the static water levels were obtained, three well volumes were removed from each well. The evacuated waters during sampling were placed into 55-gallon drums and staged on site for subsequent disposal by others. The monitoring wells were then allowed to return to static water level condition. A pre-cleaned, designated PVC bailer was slowly lowered into the well to retrieve groundwater samples, which were then placed directly into pre-cleaned, laboratory containers provided by the analytical laboratory. The samples were labeled, chain-of-custody initiated, and placed in a cooler and transported to Severn Trent Laboratories, Inc., Amherst, New York.

Soil Sample Analytical Program and Results

Analysis of the soil samples were performed for USEPA Method 8260 TCL compounds and total organic carbon and reported in a NYS ASP B-like deliverable package. Refer to Attachment #3, Volumes 1 and 2, for STL's "Analytical Report" for the soil samples.

Following are the detectable results of the soil samples:

- Soil Sample SL-3 (9' -11'): acetone @ 11 μg/kg (BJ)
  TOC @ 1350 mg/kg
- Soil Sample SL-5 (18' - 23'): acetone @ 12 μg/kg (BJ)
  trichloroethene @ 160 μg/kg
  cis-1,2-dichloroethene @ 48 μg/kg
  TOC @ 27,700 mg/kg

Trichloroethene was detected at 160 μg/kg in the soil sample obtained from the test boring, SL-5, which is below NYSDEC TAGM 4046 recommended soil cleanup objective of 700 μg/kg or ppb.

Groundwater Sample Analytical Program and Results

Analysis of the groundwater samples were performed for USEPA Method 8260 TCL compounds, iron, manganese, COD, alkalinity and sulfate and reported in a NYS ASP B-like deliverable package. Refer to Attachment #4, Volumes 1 through 4, for STL's "Analytical Report" for the groundwater samples. Table 2 presents the detectable analytical results for the groundwater samples.

As presented on Table 2, acetone, vinyl chloride, carbon disulfide, cis-1,2-dichloroethane and 1,2,4-triclorobenzene were detected at concentrations at or slightly above their respective method detection limit in the low ppb range in the groundwater sample that was obtained from MW-11.

Barron & Associates, P.C. appreciates the opportunity to assist in the performance of this monitoring well installation, sampling and analysis and sewer bedding investigation. Please call at your earliest convenience, if questions should arise.

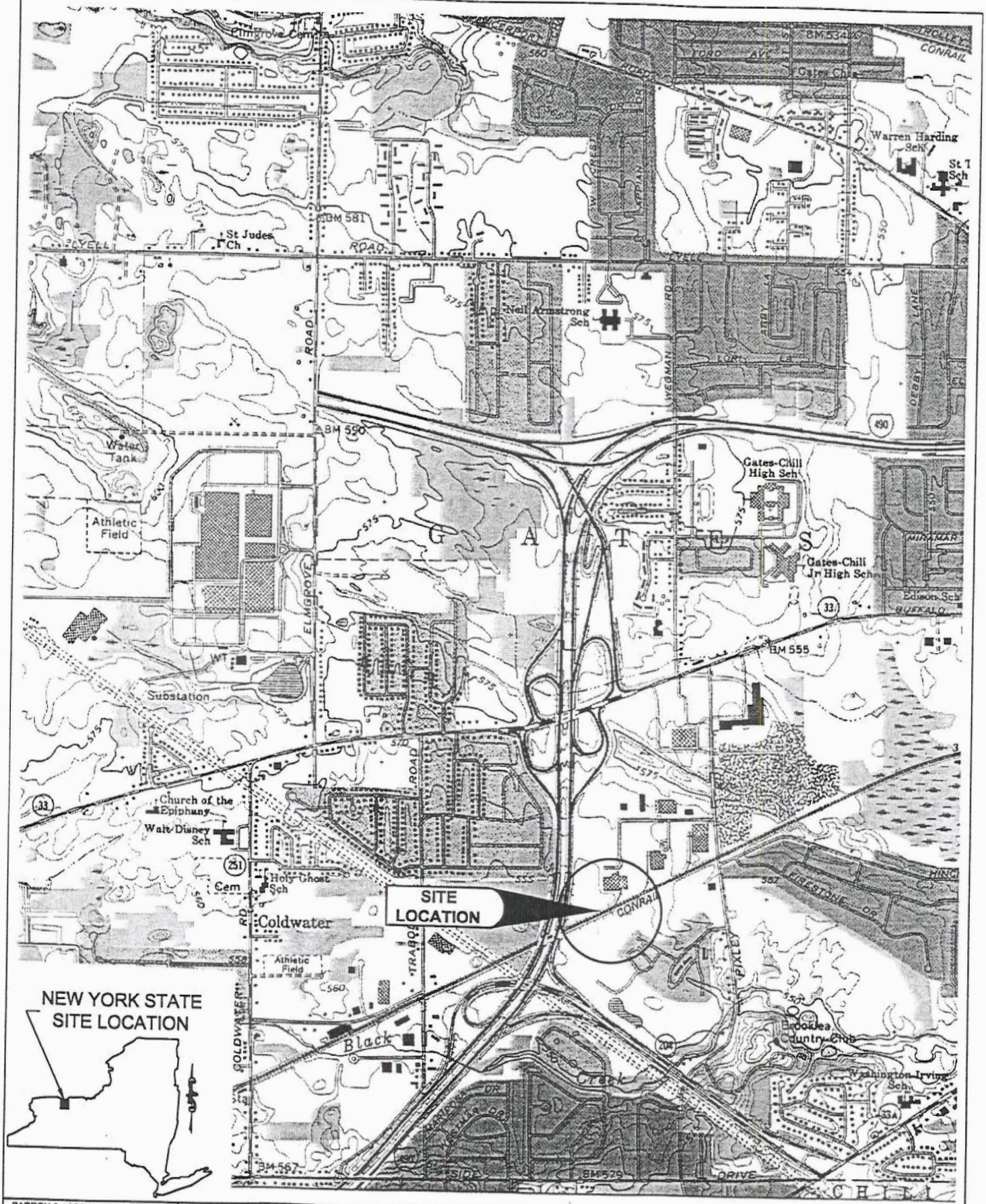
Yours truly,
Barron & Associates, P.C.

Richard L. Crouch, Jr.
Senior Hydrogeologist

attachments

ATTACHMENT #1

Figures and Tables
Worker's Breathing Zone Monitoring Data Sheet
Field Development & Sampling Data Sheet



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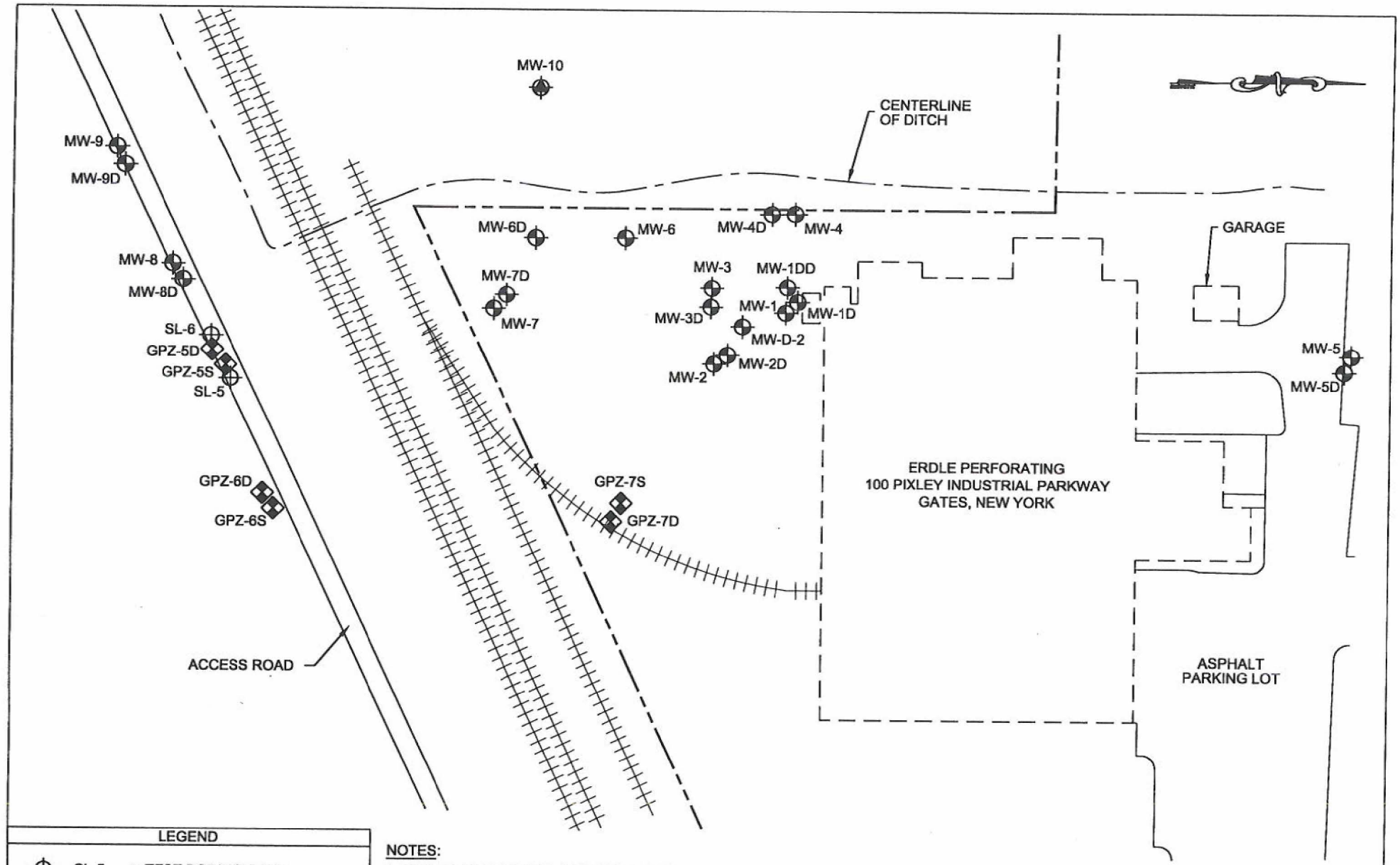
DRAWN: DAN KASPROWICZ

CLIENT: HARTER, SECREST & EMERY LLP
TWELVE FOUNTAIN PLAZA, SUITE 400
BUFFALO, NEW YORK 14202-2228

PROJECT: MONITORING WELL INSTALLATION AND SEWER BEDDING INVESTIGATION - ERDLE PERFORATING
100 PIXLEY INDUSTRIAL PARKWAY
GATES, NEW YORK 14264

USGS SITE LOCATION PLAN
ROCHESTER WEST, N.Y. QUAD
1971 - PHOTO REVISED 1978

JOB NO.: 02-555	SCALE: 1" = 2000' ±
DATE: 9/10/2003	FIGURE NO. 1



LEGEND

- SL-5 = TEST BORING & NO.
- MW-10 = MONITORING WELL & NO.
- MW-2 = MONITORING WELL & NO. (BY OTHERS)
- GPZ-7D = GEOPROBE & NO. (BY OTHERS)

NOTES:

1. WELLS, GEOPROBES, BUILDINGS, SITE FEATURES, PROPERTY LINE LOCATIONS, AND SCALE OF DRAWING ARE APPROXIMATE.
2. BASE MAP REFERENCE PROVIDED BY RADIAN ENGINEERING, INC., TITLED "SOUTHERN OFFSITE AREA ADDITIONAL INVESTIGATION REPORT", FIGURE NO. 4, REV A, JOB NO. 805985.03, LAST REVISION DATED 3/15/2001.

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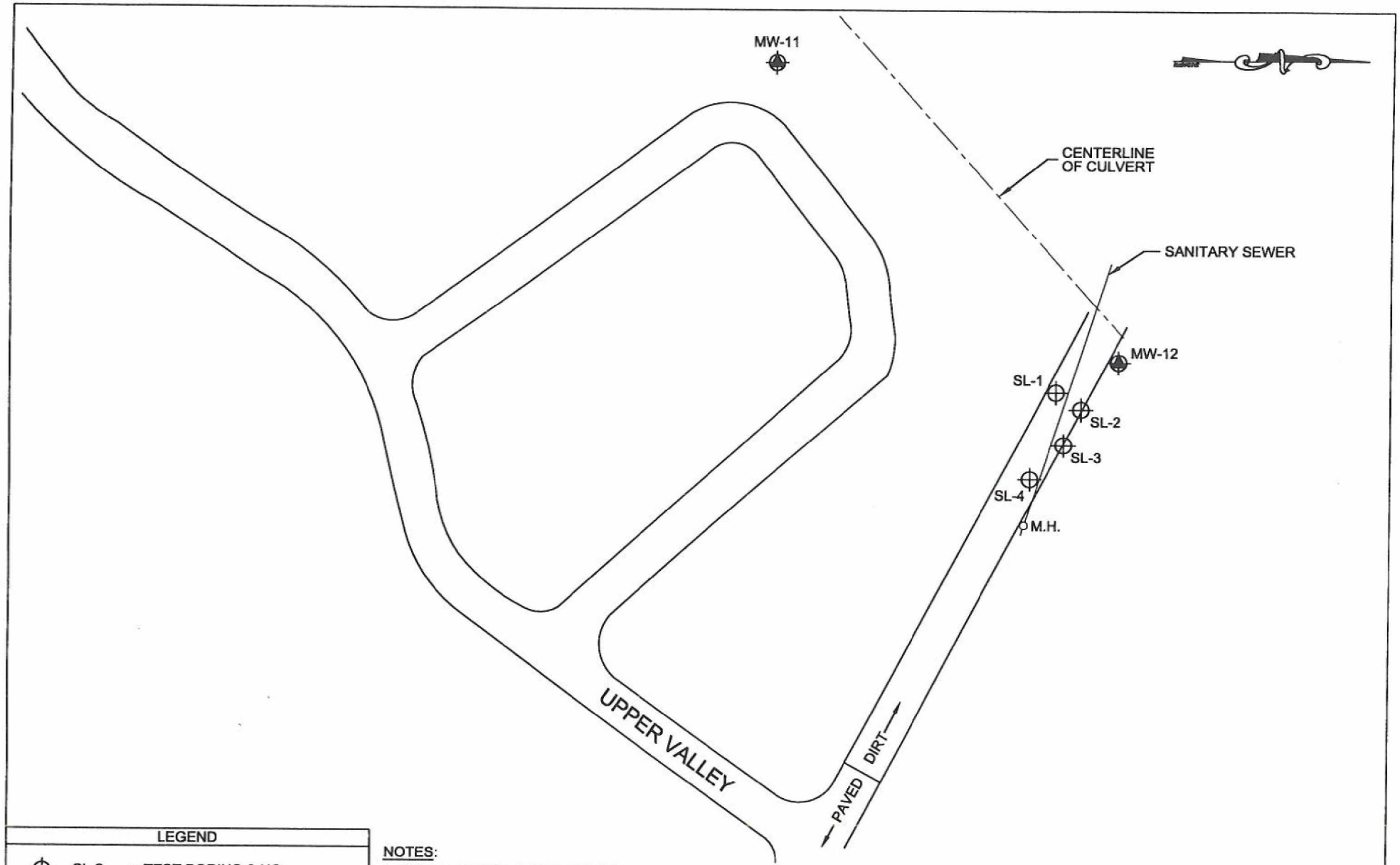
PROJECT: MONITORING WELL INSTALLATION AND SEWER BEDDING INVESTIGATION - ERDLE PERFORATING
100 PIXLEY INDUSTRIAL PARKWAY
GATES, NEW YORK 14264

MONITORING WELL AND TEST BORING LOCATION PLAN

0 50 100 200

JOB NO.: 02-555	SCALE: 1" = 100' ±
DATE: 9/10/2003	FIGURE NO. 2



LEGEND	
SL-2	= TEST BORING & NO.
MW-12	= MONITORING WELL & NO.

NOTES:

1. WELLS, GEOPROBES, BUILDINGS, SITE FEATURES, PROPERTY LINE LOCATIONS, AND SCALE OF DRAWING ARE APPROXIMATE.
2. BASE MAP REFERENCE PROVIDED BY RADIAN ENGINEERING, INC., TITLED "SOUTHERN OFFSITE AREA ADDITIONAL INVESTIGATION REPORT", FIGURE NO. 4, REV A, JOB NO. 805985.03, LAST REVISION DATED 3/15/2001.

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PROJECT: MONITORING WELL INSTALLATION AND SEWER BEDDING INVESTIGATION - ERDLE PERFORATING
100 PIXLEY INDUSTRIAL PARKWAY
GATES, NEW YORK 14264

MONITORING WELL AND TEST BORING LOCATION PLAN

0 50 100 200

JOB NO.: 02-555	SCALE: 1" = 100' ±
DATE: 9/10/2003	FIGURE NO. 3

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TABLE NO. 1
PHOTOIONIZATION DETECTOR SUMMARY OF ORGANIC VAPOR SCREENING

CLIENT: Harter, Secrest & Emery LLP
PROJECT: Test Borings and Monitoring Well Installation
Erdle Perforating, 100 Pixley Industrial Park, Gates, New York
JOB NO: 02-555

TECHNICIAN: R. Crouch
DATE: April 22, 23 & 24, 200
PAGE: 1 of 2

TOTAL IONIZABLES PRESENT

SAMPLE ID #		DEPTH (ft.)	PID READING (ppm)
Background in air			0.0
MW-10	S-1	0-2	0.0
	S-2	2-4	0.0
	S-3	4-6	0.0
	S-4	6-8	0.0
	S-5	8-10	0.0
	S-6	10-12	0.0
	S-7	12-14	0.0
MW-11	S-1	0-2	0.0
	S-2	2-4	0.0
	S-3	4-6	0.0
	S-4	6-8	0.0
	S-5	8-10	0.0
	S-6	10-12	0.0
MW-12	S-1	0-2	0.0
	S-2	2-4	0.0
	S-3	4-6	0.0
	S-4	6-8	0.0
	S-5	8-10	0.0
SL-1	S-1	0-2	0.0
	S-2	2-4	0.0
	S-3	4-6	0.0
	S-4	6-8	0.0
	S-5	8-10	0.0

SAMPLE ID #		DEPTH (ft.)	PID READING (ppm)
SL-2	S-1	0-2	0.0
	S-2	2-4	0.0
	S-3	4-6	0.0
	S-4	6-8	0.0
SL-3	S-1	0-2	0.0
	S-2	2-4	0.0
	S-3	4-6	0.0
	S-4	6-8	0.0
	S-5	8-10	0.0
	S-6	10-12	0.0
SL-4	S-1	0-2	0.0
	S-2	2-4	0.0
	S-3	4-6	0.0
	S-4	6-8	0.0
	S-5	8-10	0.0
	S-6	10-12	0.0
SL-5	S-1	14-16	0.0
	S-2	16-18	0.0
	S-3	18-20	0.0
	S-4	20-22	0.0
	S-5	22-24	0.0

* Petroleum-type odors detected.
\+ Earthy-type odors detected.

NOTES:
1. Screening of the headspace of sample containers was done using a MiniRae hand-held air monitor/photoionization detector (PID) equipped with a 10.6 eV bulb.
2. The PID was calibrated prior to sample screening using isobutylene in air at an equivalent concentration of 57.0 ppm benzene in air.
3. The detected concentration in sample headspace does not represent actual concentration in soil, but rather a relative measure of total ionizables present with an ionization potential of less than 10.6 eV
4. Soil samples were screened in the field by placing the samples into a sealable plastic bag, then inserting the PID tip into the bag.

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TABLE NO. 1
PHOTOIONIZATION DETECTOR SUMMARY OF ORGANIC VAPOR SCREENING

CLIENT: Harter, Secrest & Emery LLP
PROJECT: Test Borings and Monitoring Well Installation
Erdle Perforating, 100 Pixley Industrial Park, Gates, New York
JOB NO: 02-555

TECHNICIAN: R. Crouch
DATE: April 22, 23 & 24, 200
PAGE: 2 of 2

TOTAL IONIZABLES PRESENT

SAMPLE ID #		DEPTH (ft.)	PID READING (ppm)
Background in air			0.0
SL-6	S-1	14-16	0.0
	S-2	16-18	0.0
	S-3	18-20	0.0
	S-4	20-22	0.0
	S-5	22-24	0.0

SAMPLE ID #	DEPTH (ft.)	PID READING (ppm)

* Petroleum-type odors detected.
\+ Earthy-type odors detected.

NOTES:
1. Screening of the headspace of sample containers was done using a MiniRae hand-held air monitor/photoionization detector (PID) equipped with a 10.6 eV bulb.
2. The PID was calibrated prior to sample screening using isobutylene in air at an equivalent concentration of 57.0 ppm benzene in air.
3. The detected concentration in sample headspace does not represent actual concentration in soil, but rather a relative measure of total ionizables present with an ionization potential of less than 10.6 eV
4. Soil samples were screened in the field by placing the samples into a sealable plastic bag, then inserting the PID tip into the bag.

TABLE 2

Detectable Analytical Results - Groundwater Samples
Erdle Perforating
100 Pixley Industrial Parkway
Gates, New York

		GROUNDWATER SAMPLES		
DETECTABLE COMPOUNDS	CONC. UNIT	MW-10	MW-11	MW-12
vinyl chloride	ppb	1U	6	1U
carbon disulfide	ppb	2	3	1
acetone	ppb	5U	4J	5U
1,1-dichloroethane	ppb	1U	1	1U
cis-1,2-dichloroethene	ppb	1U	29D	1U
1,2,4-trichlorobenzene	ppb	1U	0.8DJ	1U
iron	ppb	2780	5790	13200
manganese	ppb	125	265	343
chemical oxygen demand	ppm	10U	10U	10U
sulfate	ppm	194	624	59.8
total alkalinity	ppm	174	296	394

NOTES:

1. U - indicates compound was analyzed, but not detected.
2. J - indicates the presence of a compound that meets identification criteria, but the result is less than sample quantitation limit but greater than zero. The value shown is an estimated value.
3. MDL - method detection limit (e.g., 5 U).
4. D - identifies all compounds identified in an analysis at a secondary dilution factor.

WORKER'S BREATHING ZONE MONITORING DATA SHEET

Erdle Perforating
100 Pixley Industrial Parkway
Gates, New York

April 22, 2003

No particulate monitoring or PID monitoring upwind and downwind of the work area was performed due to rain. The top of the hollow stem auger was screened with the PID during the drilling of MW-10. No PID readings were detected.

April 23, 2003

No particulate monitoring or PID monitoring upwind and downwind of the work area was performed due to snow. The top of the hollow stem auger was screened with the PID during the drilling of MW-11 and 12, SL-1, SL-2, SL-3 and SL-4. No PID readings were detected.

April 24, 2003

The following air monitoring results were measured during the drilling of SL-5 and SL-6:

PM-10 Particulate Levels During the Drilling of SL-5

time		downwind ($\mu g/m^3$)	upwind ($\mu g/m^3$)
11:13 AM	real time	5.5 (before drilling)	4.2 (before drilling)
	TWA	7.2 (before drilling)	5.4 (before drilling)
11:19 AM	real time	6.9	4.5
	TWA	6.1	5.1
11:38 AM	real time	5.0	5.6
	TWA	5.5	5.9
11:49 AM	real time	16.7	3.9
	TWA	13.3	5.3
11:59 AM	real time	4.0	4.0
	TWA	13.7	5.1

No detectable PID readings at the top of the hollow stem augers during drilling of SL-5.

PM-10 Particulate Levels During the Drilling of SL-6

time		downwind ($\mu g/m^3$)	upwind ($\mu g/m^3$)
12:32 PM	real time	5.0 (before drilling)	4.6 (before drilling)
	TWA	11.4 (before drilling)	5.0 (before drilling)
12:35 PM	real time	5.1	3.4
	TWA	11.2	5.0

WORKER'S BREATHING ZONE MONITORING
(Continued)

Erdle Perforating
100 Pixley Industrial Parkway
Gates, New York

time		downwind ($\mu g/m^3$)	upwind ($\mu g/m^3$)
12:41 PM	real time	3.2	3.0
	TWA	11.4	5.1
12:55 PM	real time	4.3	4.3
	TWA	11.5	5.0
1:02 PM	real time	5.9	2.7
	TWA	11.1	5.0
1:11 PM	real time	2.7	3.7
	TWA	10.5	4.5

No detectable PID readings at the top of the hollow stem augers during drilling of SL-6.

FIELD DEVELOPMENT & SAMPLING DATA SHEET

Erdle Perforating
100 Pixley Industrial Parkway
Gates, New York

Monitoring Well Development

Date: May 8, 2003

Field Equipment:
Heron Instruments Oil/Water Interface Meter
Cole Palmer Model 59002-30 pH Meter
Cole Palmer Model 19815 Conductivity Meter

Calibration: Calibration of pH and conductivity meters was performed in the field prior to development activities by B&A field personnel.

Monitoring Well MW-10

Depth to Static Water: 3.5' from top of PVC riser, no free product
Depth of Well: 17' from top of PVC riser
Volume of Water Removed: 17 gallons
Initial pH, conductivity and temperature: 6.62 s.u. ,1195 μS and 12.3°C
Final pH, conductivity and temperature: 6.68 s.u., 1200 μS and 12.5°C
Observation: moderately turbid, no odors, no sheen

Monitoring Well MW-11

Depth to Static Water: 8.1' from top of PVC riser, no free product
Depth of Well: 13.25' from top of PVC riser
Volume of Water Removed: 7.5 gallons
Initial pH, conductivity and temperature: 6.44 s.u., 1807 μS and 13.5°C
Final pH, conductivity and temperature: 6.55 s.u., 1776 μS and 14.2°C
Observation: moderately turbid, no odors, no sheen

Monitoring Well MW-12

Depth to Static Water: 8.5' from top of PVC riser, no free product
Depth of Well: 12.0' from top of PVC riser
Volume of Water Removed: 5.5 gallons
Initial pH, conductivity and temperature: 6.43 s.u., 868 μS and 17.1°C
Final pH, conductivity and temperature: 6.51 s.u., 174 μS and 16.7°C
Observation: slightly turbid, no odors, no sheen

FIELD DEVELOPMENT & SAMPLING DATA SHEET

Erdle Perforating
100 Pixley Industrial Parkway
Gates, New York

Monitoring Well Development

Date: May 21, 2003

Field Equipment:
Heron Instruments Oil/Water Interface Meter
LaMotte Turbidity Meter Model 2020
Myron Ultrameter Model 6P

Calibration: Calibration of turbidity meter and Myron Ultrameter Model 6P was performed by Ashtead Technology Rentals on May 21, 2003.

Monitoring Well MW-10

Depth to Static Water: 2.8' from top of PVC riser, no free product
Depth of Well: 17' from top of PVC riser
Volume of Water Removed: 9.5 gallons
pH, conductivity and temperature: 7.18 s.u., 1081 μS and 54.8°F
ORP, TDS and Turbidity: 36 mv, 770.6 ppm and 24 NTU

Monitoring Well MW-11

Depth to Static Water: 7.8' from top of PVC riser, no free product
Depth of Well: 13.25' from top of PVC riser
Volume of Water Removed: 7.5 gallons
pH, conductivity and temperature: 6.97 s.u., 1868 μS and 51.9°F
ORP, TDS and Turbidity: 20 mv, 1378 ppm and 23.1 NTU

Monitoring Well MW-12

Depth to Static Water: 7.75' from top of PVC riser, no free product
Depth of Well: 12.0' from top of PVC riser
Volume of Water Removed: 5.5 gallons
pH, conductivity and temperature: 6.76 s.u., 1018 μS and 51.8°F
ORP, TDS and Turbidity: 88 mv, 718.2 ppm and 22.2 NTU

ATTACHMENT #2

Test Boring Logs and Monitoring Well Schematics

BARRON & ASSOCIATES, P.C. &
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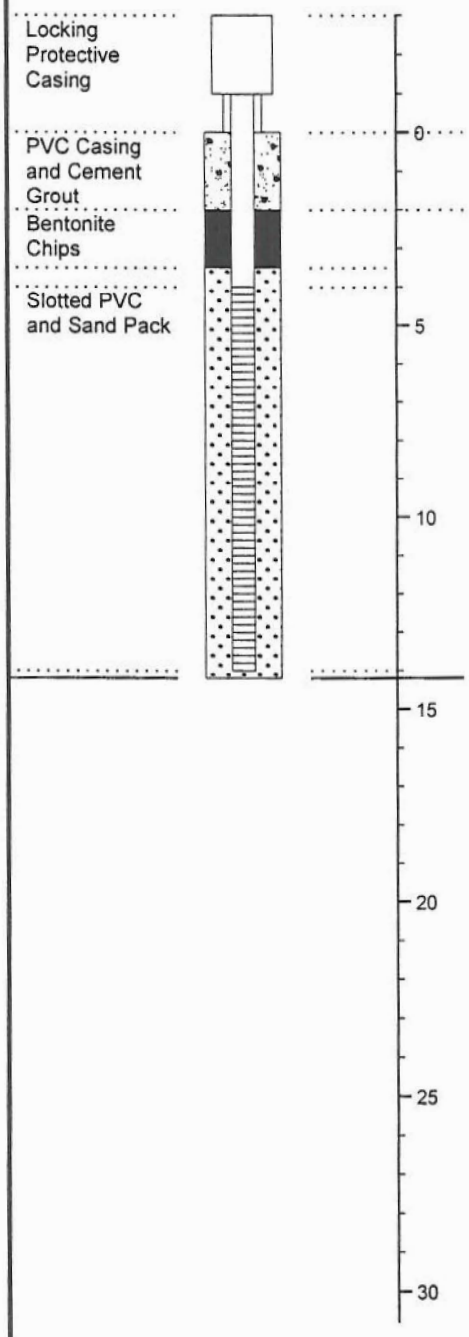
CLARENCE, NEW YORK 14031
(716) 759-7821 FAX: (716) 759-7823

MONITORING WELL SCHEMATIC

JOB No.: 02-555 **BORING No.:** MW-10

PROJECT: Monitoring Well Installation & Sewer Bedding Investigation
Erdle Perfurating, Gates, New York

DRILLER:	J. Gardner	**TYPE OF DRILL RIG:**	Track Mounted ATV
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	4 1/4" Hollow Stem Auger
DATE STARTED:	4/22/03	**SURFACE ELEVATION (FT):**	-
DATE COMPLETED:	4/22/03	**GROUNDWATER DEPTH (FT):** (measured at completion unless indicated below)	See Note



Sample No.	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
S-1	3	50	Brown, v. loose f/m SAND, little Silt, wet (SM)
S-2	6	75	Brown, m. stiff CLAY, some Silt, tr. f. Sand, mod. plastic, moist (CL)
S-3	14	75	...grade: stiff
S-4	34	100	...grade: hard
S-5	14	100	...grade: stiff, wet
S-6	8	75	...grade: Gray, m. stiff
S-7	8	10	...grade: little f/c Sand, saturated
			Depth to Bottom of Hole: 14.2 feet

1. 2.8 feet below top of PVC casing, 5/21/03.

Logged by: R. Crouch

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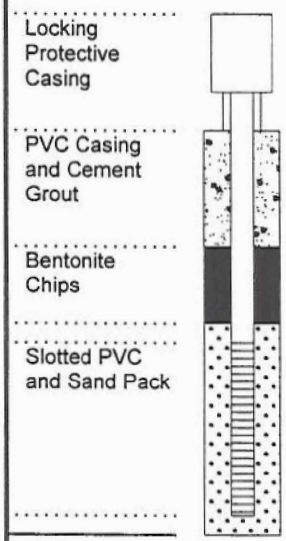
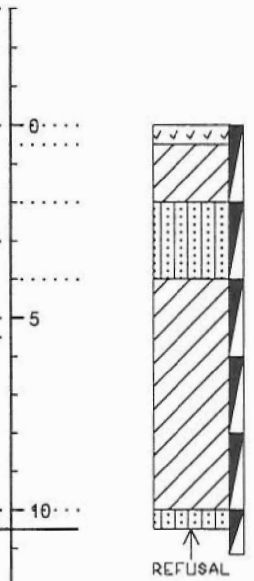
MONITORING WELL SCHEMATIC

JOB No.: 02-555 **BORING No.:** MW-11

PROJECT: Monitoring Well Installation & Sewer Bedding Investigation
Erdle Perfurating, Gates, New York

DRILLER:	J. Gardner	**TYPE OF DRILL RIG:**	Track Mounted ATV
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	4 1/4" Hollow Stem Auger
DATE STARTED:	4/23/03	**SURFACE ELEVATION (FT):**	-
DATE COMPLETED:	4/23/03	**GROUNDWATER DEPTH (FT):** (measured at completion unless indicated below)	See Note





Sample No.	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
			Topsoil (6")
S-1	6	30	Brown, m. stiff CLAY, some Silt, mod. plastic, moist (CL)
S-2	24	50	Brown, m. dense f/m SAND, little Silt, moist (SM)
S-3	23	90	Brown, v. stiff CLAY, some Silt, little Gravel, tr. f/m Sand, mod. plastic, moist (CL)
S-4	62	90	...grade: hard
S-5	12	50	...grade: Gray, stiff, wet
S-6	100	50	Gray, v. dense f/c SAND, some Silt, little Gravel, saturated (SM)

Depth to Bottom of Hole: 10.5 feet

1. 7.8 feet below top of PVC casing, 5/21/03.

Logged by: R. Crouch

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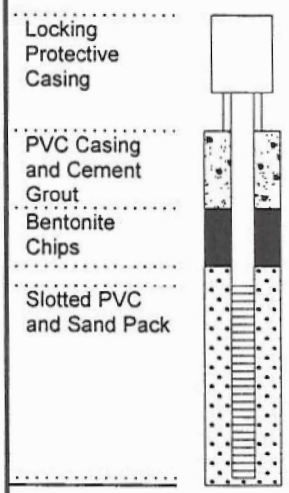
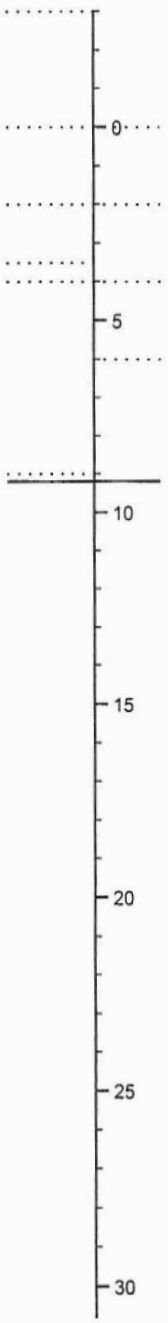
MONITORING WELL SCHEMATIC

JOB No.: 02-555 **BORING No.:** MW-12

PROJECT: Monitoring Well Installation & Sewer Bedding Investigation
Erdle Perfurating, Gates, New York

DRILLER:	J. Gardner	**TYPE OF DRILL RIG:**	Track Mounted ATV
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	4 1/4" Hollow Stem Auger
DATE STARTED:	4/22/03	**SURFACE ELEVATION (FT):**	-
DATE COMPLETED:	4/22/03	**GROUNDWATER DEPTH (FT):** (measured at completion unless indicated below)	See Note





Sample No.	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
S-1	17	75	Brown, v. stiff CLAY, little Silt, tr. Gravel, mod. plastic, moist (CL)
S-2	51	75	Lt. brown, v. dense f/m SAND, little Silt, moist (SM)
S-3	18	75	Brown, v. stiff CLAY, little Silt, tr. f. Sand, mod. plastic, moist (CL)
S-4	31	50	Gray, dense f/c SAND, little Gravel, little Silt, saturated (SM)
S-5	55+	25	...grade: v. dense
			Depth to Bottom of Hole: 9.2 feet

1. 9.2 feet below top of PVC casing, 5/21/03.

Logged by: R. Crouch

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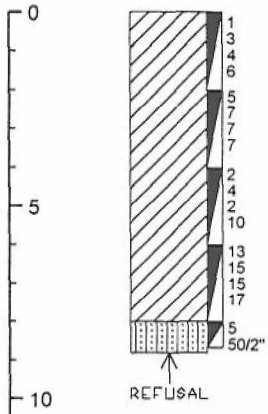
TEST BORING LOG

JOB No.: 02-555 **BORING No.:** SL-1

PROJECT: Monitoring Well Installation & Sewer Bedding Investigation
Erdle Perfurating, Gates, New York

DRILLER:	J. Gardner	**TYPE OF DRILL RIG:**	Track Mounted ATV
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	4 1/4" Hollow Stem Auger
DATE STARTED:	4/22/03	**SURFACE ELEVATION (ft.):**	-
DATE COMPLETED:	4/22/03	**GROUNDWATER DEPTH (ft.):** (measured at completion unless indicated below)	None



Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
		S-1 : 0.0'- 2.0'	7	60	Brown, m. stiff CLAY, some Silt, little f. Sand, mod. plastic, moist (CL)
		S-2 : 2.0'- 4.0'	14	75	...grade: stiff
		S-3 : 4.0'- 6.0'	6	75	...grade: m. stiff
		S-4 : 6.0'- 8.0'	30	60	...grade: v. stiff
		S-5 : 8.0'- 8.7'	50+	25	Gray, v. dense f/c SAND, some Gravel, little Silt, saturated (SM)
					Depth to Bottom of Hole: 8.8 feet

Logged by: R. Crouch

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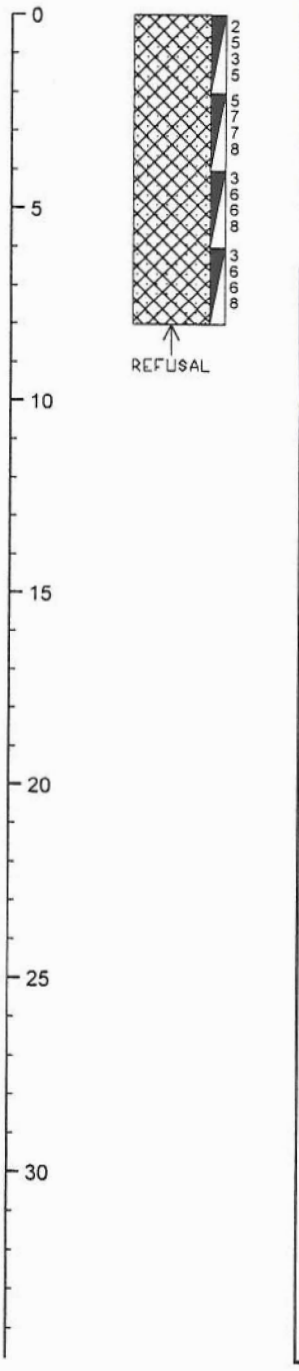
TEST BORING LOG

JOB No.: 02-555 **BORING No.:** SL-2

PROJECT: Monitoring Well Installation & Sewer Bedding Investigation
Erdle Perfurating, Gates, New York

DRILLER: J. Gardner
SAMPLING METHODS: ASTM D1586
DATE STARTED: 4/22/03
DATE COMPLETED: 4/22/03

TYPE OF DRILL RIG: Track Mounted ATV
SIZE AND TYPE OF BIT: 4 1/4" Hollow Stem Auger
SURFACE ELEVATION (ft.): -
GROUNDWATER DEPTH (ft.): None
(measured at completion unless indicated below)



Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
S-1 : 0.0'- 2.0'	8	50	Dk. brown, loose f. Sand, some Silt, moist (SM-Fill)
S-2 : 2.0'- 4.0'	14	50	...grade: m. dense
S-3 : 4.0'- 6.0'	12	10	Same as S-2
S-4 : 6.0'- 8.0'	12	5	Same as S-2
			Depth to Bottom of Hole: 8.0 feet

Logged by: R. Crouch

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TEST BORING LOG

JOB No.: 02-555 **BORING No.:** SL-3

PROJECT: Monitoring Well Installation & Sewer Bedding Investigation
Erdle Perfurating, Gates, New York

DRILLER: J. Gardner
SAMPLING METHODS: ASTM D1586
DATE STARTED: 4/22/03
DATE COMPLETED: 4/22/03

TYPE OF DRILL RIG: Track Mounted ATV
SIZE AND TYPE OF BIT: 4 1/4" Hollow Stem Auger
SURFACE ELEVATION (ft.): -
GROUNDWATER DEPTH (ft.): None
(measured at completion unless indicated below)

Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
0	4 6 11 9	S-1 : 0.0'- 2.0'	17	60	Brown, v. stiff Clay, little Silt, tr. Gravel, mod. plastic, moist (CL-Fill)
	4 6 6 7	S-2 : 2.0'- 4.0'	12	50	Brown, m. dense f. Sand, little Silt, moist (SM-Fill)
5	3 3 6 12	S-3 : 4.0'- 6.0'	9	50	Brown, stiff CLAY, some Silt, mod. plastic, moist (CL)
	11 15 15 25	S-4 : 6.0'- 8.0'	30	50	...grade: v. stiff
	11 17 17 16	S-5 : 8.0'- 10.0'	34	0	...grade: wet to saturated
10	8 9 50/5"	S-6 : 10.0'- 11.4'	59+	0	
	REFUSAL				Depth to Bottom of Hole: 11.4 feet
15					
20					
25					
30					

Logged by: R. Crouch

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TEST BORING LOG

JOB No.: 02-555 **BORING No.:** SL-4

PROJECT: Monitoring Well Installation & Sewer Bedding Investigation
Erdle Perfurating, Gates, New York

DRILLER:	J. Gardner	**TYPE OF DRILL RIG:**	Track Mounted ATV
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	4 1/4" Hollow Stem Auger
DATE STARTED:	4/22/03	**SURFACE ELEVATION (ft.):**	-
DATE COMPLETED:	4/22/03	**GROUNDWATER DEPTH (ft.):** (measured at completion unless indicated below)	None

Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
0	1 1 1 3	S-1 : 0.0'- 2.0'	2		Dk. brown, soft Silt, little f. Sand, tr. Roots, non-plastic, moist (ML-Fill)
	3 4 7 9	S-2 : 2.0'- 4.0'	11		Lt. brown, m. dense f. SAND, little Silt, moist (SM)
5	3 9 12 19	S-3 : 4.0'- 6.0'	21		Brown, stiff CLAY, some Silt, mod. plastic, moist (CL)
	14 20 22 21	S-4 : 6.0'- 8.0'	42		...grade: hard
	4 10 28 8	S-5 : 8.0'- 10.0'	38		Gray, dense f/c SAND, some Gravel, tr. Silt, wet (SW)
10	10 16 50/4" REFUSAL	S-6 : 10.0'- 11.3'	66		
15					Depth to Bottom of Hole: 11.3 feet
20					
25					
30					

Logged by: R. Crouch

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TEST BORING LOG

JOB No.: 02-555 **BORING No.:** SL-5

PROJECT: Monitoring Well Installation & Sewer Bedding Investigation
Erdle Perfurating, Gates, New York

DRILLER:	J. Gardner	**TYPE OF DRILL RIG:**	Track Mounted ATV
SAMPLING METHODS:	ASTM D1586	**SIZE AND TYPE OF BIT:**	4 1/4" Hollow Stem Auger
DATE STARTED:	4/22/03	**SURFACE ELEVATION (ft.):**	-
DATE COMPLETED:	4/22/03	**GROUNDWATER DEPTH (ft.):** (measured at completion unless indicated below)	None

Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
15	2 5 5 7	S-1 : 14.0'- 16.0'	10	30	Brown, stiff CLAY, some Silt, tr. f. Sand, mod. plastic, moist (CL)
	5 6 7 6	S-2 : 16.0'- 18.0'	13	30	Same as S-1
	1 1 2 2	S-3 : 18.0'- 20.0'	3	60	...grade: soft, wet
20	2 3 3 3	S-4 : 20.0'- 22.0'	6	60	...grade: m. stiff
	3 4 5 7	S-5 : 22.0'- 24.0'	9	75	...grade: stiff
25					Depth to Bottom of Hole: 24.0 feet
30					
35					
40					
45					

Logged by: R. Crouch

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TEST BORING LOG

JOB No.: 02-555 **BORING No.:** SL-6

PROJECT: Monitoring Well Installation & Sewer Bedding Investigation
Erdle Perfurating, Gates, New York

DRILLER: J. Gardner
SAMPLING METHODS: ASTM D1586
DATE STARTED: 4/22/03
DATE COMPLETED: 4/22/03

TYPE OF DRILL RIG: Track Mounted ATV
SIZE AND TYPE OF BIT: 4 1/4" Hollow Stem Auger
SURFACE ELEVATION (ft.): -
GROUNDWATER DEPTH (ft.): None
(measured at completion unless indicated below)

Elevation/ Depth (feet)	Soil Symbols Sampler Symbols Field Test Data	Sample No. : Range	N-Value	% REC (RQD)	Soil and Rock Description / Remarks
15	12 7 11 12	S-1 : 14.0'- 16.0'	18	25	Brown, v. stiff CLAY, some Silt, tr. f. Sand, mod. plastic, moist (CL)
	10 20 25 24	S-2 : 16.0'- 18.0'	45	25	...grade: hard
	6 9 12 15	S-3 : 18.0'- 20.0'	21	100	...grade: v. stiff
20	5 7 9 11	S-4 : 20.0'- 22.0'	16	100	Same as S-3
	9 8 8 8	S-5 : 22.0'- 24.0'	16	100	Gray, m. dense f/c SAND, some Silt, little Gravel, saturated (SM)
25					Depth to Bottom of Hole: 24.0 feet
30					
35					
40					
45					

Logged by: R. Crouch