Moench Tanning

Cattaraugus COUNTY

Gowanda, NEW YORK

SITE MANAGEMENT

PLAN

NYSDEC Site Number: 905004

Prepared for:
Caleres, Inc.
265 Palmer Street
Gowanda, NY, 14070

Prepared by:
B&B Engineers & Geologists of New York, P.C.
289 Great Road, Suite 202
Acton, Massachusetts 01720

Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date

July 2019

CERTIFICATION STATEMENT

I, Susan B. Welt certify that I am currently a NYS registered professional engineer as in defined in 6 NYCRR Part 375 and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

NAME: _____

Susan B. Welt, P.E.

DATE: 26 July 2019

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SITE MANAGEMENT PLAN

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ES EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by this Site Management Plan:

Site Identification: #905004 Moench Tanning, 265 Palmer Street, Gowanda, NY	
Institutional Controls:	Easement, financial assurance, use restrictions, groundwater use restrictions, and an Excavation Work Plan (Section 3.2)
Engineering Controls:	Fence, landfill cover system, and erosion control (Section 3.3)
Inspections:	
Cover system	Annually and after severe rain or flood events (Section 4)
Monitoring:	Annually and Biennially (Section 4)
Groundwater Monitoring in overburden, bedrock and upgradient wells as follows: • Overburden: MW-3D, MW-4SR, MW-5, MW-6 (Annual) • Bedrock: MW-3DR, MW-4D, MW-6D (Biennial) • Upgradient: MW-8, MW-8D (Biennial)	
Maintenance:	
Cover system Shoreline erosion protection	As needed As needed (Section 5)
Reporting:	
Periodic Review Report certified by a PE	Annual (Section 6)

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan.

1. INTRODUCTION

This Site Management Plan (SMP) is a required element of the Administrative Order on Consent entered into between the New York State Department of Environmental Conservation (NYSDEC, or Department) and Caleres, Inc. (Caleres) dated _____ (the "Consent Order") for the Moench Tanning Site located in Gowanda, New York (hereinafter referred to as the "Site"; Figure 1). The Site is currently in the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program Site No. 905004 as a Class 4 site, which is administered by NYSDEC. A Class 4 site means the property has been properly closed but requires continued site management consisting of operation, maintenance and monitoring.

Moench Tanning Company, a division of Brown Shoe Company, Inc. (now Caleres) operated the Palmer Street Landfill at the Site until 1983. From 1990 to 1992, Brown Shoe Company closed the landfill under oversight from the Department, and the Department accepted its certification that the Site had been closed in accordance with the Department-approved Closure Plan in October 1992. In 1993, the Department gave its final approval for a Post-Closure Plan ("PCP"), establishing the post-closure obligations applicable to the Facility. The PCP was amended, with the Department's approval, in 1994, 2001, and 2006.

This SMP was prepared by B&B Engineers & Geologists of New York, P.C., on behalf of Caleres, to clearly identify the Respondent's remaining post-closure obligations at the Site, as required by the Consent Order. This plan replaces all previously approved management plans, including the PCPs, and has been approved by the NYSDEC. Compliance with this plan is required by the Respondent and its grantors, successors and assigns under the Consent Order. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that failure to comply with this SMP is a violation of the Consent Order, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the site is provided in Appendix A of this SMP.

1.1 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. Revisions will be necessary upon, but not limited to, the following occurring: a change in groundwater monitoring requirements (i.e., frequency or sampling analytical requirements), or other significant change to the Site conditions. When the proposed revision is approved, the SMP will be revised.

1.2 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the Order on Consent and/or Environmental Conservation Law.
- 7-day advance notice of any field activity associated with performance of this plan.
- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan.
- Notice within 48-hours of any damage or defect to the engineering controls at the Site, and likewise, any action to be taken to mitigate the damage or defect.
- Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of the landfill cover system at the site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the landfill cover system.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the Consent Order and all approved work plans and reports, including this SMP.

- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table 1 includes contact information for the above notification. A full listing of site-related contact information is provided in Appendix A.

Table 1: Notifications*

Name	Contact Information
Stanley Radon, CPG	(716) 851-7220 stanley.radon@dec.ny.gov
Andrew Zwack	(716) 851-7220 andrew.zwack@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary to provide accurate contact information.

1.3 Access

The Department shall have access to the Site within 24 hours of giving notice to the property owner.

2. SUMMARY OF PREVIOUS INVESTIGATIONS AND CLOSURE ACTIONS

2.1 Site Location and Description

The Site is located in Gowanda, Cattaraugus County, New York and is identified as Tax Map Numbers 17.029-1-4, 16.036-3-30, 16.036-3-41 and 16.002-4-31. (Figure 1). The Site is an approximately 25-acre area (this area includes the approved landfill cover system and surrounding support areas) and is bounded by steeply sloped wooded area to the west and south, a swampy area to the northwest, and Cattaraugus Creek and Splinter Creek to the east. (Figure 2).

The owner of the Site at the time of issuance of this SMP is Caleres.

2.2 Physical Setting

2.2.1 Land Use

The Site consists of a capped landfill, adjacent to which lies a parking area and a small garage. The Site is zoned industrial and is currently vacant. Site occupants include Site workers who occasionally access the Site to maintain the cover or conduct the groundwater monitoring program activities. The Site is primarily located in the Village of Gowanda and bordered on the east by Cattaraugus Creek.

2.2.2 Geology

As stated in the *Comprehensive Groundwater Monitoring Evaluation (CME)* (NYSDEC, 1998), the geology at the Site is a typical interfingering glacial/ glaciolacustrine/ glaciofluvial sequence. The upper overburden deposits are primarily glaciolacustrine silts and sands. A discontinuous alluvial silt, sand and gravel layer overlies the glaciolacustrine unit and the waste sits on top of this alluvial unit. The alluvial material is present along Cattaraugus Creek. The lower overburden deposits consist of a glaciolacustrine unit, a glaciofluvial sand unit, and three distinct glacial till units.

Top of rock contours have been mapped and indicate the presence of a deep, glacially scoured bedrock valley. The landfill site is located on the sloping sides of this buried valley. The valley deepens at least another 230 feet towards the Village of Gowanda. The bedrock near the creek is predominantly gray-brown shale with calcerous siltstone partings, which grades into a green-gray shale with lesser siltstone content.

Geologic cross sections are shown in Figures 3 and 4. Available site- specific boring logs are provided in Appendix B.

2.2.3 Hydrogeology

As summarized in the CME (NYSDEC, 1998), the upper overburden water bearing zone is a shallow-leachate bearing zone consisting of the near surface waste/fill and underlying layer of undisturbed alluvial materials. The groundwater/leachate in this zone behaves like typical water table conditions, and recharge occurs primarily by infiltration of precipitation through the waste/fill and secondarily from upgradient groundwater flow. Discharge occurs to Splinter Creek and Cattaraugus Creek, off-Site across the northern landfill boundary, and downward through the lower overburden to the regional aquifer by seepage through the lower overburden.

The lower overburden water bearing zone includes saturated unconsolidated glaciolacustrine sand and silt between the base of the upper overburden and the bedrock. The vertical hydraulic gradient between the lower overburden and the bedrock wells is downward across the Site, and it appears that the two units are in hydraulic connection. The average hydraulic conductivity in the lower permeability materials in this zone is 8.1×10^{-8} centimeters per second (cm/s).

The bedrock underlying the Site is in hydraulic connection with the regional aquifer. The bedrock is recharged from the lower overburden zone. Hydraulic conductivities in the bedrock beneath the Site average 1.8×10^{-5} cm/s, although the bedrock in the northern portion of the Site has an average hydraulic conductivity of 1.4×10^{-4} cm/s.

Groundwater contour maps for the overburden and bedrock conditions are shown in Figures 5 and 6, respectively. Groundwater elevation data is provided in Table 2. Available groundwater monitoring well construction logs are provided in Appendix B.

Table 2 – Groundwater Elevation Measurements (July 2018)

Monitoring Point	Elevation Top of PVC (FT)	Total Depth from Top of PVC (FT)	Water Depth from Top of PVC (FT)	Water Elevation (FT)
Monitoring Wells				
MW-1	826.05	31.90	7.95	821.10
MW-1D	827.82	188.20	15.95	811.87
MW-2A	810.62	16.15	4.05	806.57
MW-3	810.81	17.10	16.95	793.86
MW-3D	810.73	67.70	12.80	795.93
MW-3DR	810.47	102.30	9.50	800.97
MW-4SR	806.75	24.92	12.70	794.05
MW-4D	805.93	74.94	12.65	793.28
MW-5	805.35	18.15	DRY	DRY
MW-6	800.48	18.78	16.45	784.03
MW-6D	800.63	37.03	17.70	782.93
MW-7	800.5	30.60	6.75	793.75
MW-7D	800.39	41.90	5.50	794.89
MW-8	821.82	15.96	DRY	DRY
MW-8D	821.89	126.80	17.85	804.04
Infiltrometers				
# 1		9.00	5.40	--
# 2		8.80	7.10	--
# 3		9.00	7.20	--
# 4		8.92	6.60	--
# 5		9.00	7.25	--
Piezometers				
P-1	811.85	18.30	17.30	794.55
P-4	813.54	19.70	15.40	798.14
P-6D	810.3	61.25	19.60	790.70
P-7A	816.92	23.90	19.75	797.17
WP-1	822.16	11.71	9.00	813.16

Notes:

FT = feet

2.3 Site History, Investigation and Remedial Activities

Moench Tanning Company, a division of Brown Shoe Company, Inc. (now Caleres), was a leather tanning facility, located just north of the landfill at 265 Palmer Street, that was in operation for approximately 120 years. Moench Tanning Company operated the Site from 1900 until 1983.

A variety of wastes generated at the Moench leather tanning facility were disposed of at the Site after 1900. The landfill was not used for disposal of wastes generated from outside sources. It is important to note that in October 1980 tannery wastes (K-58) were "delisted" and therefore the wastes disposed at the landfill are not listed hazardous waste.

Brief descriptions of the types of wastes known to have been disposed of at the landfill site are presented in the Palmer Street Landfill Closure Plan (revised August 1989); these waste types included:

- Sole leather extract which consisted of exhausted vegetable tanning solution (primarily bark and wood extract) used in the tanning of shoe sole, luggage and upholstery leathers. Generation of this waste stopped in 1967. There is no estimate of the quantity of this non-hazardous waste.

- Rendering waste (sometimes referred to as scutch liquor), which is the residual waste generated from the sulfuric acid grease rendering operation. It contained hair and other suspended solids and was acidic in nature. Disposal of this waste at the Site stopped in 1979. There is no estimate of the quantity of this non-hazardous waste.

- Spray booth cleanup waste consists of materials generated from the cleanup of the spray finishing booths (i.e., spray booth sludge) and conveyors (i.e., band cleaning residue). These wastes were not placed into the landfill after July 1983. A waste characterization of the two fore-mentioned wastes were analyzed in August of 1983 and failed EP Toxicity Test for Lead. Additional waste characterization was performed February 27, 1984 during which the band cleaning residue again failed the EP Toxicity Test for Lead. Analysis conducted July 30, 1985 on the combined waste streams did not fail the EP Toxicity Test for Lead. Between the period of 1972 and 1983, Moench disposed of 2 tons of spray booth wastes weekly at the Site. After 1983, the spray booth waste was classified and disposed of as an industrial waste that was sent off-site to an appropriately permitted disposal facility.

- Waste finish which consists of spent resins, pigments, waxes, dyes, detergents, lacquer emulsions, and solvents. Approximately 3,950 tons of waste finish was disposed at the

Site. Starting in 1979, waste finish material was transported to an off-site permitted facility for treatment/disposal or reclaimed on-site.

- Waste hair, which is non-hazardous, consists of hair removed from hides during the dehairing process. Waste hair was not disposed at the Site after September 1982. There is no estimate of the quantity of this non-hazardous waste.

- Leather scraps, which are non-hazardous and include pieces of finished leather, blue stock, and shavings. These wastes were not placed in the landfill after September 1982. There is no estimate of the quantity of this non-hazardous waste.

- Wastewater treatment plant sludge, which is the dewatered biological residue produced by the activated sludge wastewater treatment system. The sludge was first mixed with lime (for stabilization and as a dewatering aid) and dewatered on a rotary vacuum filter. A total of approximately 100,000 tons of wastewater treatment plant sludge, which is non-hazardous, is estimated to have been disposed at the Site between 1972 and 1982.

- Occasional construction debris (i.e., building demolition debris), which is non-hazardous, was placed on the Site through July 1983. There is no estimate of the quantity of this non-hazardous waste.

There is virtually no documented information on the operation of the landfill because records/logs were not maintained. All information presented herein regarding operational practices and the location of wastes is based on interviews with plant personnel involved in the landfill operation. Based on these interviews conducted by others, there are three areas of the landfill (see Figure 2).

- Area 1 is oldest part of the landfill and received the majority of wastes. Initially there were dump pits in this area of the landfill in which wastes were disposed. Some of these dump pits were then used as waste piles for the disposal of plant garbage, construction debris, leather scraps, hair, spray booth sludge, and waste finishing materials. The majority of Area 1 was utilized to landfill via the narrow trench method wastewater treatment plant sludge, hair, leather scraps, and spray booth sludge. These portions of Area 1 were trenched two to three times in various directions. Therefore, the surface of Area 1 is a mixture of in-situ soils and waste materials.

- Areas 2 and 3 are the newest portions of the landfill. They were utilized to landfill via the narrow trench method wastewater treatment plant sludge, hair, leather scraps, and spray booth sludge. No other wastes are known to have been disposed in these areas.

    - Much of Area 2 was trenched two to three times in various directions. Therefore, the surface of Area 2 is a mixture of in-situ soils and waste materials.

- Area 3 was trenched one time and all waste materials were covered with one to two feet of clean fill excavated from the trench.

From 1990 to 1992, Caleres voluntarily closed the Site as a hazardous waste landfill under the requirements of 6 NYCRR Part 373 under oversight from the NYSDEC. Since the NYSDEC approved the PCP in 1992, the Respondent has voluntarily implemented the PCP, as amended, to the NYSDEC's satisfaction without being under an Administrative Order on Consent or subject to a permit. Caleres has worked cooperatively with the NYSDEC and has addressed their concerns, if any, throughout the Site's history.

Conditions at the Site have remained consistent over the 27 years since closure. Caleres has maintained the Site's cover system in good condition with successful revegetation and no visible evidence of a breach in the cover system has been observed. Monitoring wells in bedrock aquifers, overburden and intermittent seeps from the Site at the adjacent waterway have shown no evidence of a release from the Site that has required corrective action. Groundwater samples taken within the footprint of the landfill (screened in waste) have shown sporadic and limited amounts of arsenic in groundwater in excess of Class GA groundwater standards, but arsenic occurs naturally in the area and there has been no evidence of migration of such compounds in downgradient wells or in the bank seep samples.

Documentation of the Site history, investigation, closure strategy, and post closure monitoring is provided in Section 7.0 - References.

3. INSTITUTIONAL AND ENGINEERING CONTROLS

3.1 General

Since remaining waste material exists at the site, Institutional Controls (ICs) and Engineering Controls (ECs) are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC.

This plan provides:

- A description of all IC/ECs on the site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the Excavation Work Plan (EWP) (as provided in Appendix C) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the site remedy, as determined by the NYSDEC.

3.2 Institutional Controls

A series of Institutional Controls (ICs) are required by the Consent Order to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and, (3) limit the use and development of the site to commercial, industrial or passive recreational uses as approved by the NYSDEC and New York State Department of Health (NYSDOH). Adherence to these ICs on the site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

- The property may be used for commercial, industrial or passive recreational uses;
- All ECs must be operated and maintained as specified in this SMP;
- All ECs must be inspected at a frequency and in a manner defined in the SMP.
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Cattaraugus Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.
- Groundwater monitoring must be performed as defined in this SMP;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;
- Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement; and
- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries, and any potential impacts that are identified must be monitored or mitigated.

3.3 Engineering Controls

Exposure to remaining contamination at the site is prevented by a cover system placed over the site. This cover system is comprised of 24-inches of a barrier layer (i.e., low permeability soil layer at a maximum permeability of 1×10^{-7} cm/s) and a 12-inch topsoil layer over which vegetation grows. To ensure this cover system is maintained, annual inspections will be conducted as described in the following section. Further, in the unlikely event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed, the invasive activities will be conducted in accordance with the Excavation Work Plan (EWP) prepared for the Site and included as Appendix C.

4. IMPLEMENTION OF POST CLOSURE ACTIVITES

Caleres has been successfully implementing the PCP since its approval by the Department in 1992. This SMP requires that Caleres continue to fully comply with the following activities.

Caleres will hire personnel (fully qualified to perform the work) or a licensed consulting engineering firm to perform site inspections and supervise maintenance operations described below in accordance with the following health and safety procedures.

All activities will be conducted in strict conformance with the Task Hazard Analysis (Appendix D) prepared to address health and safety concerns posed by the monitoring and maintenance activities, and Caleres-specific health and safety protocols, prior to commencing any activities on the Site.

All sampling activities will be conducted in accordance with NYSDEC DER-10 / Technical Guidance for Site Investigation and Remediation (DER-10; NYSDEC, 2010 and updated in November 2017) and a manner to meet the data quality goals of the monitoring program.

4.1 Groundwater Monitoring and Sampling

Groundwater monitoring will be performed from a network of monitoring wells installed to monitor upgradient, on-site and downgradient groundwater conditions at the Site. The network of wells has been designed to monitor the effectiveness of the landfill cover system to reduce the potential for residual wastes to impact groundwater, and to assess the degradation of waste material within the landfill.

Prior to collecting the samples, the depth to water will be measured from the 15 monitoring wells, five infiltrometers, and five piezometers on the Site (see Figure 2).

Samples will be collected from the groundwater monitoring wells on a regular basis during the late summer or early fall months (e.g., September or October) using a Grundfos or another suitable submersible pump. Groundwater from each sampling location will be purged and monitored until stabilization is reached according to the low flow sampling procedures outlined in the United States Environmental Protection Agency's (USEPA's) "Low stress (low

flow) purging and sampling procedure for the collection of groundwater samples from monitoring wells" (USEPA, 2017). When stabilization has been reached, samples will be collected in laboratory-supplied bottles that conform to the NYSDEC sampling and preservative requirements and delivered to the analytical laboratory for analysis, chilled and under chain-of-custody documentation. Sampling locations, required analytical parameters, and schedule are provided in Table 3 below.

In addition to the parameters listed in Table 3, one round of water samples will be collected from select groundwater monitoring wells and analyzed for 1,4-dioxane via USEPA Method 8270-SIM and Perfluorinated Compounds (PFC)/Perfluoroalkyl Substances (PFAS) via USEPA Method 537[1]. If the concentrations of 1, 4,- dioxane and/or PFC/PFAS exceed applicable lifetime health advisory levels (e.g., 35 μg/L (the 10^{-4} US EPA cancer risk level) for 1,4-dioxane or 70 ng/L for total PFC/PFAS) published by EPA (or any successor action levels promulgated by NYSDEC) in the downgradient wells, Caleres will add analysis of such compounds into the annual groundwater monitoring program. If the levels of such compounds stay the same or decrease over four years of sampling, no additional sampling will be conducted. If the levels increase, Caleres will assess the cause, nature, and extent of the presence of such compounds and the risk posed by such compounds.

Any modifications to the current groundwater monitoring and sampling plan will be submitted to the NYSDEC and approved prior to being implemented at the Site.

4.1.1 Decontamination of Groundwater Sampling Equipment

To minimize the possibility of cross-contamination, the following procedures will be used to decontaminate any non-disposable sampling equipment:

- Wash and scrub the equipment with non-phosphate laboratory grade detergent (i.e., Alconox and potable water);
- Generous potable water rinse;
- Rinse with a non-analyte organic solvent (acetone);

[1] Caleres will discuss and obtain NYSDEC approval on which wells will be sampled for analysis of 1,4-dioxane and PFC/PFAS prior to sampling.

- Triple rinse with distilled water; and
- Air dry.

All cleaned equipment will be wrapped in aluminum foil and/or stored in disposable plastic sheeting to maintain a contaminant-free condition. Any deviations from these procedures will be documented in the field logbook.

Table 3 –Post Closure Sampling Requirements

Sampling Location	**Analytical Parameters**		
	Soluble Arsenic, Chromium, Lead	VOCs	pH Conductivity Temperature Groundwater Elevation Turbidity (visual)
Analytical Method	EPA Method 200.7[1]	EPA Method 8260[2]	Field Measurements
Downgradient Wells			
Overburden (sample every year [i.e., annual])			
MW-3D	x	x	x
MW-4SR	x	x	x
MW-5	x	x	x
MW-6	x	x	x
Bedrock (sample every other year [i.e., biennial] at the same time as the upgradient well sampling			
MW-3DR	x	x	x
MW-4D	x	x	x
MW-6D	x	x	x
Upgradient Wells (sample every other year [i.e., biennial] at the same time as the bedrock well sampling)			
MW-8	x	x	x
MW-8D	x	x	x

Notes:

1. Metal samples will be collected in 1000 mL vials that have HNO_3 to pH<2 and will be cooled to 4° C plus or minus 2°C. The samples have a holding time of six months.
2. VOC samples will be collected in three 40 mL vials that have HCl to pH<2 and will be cooled to 4° C plus or minus 2°C. The samples have a holding time of 14 days.

4.1.2 Field Documentation Procedures

Field sampling procedures will be documented by on-site personnel in bound waterproof field logbooks and task-specific field forms and will include:

- Calibration of field instruments;
- Sample labels, which prevent misidentification of samples;
- Submission of field-based blanks, where appropriate;
- Field sampling equipment and containers including preservatives and specific identification numbers of equipment;
- Sampling order;
- Decontamination procedures; and
- Field personnel.

Corrections to field entries will be made by drawing a single line through the incorrect data and initialing and dating the correction that was made to the side of the error. An initialed diagonal line will be used to indicate the end of an entry or the end of the day's activities. Copies of all field forms for each field event will be maintained in the project file.

4.1.3 Quality Assurance Procedures

Chemical data generated from sample analyses will be assessed in terms of both the analytical laboratory and field sample collection programs for the following five parameters that define quality assurance objectives presented in Table 4.

- Precision, which measures the reproducibility of data or measurements under specific conditions, will be evaluated using field duplicate and laboratory duplicate samples.
- Accuracy, which is a measure of the bias in a measurement system which may result from sampling or analytical error, will be evaluated using the field and laboratory blanks, matrix spike samples and Laboratory Control Samples.
- Completeness, which is defined as the percentage of data that is judged to be valid to achieve the objectives of the investigation compared to the total amount of data obtained, will be determined based on an assessment of the sufficiency of the data to achieve the SMP goals.

- Representativeness, which is the degree to which the data gathered by the project accurately and precisely represent the actual field conditions, will be assessed by comparing the analytical results from field duplicate samples.

- Comparability, which is a qualitative parameter that expresses the confidence with which data sets can be compared, will be accomplished through the consistent use of the analytical and sampling methods described herein and the acceptance criteria for data quality indicators.

Table 4: Data Quality Objectives

DQO Parameter	Laboratory Parameter	Frequency
PRECISION		
Matrix Spike/Matrix Spike Duplicate	laboratory in-house limits	1 per 20
Field Duplicate	< 30% RPD	1 per 20
ACCURACY		
Method Blank	<QL	1 per 20 or SDG
Equipment Blank	<QL	1 per day or 1 per 10
Trip Blank	<QL	1 per sampling team, 1 per 20, or 1 per SDG*
Matrix Spike/Matrix Spike Duplicate	laboratory in-house limits	1 per 20 or SDG
Laboratory Control Sample	laboratory in-house limits	1 per 20 or SDG
COMPLETENESS	90%	
REPRESENTATIVENESS	90%	
COMPARABILITY	Based on precision, accuracy, and media comparison	

Notes:
*: whichever is more frequent
RPD: relative percent difference for a pair of measurements
QL: quantitation limit
SDG: sample delivery group

4.1.4 Data Validation

A Stage 2A data validation will be performed by a QA Scientist for all analytical data received from the laboratory for each sampling event. Validation will consist of sample results, analytical holding times, sample preservation, chains-of-custody, field and laboratory blank analysis results, instrument performance check sample results, MS/MSD recoveries and RPD

and field duplicate recoveries. During data validation, data is also reviewed for transcription and reporting errors.

The Periodic Review Report (PRR) will include a discussion of data quality.

4.2 Inspections

The Site will be inspected annually for:

- Integrity of structures, if any;
- Visible debris, litter and waste;
- Loss of vegetative cover or growth of undesirable species;
- Integrity of drainage ditches including:
    - Sediment buildup;
    - Pooling or ponding;
    - Slope integrity; and
- Overall adequacy of surface runoff collection system.
    - Integrity of gas venting system;
    - Integrity of access roads, gates and fences;
    - Integrity of groundwater monitoring system; and
    - Integrity of landfill cover system including:
        - Erosion or settling of cover system material, and
        - Leachate breakthroughs.

The results of the inspection activities will be summarized on Site Inspection Checklist (Appendix E) and submitted to the NYSDEC as part of the PRR.

4.3 Site Security

Site access will be restricted except for those vehicles and personnel necessary to provide routine inspection and maintenance as described herein. Unauthorized access to the Site will be discouraged by the existing fence on the north, south and west boundaries. The

natural boundary of the steep creek bank on the east should be sufficient to restrict unauthorized access which might lead to potential damage of the closure appurtenances of the Site from this direction.

5. MAINTENANCE PLAN

The site remedy relies on the integrity of the cover system, which requires routine maintenance and measures to address unplanned events (i.e., contingency planning) as described below.

5.1 Routine Maintenance

Cover maintenance will be performed as necessary over the entire post-closure care period and includes:

- Mowing once per year (i.e., annually) when the groundwater monitoring and inspection activities occur (i.e., September or October). Any undesirable species (i.e., large tree growth) will be removed if their presence is suspected to have the potential to deteriorate the integrity of the final cover. Clippings that could smother the grass will be removed.

- Correction of signs of erosion, settling cracking or other site maintenance problems detected during the annual site inspections as soon as possible after observation.

- Eroded areas will be brought back to original grade according to the procedures described for constructing the final cover (Malcolm Pirnie, 1992). These include, but will not be limited to:

    - Strip and stockpile topsoil from the affected area;

    - Re-grade the affected area in accordance with the grading plan;

    - Using clay or a bentonite-soil admixture, fill cracks and re-establish the recompacted low permeability soil layer to a depth of twenty-four inches at a maximum permeability of 1×10^{-7} cm/s; and

    - Replace topsoil and re-vegetate affected are in accordance with Table 5.

- Re-grading and re-vegetating areas where settling results in ponding of water and potential impairment of cover system.

- Re-seeding and fertilizing, as necessary, bare spots in the final cover that may impair the effectiveness of the cover system. Seed and fertilizer will be of the same type and quality as specified in Table 5.

- Maintenance of drainage ditches, including but not limited to:

    - Repair, re-grade, and reseed eroded areas using the recommended seed mixture given in Table 5;

- Remove sediment buildup if it restricts flow; and
- Rework and regrade areas where the cross-section or slope has been altered to the extent that flow does not occur as desired.

- Repair or rebuild gas vents to restore them to the original design configuration.
- Assess and repair monitoring wells which sustain damage or cannot provide representable groundwater samples. Attention will be given to:
  - Signs of encrustation and corrosion (pipes are PVC);
  - An exceptional increase in solids content (due to the breakdown of the screening arrangement); and
  - An appreciable decrease in groundwater elevation.

Remedial actions will be determined by the expected impact of the loss of data on the overall monitoring program.

- Maintain the access road so that annual inspections, sampling, and maintenance activities can occur.
- Maintain gates in good repair to prevent unauthorized access onto the Site.

Table 5 –Seed Mixture

Seed Type	Concentration
Perennial Ryegrass	10 lbs/acre
Kentucky Bluegrass	20 lbs/acre
Strong Creeping Red Fescue	20 lbs/acre
Chewing Fescue	20 lbs/acre
Hard Fescue	20 lbs/acre
White Clover	10 lbs/acre
Note: Six months after seeding, the cover will be fertilized with 400 1b/acre of 10-10-10 fertilizer.	

5.2 Contingency Plan

The objective of a contingency plan is to address events, which occur outside the scope of the routine maintenance program. The contingencies and associated actions identified for this Site follow.

5.2.1 Fire

A fire at the landfill will be immediately reported to the local fire department. Appropriate response measures, including personnel safety, will be the responsibility of the fire department. Underground fires will be controlled as necessary. Aboveground fires will be quenched according to approved fire department protocol. Damage to the surface drainage system or final cover will be repaired where these systems have been compromised.

5.2.2 Vandalism

Vandalism will be reported to the local enforcement authorities. If vandals have gained entry to the landfill, appropriate measures will be taken to eliminate or restrict future access. Vandalism to monitoring wells will be repaired as appropriate. Damage caused by off-road vehicles will be repaired, where the damage is determined to have compromised the integrity of the final cover or the functions of the gas vents or surface drainage system.

5.2.3 Air Contamination

Methane gas venting to the atmosphere should not present a risk to human health due to the rural nature of the landfill and the relative lack of human population adjacent to the landfill. It is conceivable, although highly unlikely, that a buildup of gas within the landfill may occur.

Should it be suspected that methane gas generation may be presenting an explosion or other hazard, Caleres will notify the NYSDEC and New York State Department of Health (NYSDOH). If it is determined that such a hazard is present, a work plan will be developed to determine if the venting system is functioning properly and to determine the appropriate response actions. Possible response actions include replacing portions of the venting system, adding new vents, or installing an active gas withdrawal system. Any proposed remedial actions would be approved through the NYSDEC prior to implementation.

5.2.4 Unauthorized Dumping or Disposal

Unauthorized dumping or waste disposal by other parties will be reported to the NYSDEC, and local enforcement officials. If such disposal occurs, efforts will be taken to eliminate further dumping and to restrict subsequent entry to the site. Caleres will assist the NYSDEC in the prosecution of persons found in the act of illegal dumping and in seeking reimbursement from the responsible party for all costs incurred in the removal and disposal of the waste.

6. PERIODIC ASSESSMENTS/ EVALUATIONS

6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems.

The Site is located immediately adjacent to Splinter Creek and Cattaraugus Creek, which could overtop its banks during severe rain events. To limit the potential for Splinter Creek and Cattaraugus Creek waters to impact the landfill cover system, erosion controls will be placed along the oxbow portion of Splinter Creek (Figure 7); this erosion control is in addition to that already installed along the northern bank of the landfill adjacent to Cattaraugus Creek (Figure 8). The erosion control, which will be installed in accordance with a NYSDEC-approved work plan and the appropriate permits, will consist of a geomembrane liner which will be anchored in-place over which rip-rap will be placed (Figure 7).

Where accessible, the cover system, which includes the landfill cover system and installed erosion controls along Splinter Creek and Cattaraugus Creek, will be visually inspected after severe rain events.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology.

To reduce expenditure of energy or resources, the annual inspection of the landfill cover system and erosion controls along the stream bank will be conducted at the same time as the annual groundwater sampling event (i.e., September or October). Local qualified personnel will conduct these activities and samples for laboratory analysis will be submitted via a laboratory-provided courier under chain-of-custody procedures. Maintenance of the vegetative

cover, parking areas, and roads overlying the landfill will be conducted via local personnel annually as discussed in Section 4.

7. REPORTING REQUIREMENTS

A PRR will be submitted within 30 days of the end of each certification period (i.e., annually) to the Department. The report will include:

- Results of the required annual site inspections and severe condition inspections, if applicable.
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.
- Groundwater data summary tables and graphical representations of contaminants of concern, which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.
- A Site evaluation, which includes the following:
    - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan being monitored;
    - Recommendations regarding any necessary changes to the Monitoring and Sampling Plan; and
    - Trends in contaminant levels in groundwater to determine if the SMP continues to be effective.

The PRR will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the site is located and the NYSDOH Bureau of Environmental Exposure Investigation. The PRR may need to be submitted in hard-copy format, as requested by the NYSDEC project manager.

7.1 Certification of Institutional and Engineering Controls

Following the annual inspection, a Professional Engineer licensed to practice in New York State will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

"*For each institutional or engineering control identified for the site, I certify that all of the following statements are true:*

- The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;
- The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;
- Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;
- If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document;
- Use of the site is compliant with the environmental easement;
- The engineering control systems are performing as designed and are effective;
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program; and
- The information presented in this report is accurate and complete.

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner/Remedial Party or Owner's/Remedial Party's Designated Site Representative] for the site."

8. REFERENCES

6NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.

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Geomatrix Consultants; 2006. July 27 Letter to Stan Radon (NYSDEC9) documenting the meeting and agreement to changes to the "Detection Monitoring Program".

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Malcolm Pirnie,Inc., 1985. Groundwater Quality Assessment Program, Palmer Street Landfill. August.

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Moench Company, A Division of Caleres, Inc., 2017. "2016 Annual Groundwater Monitoring Report, Revised from December 2016". May.

Moench Company, 1993 - 2015. Palmer Street Landfill Annual Groundwater Monitoring Report for XX Calendar year (XX = Year)

NYSDEC DER-10 – "Technical Guidance for Site Investigation and Remediation".

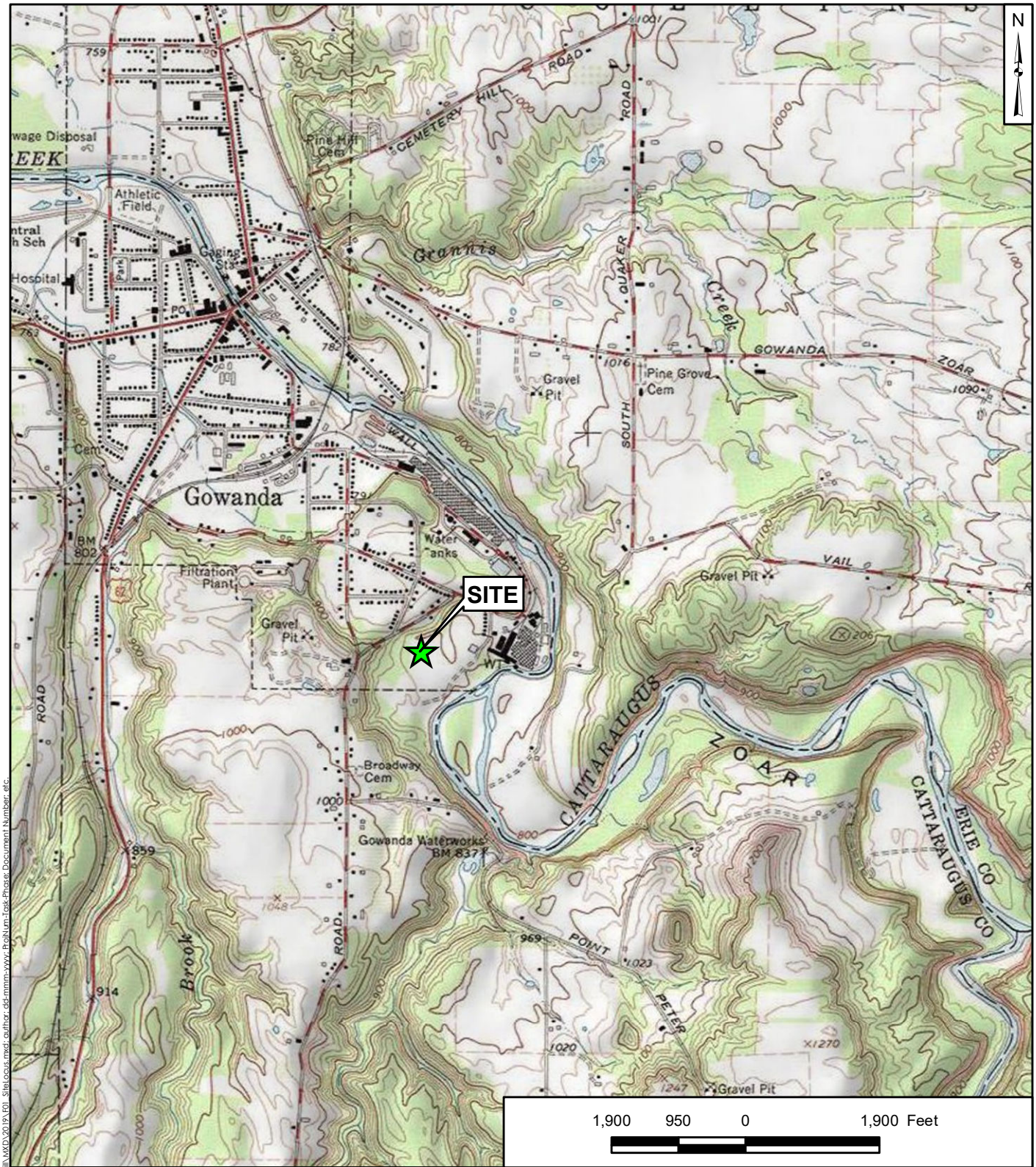
NYSDEC; Sept. 7, 2006 letter to Jeffrey Smith (Moench), agreeing and confirming the changes to the "Detection Monitoring Program", and elimination of the "Performance Monitoring Program".

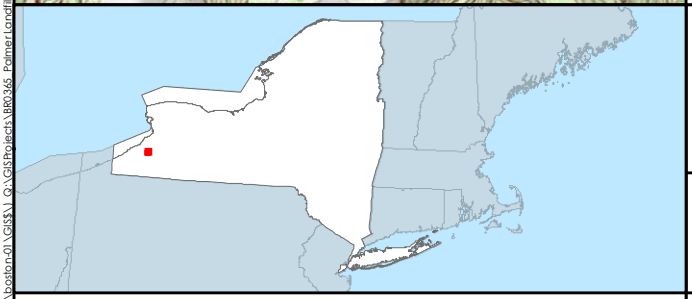
NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).

NYSDEC, 1998. "Comprehensive Groundwater Monitoring Evaluation (CME), Moench Tanning Palmer Street Landfill, I.D. #NYS 002126910". March 1998.

USEPA, 2017. Low stress (low flow) purging and sampling procedure for the collection of groundwater samples from monitoring wells. September 19.

FIGURES





Site Locus

265 Palmer Street
Gowanda, NY

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Figure **1**

Imagery obtained from USGS 1:24,000 scale topographic quadrangles

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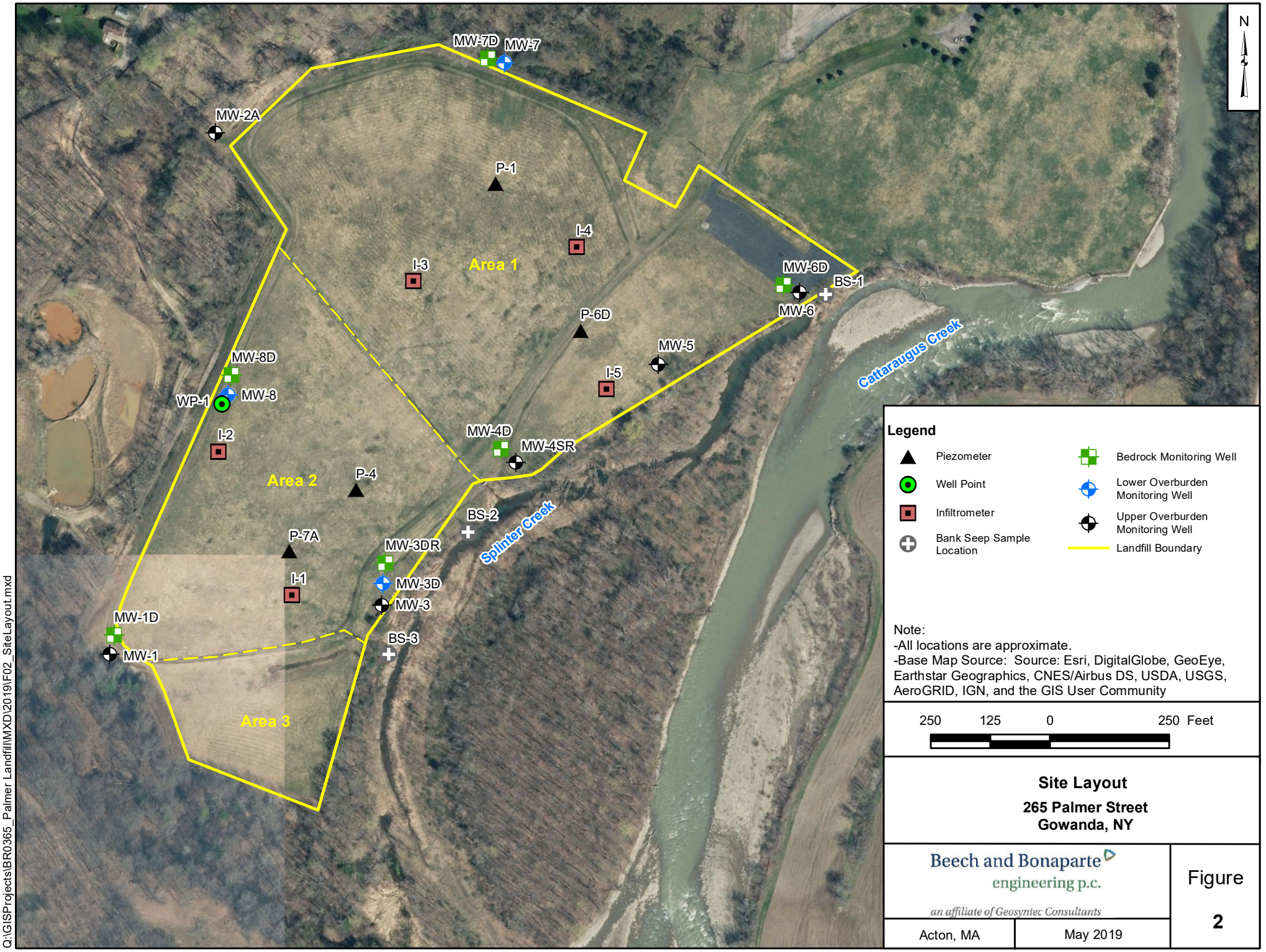
MW-7D
MW-7
MW-2A
P-1
I-4
I-3
Area 1
MW-6D
BS-1
MW-6
P-6D
MW-5
Cattaraugus Creek
MW-8D
WP-1
MW-8
I-5
I-2
MW-4D
MW-4SR
Area 2
P-4
BS-2
Splinter Creek
P-7A
MW-3DR
I-1
MW-3D
MW-3
MW-1D
BS-3
MW-1
Area 3
N
Legend
Piezometer
Well Point
Infiltrometer
Bank Seep Sample Location
Bedrock Monitoring Well
Lower Overburden Monitoring Well
Upper Overburden Monitoring Well
Landfill Boundary
Note:
-All locations are approximate.
-Base Map Source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
250 125 0 250 Feet
Site Layout
265 Palmer Street
Gowanda, NY
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May 2019
Figure
2
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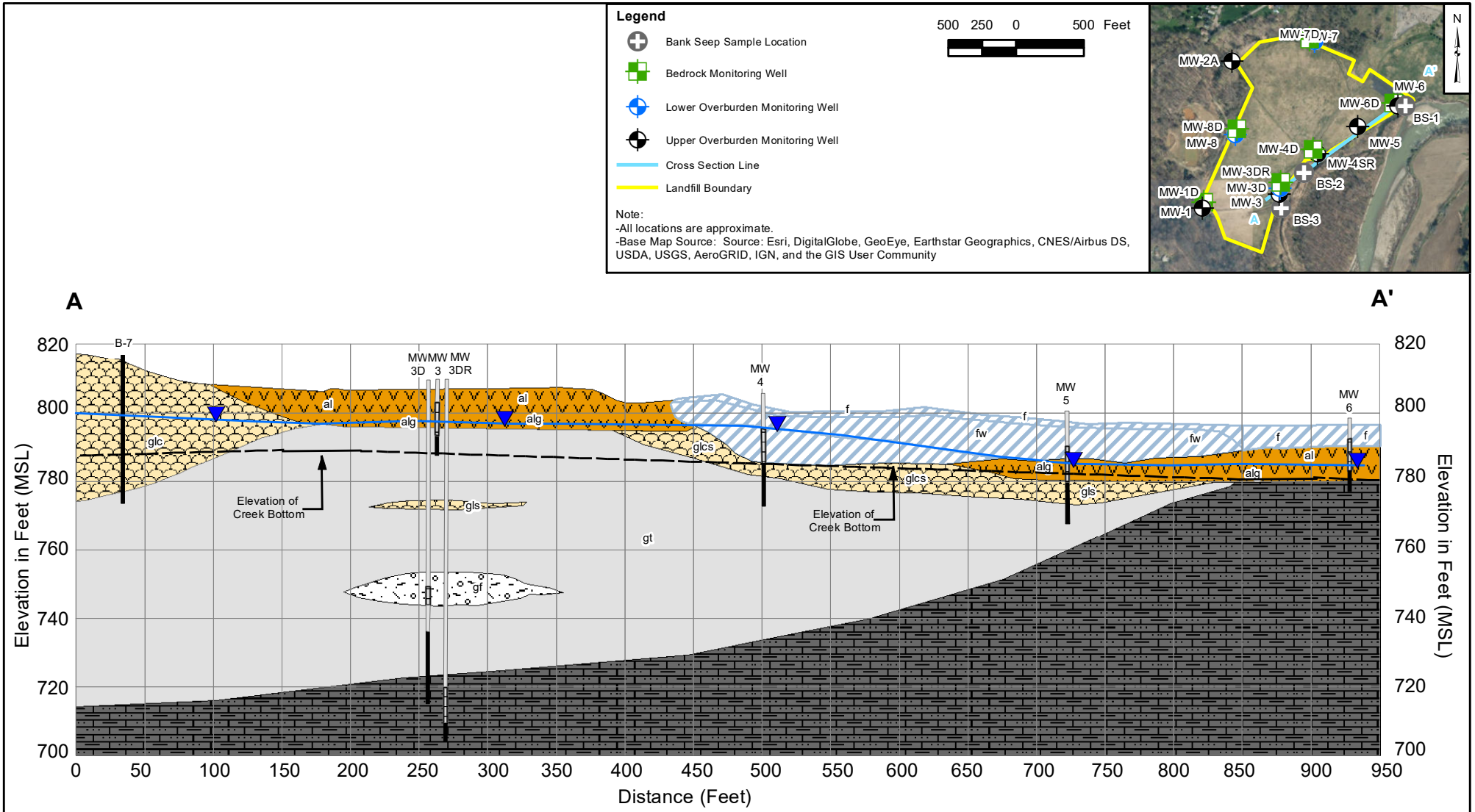

Notes:
- MSL = Mean Sea Level.
- Cross Section Information taken from Malcolm Pirnie, Inc drawing titled "Hydrogeologic Cross-Section Along Line A to A'," dated January 1989.

Vertical Scale: 1in = 40 ft
Horizontal Scale: 1in = 100 ft

Geologic Cross Section A-A'

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Figure 3

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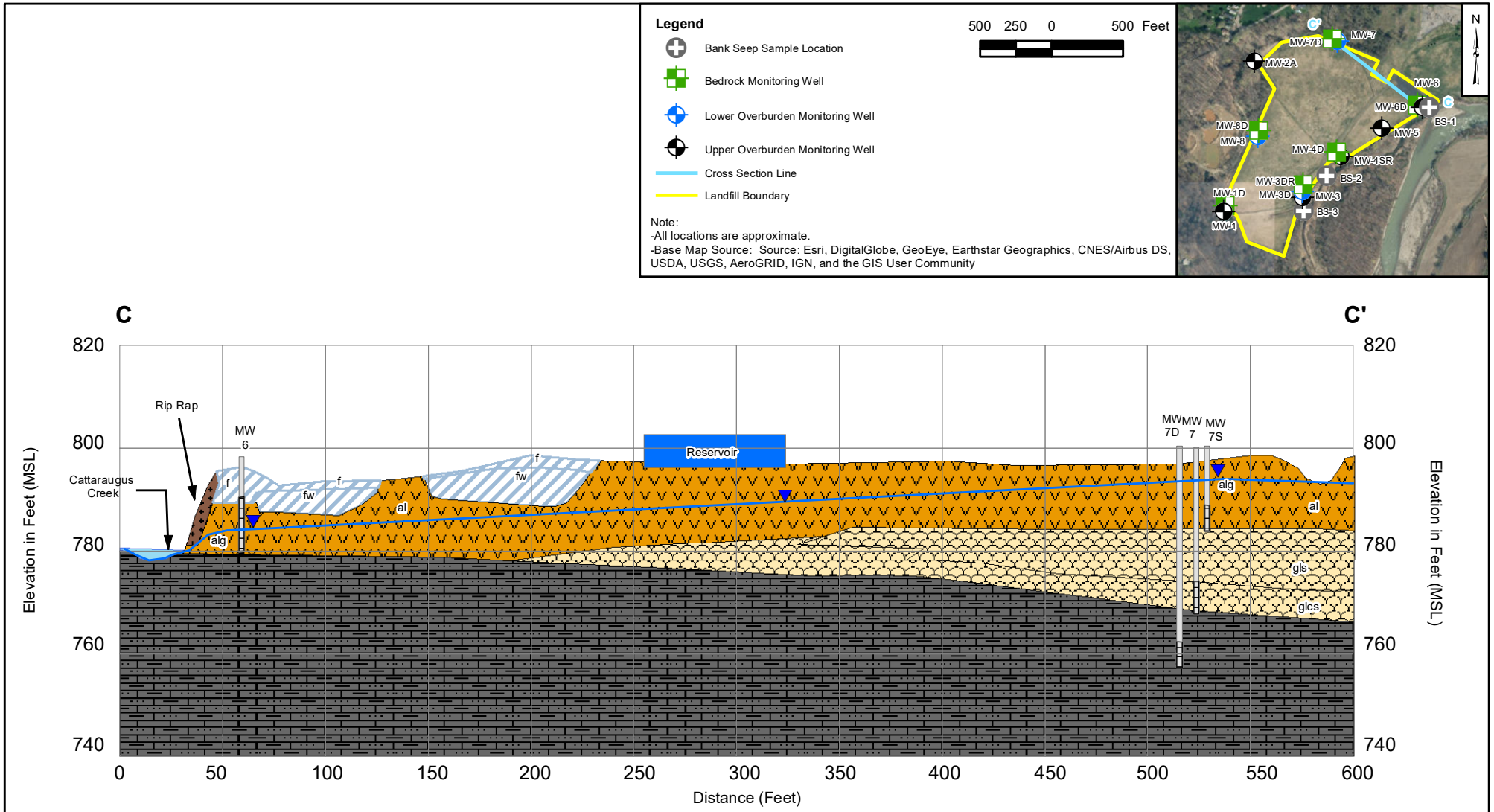

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Legend

- Groundwater Elevation (Shallow Wells)
- Shallow Unconfined Groundwater Surface
- Fill: f - Construction Fill and Cover Material; fw - In-situ Soils Mixed with Waste
- Alluvium: al - Silts and Sands; alg - Gravels
- Glaciolacustrine: gls - Silts; glcs - Clays and Silts
- Bedrock

MW 4 — Monitoring Well, Piezometer, or Well Point Number

Lithologic Contact

Screened Interval

Backfill

Notes:
- MSL = Mean Sea Level.
- Reservoir no longer present.
- Cross Section Information taken from Malcolm Pirnie, Inc drawing titled "Hydrogeologic Cross-Section Along Line C to C'," dated January 1989.

Vertical Scale: 1 in = 66 ft
Horizontal Scale: 1 in = 26 ft

Geologic Cross Section C-C'

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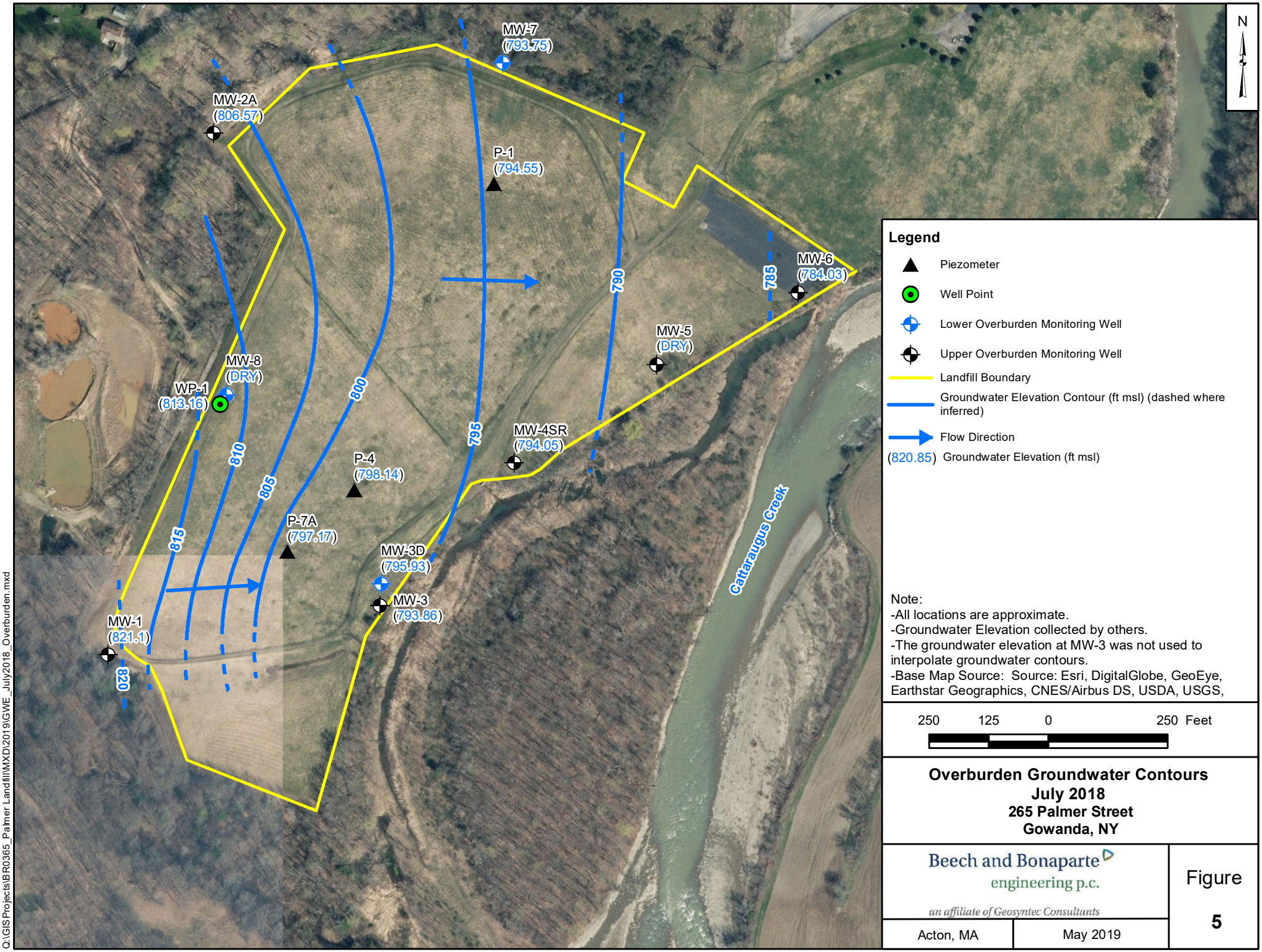
Figure 4



Overburden Groundwater Contours
July 2018
265 Palmer Street
Gowanda, NY

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Figure 5

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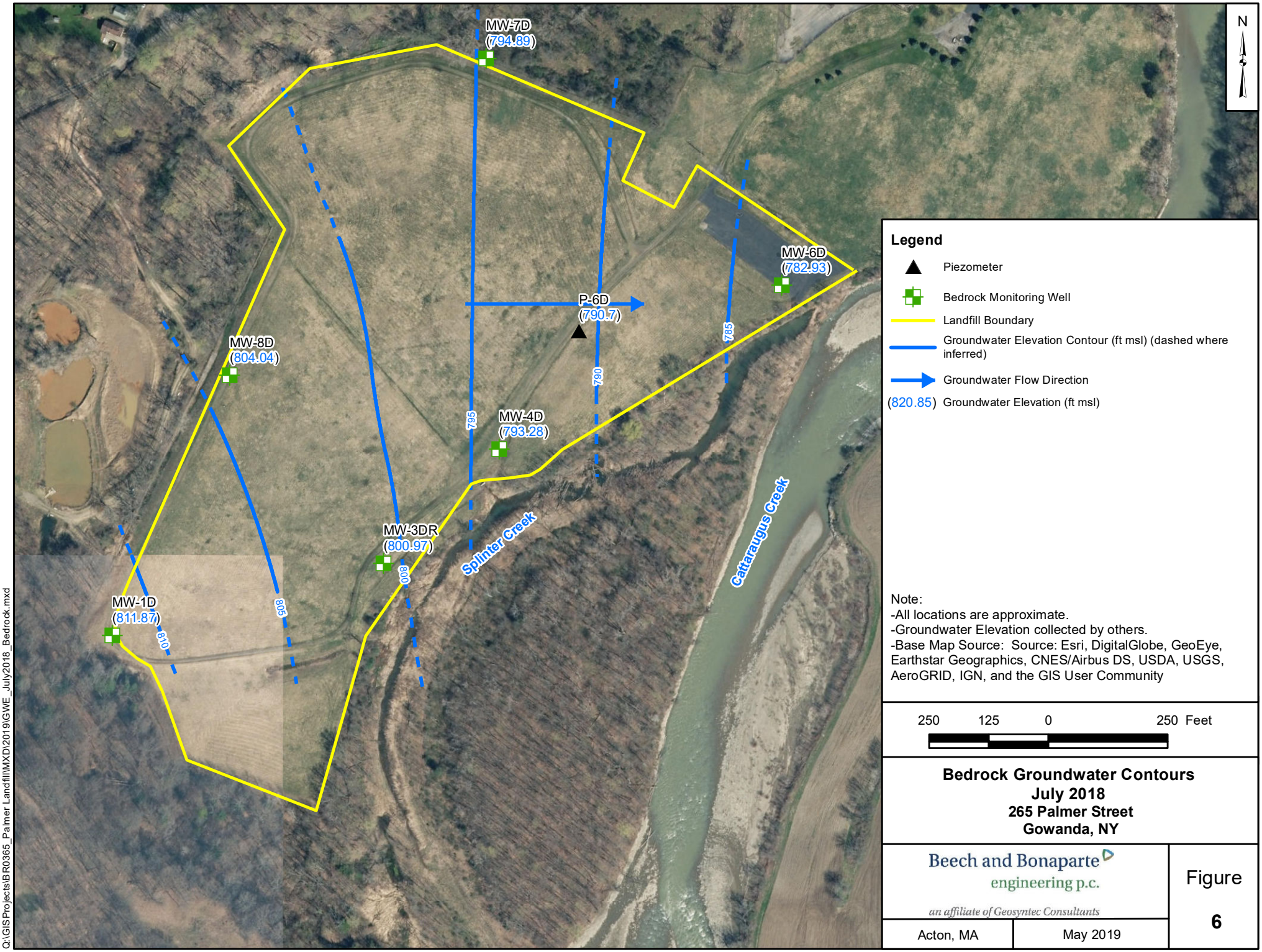

Bedrock Groundwater Contours
July 2018
265 Palmer Street
Gowanda, NY

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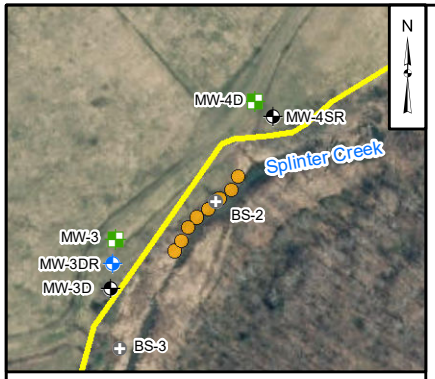
Figure **6**

Q:\GIS Projects\BR0365_Palmer Landfill\MXD\2019\GWE_July2018_Bedrock.mxd

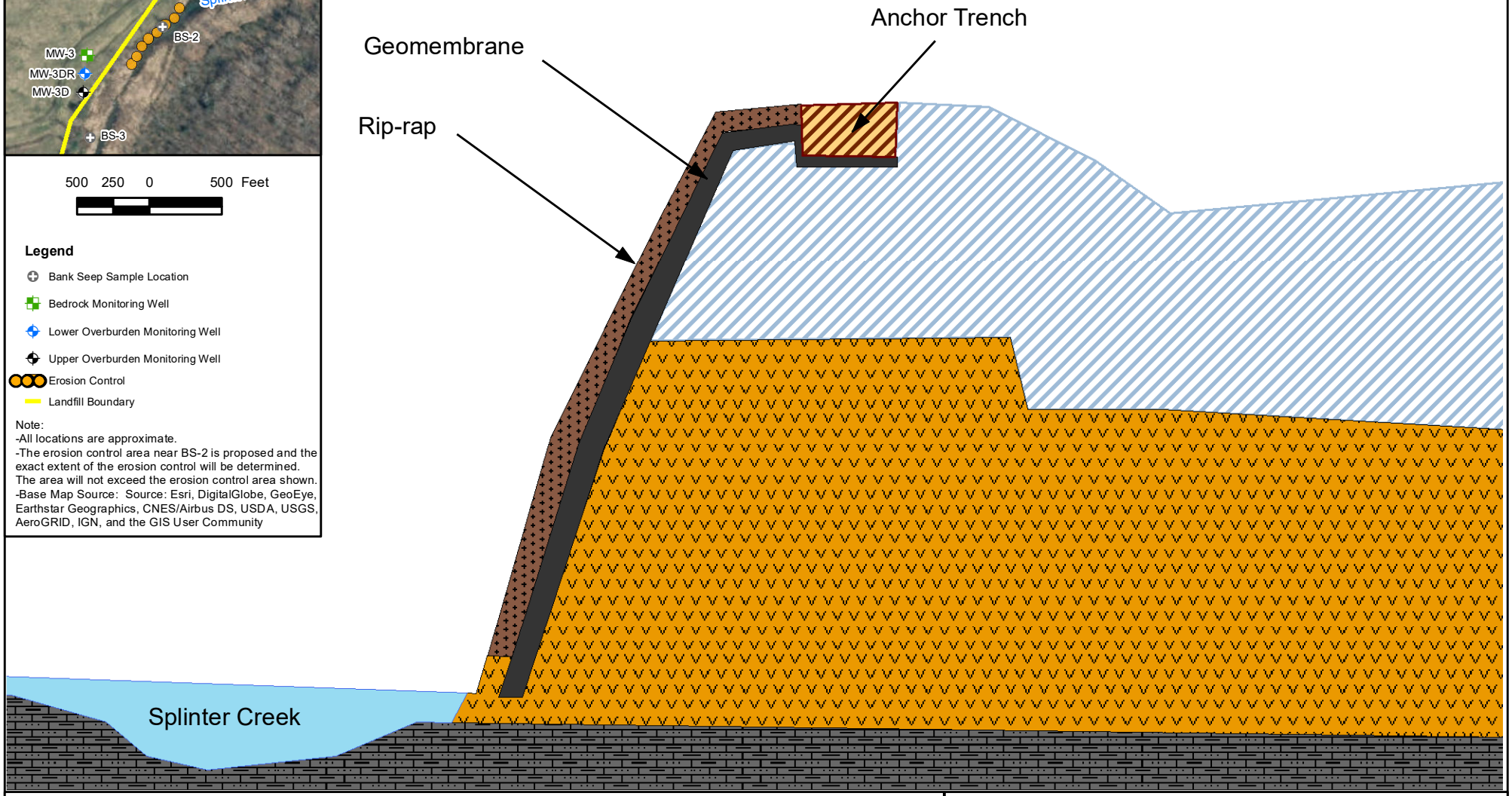


500 250 0 500 Feet

Legend

- Bank Seep Sample Location
- Bedrock Monitoring Well
- Lower Overburden Monitoring Well
- Upper Overburden Monitoring Well
- Erosion Control
- Landfill Boundary

Note:
-All locations are approximate.
-The erosion control area near BS-2 is proposed and the exact extent of the erosion control will be determined. The area will not exceed the erosion control area shown.
-Base Map Source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Legend

- Fill
- Alluvium
- Glaciolacustrine
- Glaciofluvial
- Glacial Till
- Bedrock

Vertical Scale: Not to Scale
Horizontal Scale: Not Scale

Notes:
- Cross Section Information taken from Malcolm Pirnie, Inc drawing titled "Hydrogeologic Cross-Section Along Line C to C'," dated January 1989.
- Design of erosion control will be submitted to NYDEC for review and approval and is subject to issuance of the U.S. Army Corp. of Engineers permit.

Conceptual Construction Detail of Landfill Bank Improvement Along Splinter Creek

265 Palmer Street
Gowanda, NY

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Figure 7

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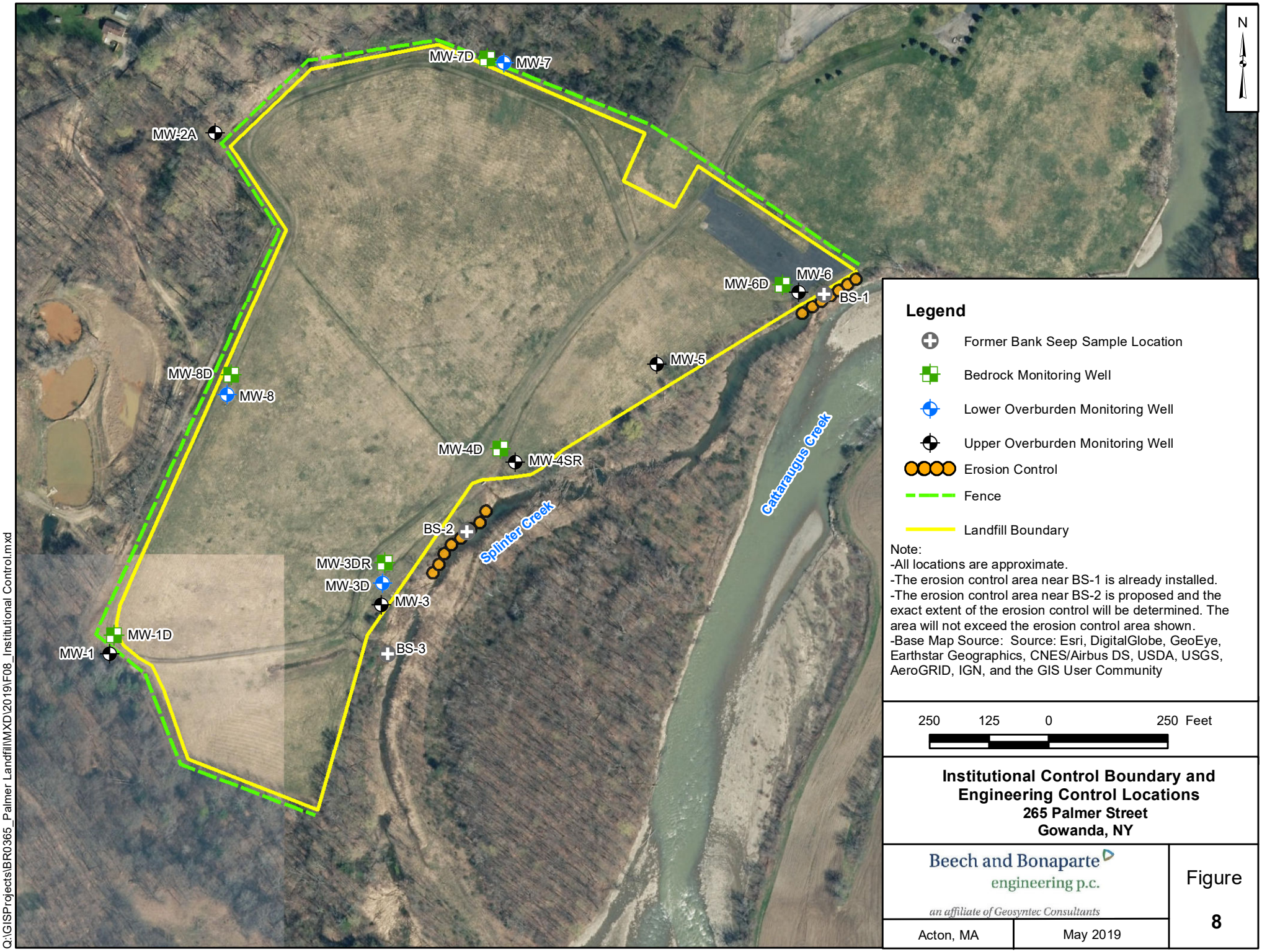

Institutional Control Boundary and Engineering Control Locations
265 Palmer Street
Gowanda, NY

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Figure **8**

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APPENDICES

APPENDIX A

LIST OF SITE CONTACTS

This Appendix should include a listing of all site contacts. The below table should be edited as necessary to include all site contacts necessary for implementation of the SMP.

Name	**Phone/Email Address**
Site Owner Emily Schultz, Caleres	314-854-4125/ eschultz@caleres.com
Remedial Party David Rodgers, Caleres	314-854-4032/ drodgers@caleres.com
Engineer of Record Susan Welt, PE (NY), B&B Engineers & Geologists of New York, P.C.	978-263-9588/ swelt@geosyntec.com
NYSDEC Regional Remediation Geologist Stan Radon, CPG	716-851-7220/ stanley.radon@dec.ny.gov
NYSDEC DER Project Manager Andrew Zwack	716-851-7220/ andrew.zwack@dec.ny.gov
Remedial Party Attorney Peter Trimarchi, Nixon Peabody, LLP	518-427-2671/ ptrimarchi@nixonpeabody.com

APPENDIX B

MONITORING WELL BORING AND CONSTRUCTION LOGS

BORING 1

PROJECT: MOENCH TANNING	PROJECT NO: 605-03-9
DATE: 9-20-83	LOCATION: GOWANDA, N.Y.
DRILLING CONTRACTOR: EARTH DIMENSIONS	INSPECTOR: K. McMANUS
DRILLING METHOD: 3½" HALLOW STEM AUGERS	SAMPLING METHOD: 2-INCH SPLIT SPOON STANDARD PENETRATION TEST
ELEVATION:	DATUM:

SAMPLE no.	SAMPLE depth	blows per 6"	DEPTH	STRATA	SOIL DESCRIPTION (density, color, SOIL, admixtures, moisture, other notes, ORIGIN)	WELL CONST	REMARKS
S-1	0-2'	3 9 / 17 17			6" TOPSOIL, LEAVES, ROOTS		PROTECTIVE STEEL SLEEVE
					MEDIUM DENSE, BROWN SAND, WITH SOME SILT & GRAVEL, MOIST & ROOTS, NON PLASTIC		
S-2	4.5-6.5'	8 13 / 9 7	5		(1" SAND & FINE GRAVEL LENS WITH RED TINT)		CEMENT BENTONITE SLURRY
					MEDIUM DENSE, BROWN, SILT WITH SOME SAND, LITTLE GRAVEL, MOIST NON-PLASTIC		
S-3	9.5-11.5	1 1 / 4 10	10		(AUGER CHANGE AT 8.5', NO RECOVERY UNTIL 11', POSSIBLE FINE SAND LENS)		
					MEDIUM DENSE, GRAY, SILT WITH SOME GRAVEL, MOIST, NON-PLASTIC		
S-4	14.5-16.5'	7 17 / 19 19	15		GRADING TO TRACE CLAY, SLIGHTLY PLASTIC		#4 SAND
					VERY STIFF, GRAY, CLAY, TRACE GRAVEL, MOIST, PLASTIC		
S-5	19.5-21.5'	9 15 / 24 26	20		(OCCASIONAL FINE SAND LENS 1/64")		
					GRADING TO SILT & CLAY, TRACE GRAVEL, SLIGHTLY PLASTIC.		2-INCH MACHINE SLOTTED PVC WELL SCREEN
S-6	24.5-26.5'	8 32 / 41 36	25		VERY DENSE, GRAY, FINE SAND AND SILT, MOIST, NON PLASTIC		
S-7	29.5-31.5'	4 / 12 13	30		BOTTOM OF BORING AT 29.5'		
			35				

NOTES: MONITORING WELL INSTALLED. 20 FEET OF 2-INCH DIAMETER PVC WELL SCREEN BACKFILLED WITH #4 SAND TO 8 FEET. THERE IS A PROTECTIVE STEEL SLEEVE WITH LOCKING CAP OVER THE STICK-UP.

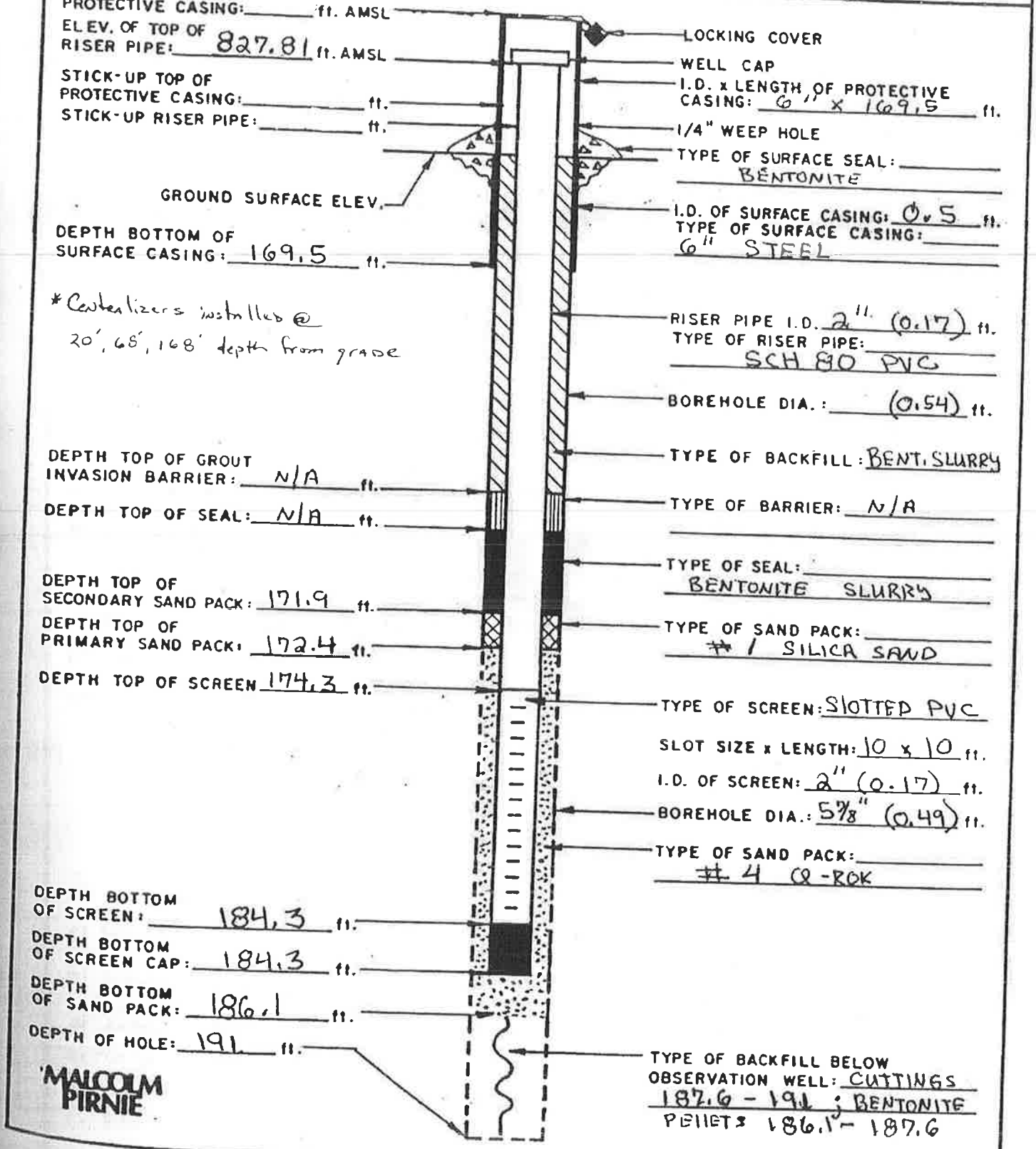
MALCOLM PIRNIE, INC.

MONITORING WELL CONSTRUCTION LOG

PROJECT: PALMER ST. LF
PROJECT NO.: 0605-17-1
GROUND ELEV.: 820.75
FIELD GEOLOGIST: JPH / RHO

LOCATION: GOWANDA
BORING: MW-1D (A)
DATE: 5-24-90

DRILLER: BUFF. DRLG. D. ALTROGGE
DRILLING METHOD: 5 7/8 ROLLER BIT
DEVELOPMENT METHOD:



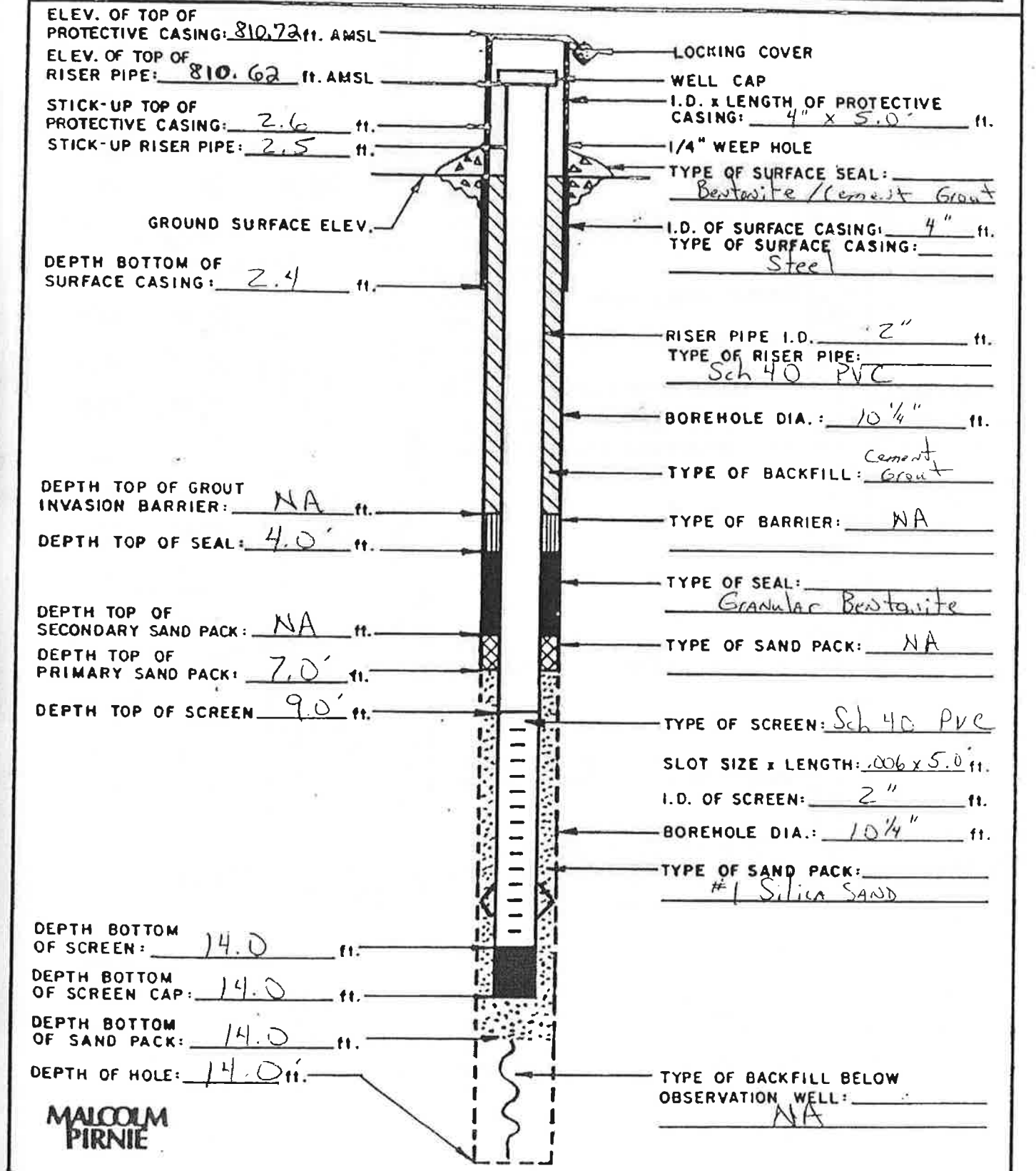
MALCOLM PIRNIE

MONITORING WELL CONSTRUCTION LOG

PROJECT: Palace St landfill
PROJECT NO.: 0605-17-1
GROUND ELEV.: 808.22
FIELD GEOLOGIST: J.P. Hilton

LOCATION: Pierson, NY
BORING: MW-2A
DATE: 4/19/90

DRILLER: T.W. Hmerer
DRILLING METHOD: 6¼" HSA
DEVELOPMENT METHOD:



MALCOLM PIRNIE

BORING 2

PROJECT: MOENCH TANNING	PROJECT NO: 605-03-9
DATE: 9-13-83	LOCATION: GOWANDA, N.Y.
DRILLING CONTRACTOR: EARTH DIMENSIONS	INSPECTOR: C. KRAEMER / K. McMANUS
DRILLING METHOD: 3½-INCH HALLOW STEM AUGERS	SAMPLING METHOD: 2-INCH SPLIT SPOON STANDARD PENETRATION TEST
ELEVATION:	DATUM:

SAMPLE no.	SAMPLE depth	blows per 6"		DEPTH	STRATA	SOIL DESCRIPTION (density, color, SOIL, admixtures, moisture, other notes, ORIGIN)	WELL CONST	REMARKS
S-1	0-2'	3	2			SOFT, GRAY, CLAY AND SILT WITH A TRACE GRAVEL, MOIST PLASTIC		PROTECTIVE STEEL SLEEVE
		2	2					
S-2	2-4'	2	1					
		2	8					
S-3	4-6'	9	14					CEMENT BENTONITE SLURRY
		11	14	5		DENSE, GRAY, SILT, LITTLE GRAVEL MOIST, NON PLASTIC		
S-4	6-8'	6	17					
		17	19					
S-5	8-10'	6	12					
		14	15					
S-6	10-12'	6	10	10		GRADING TO TRACE CLAY, VERY SLIGHTLY PLASTIC		#4 SAND
		14	17					
S-7	12-14'	8	11					
		12	20					
S-8	14-16'	7	13					
		19	23	15				
S-9	16-18'	4	10					
		18	27					
S-10	18-20'	9	20					2-INCH MACHINE SLOTTED PVC WELL SCREEN
		29	36					
S-11	20-22'	6	16	20		GRADING TO HARD, OCCASIONAL SILT TO FINE SAND LENSES (1/64")		
		28	36					
S-12	22-24'	5	8			VERY STIFF, GRAY, CLAY, MOIST PLASTIC		
		12	19					
S-13	24-26'	5	10			(OCCASIONAL FINE SAND LENSES 1/64")		
		16	23	25				
S-14	26-28'	11	14					
		44	56			GRADING TO HARD, TRACE GRAVEL AND SAND		
S-15	28-29.2'	11	53					
		100						
S-16	30-30.7'	50	100	30		VERY DENSE, GRAY, FINE SAND & SILT, SOME GRAVEL, MOIST, GLACIAL TILL.		BENTONITE PELLET SEAL
S-17	32-32.8'	60	100					
S-18	35-35.3'	100						BACKFILL TO 31.0'
				35				

NOTES: MONITORING WELL INSTALLED. 20' OF 2" DIAMETER PVC WELL SCREEN BACKFILLED WITH #4 SAND TO 8 FEET. THERE IS A PROTECTIVE STEEL SLEEVE WITH LOCKING CAP OVER THE STICK-UP. THE BORING WAS ALLOWED TO BACKFILL UP TO 31 FEET AND A 1 FOOT BENTONITE PLUG WAS INSTALLED TO SEAL THE HOLE AT 30 FEET.

MALCOLM PIRNIE, INC.

BORING 2

PROJECT: MOENCH TANNING	PROJECT NO: 605-03-9
DATE: 9-19-83	LOCATION: GOWANDA, N.Y.
ELEVATION:	DATUM:

SAMPLE no.	SAMPLE depth	SAMPLE blows per 6"		DEPTH	STRATA	SOIL DESCRIPTION (density, color, SOIL, admixtures, moisture, other notes, ORIGIN)	WELL CONST.	REMARKS
S-19	40-42'	38	70			GRADING TO HARD, GRAY, CLAY AND SILT SOME GRAVEL, MOIST GLACIAL TILL		
		64	100					
S-20	45-45.9'	63	100	45				
S-21	50-50.4'	100		50		BOTTOM OF BORING AT 50'		
				55				
				60				
				65				
				70				
				75				
				80				

NOTES:

MALCOLM PIRNIE, INC.

BORING 3

PROJECT: MOENCH TANNING	PROJECT NO: 605-03-9
DATE: 9-22-83	LOCATION: GOWANDA, N.Y.
DRILLING CONTRACTOR: EARTH DIMENSIONS	INSPECTOR: K. McMANUS
DRILLING METHOD: 3½-INCH HALLOW STEM AUGERS	SAMPLING METHOD: 2-INCH SPLIT SPOON STANDARD PENETRATION TEST
ELEVATION:	DATUM:

SAMPLE no.	SAMPLE depth	blows per 6"		DEPTH	STRATA	SOIL DESCRIPTION (density, color, SOIL, admixtures, moisture, other notes, ORIGIN)	WELL CONST.	REMARKS
S-1	0-2'	2	12			FILL, BROWN, SILT WITH SOME CLAY, TRACE SAND AND GRAVEL, MOIST, ROOTS THROUGHOUT (6" SAND LENSE AT 1.5')		PROTECTIVE STL. SLEEVE; CEMENT / BENTONITE SLURRY
		20	22					
S-2	4.5-6.5'	4	11	5		VERY STIFF, BLACK CLAY, TRACE SILT, MOIST PLASTIC, SMALL ROOTS GRADING TO GRAY		#4 SAND
		16	18					
S-3	9.5-11.5'	27	35	10		VERY DENSE, BLACK, GRAVEL, MOIST GRADING TO VERY DENSE, GRAY, FINE SAND AND SILT, SOME GRAVEL, MOST, NON PLASTIC, GLACIAL TILL		2-INCH MACHINE SLOTTED PVC WELL SCREEN
		21	19					
S-4	14.5-14.8'	100		15				BENTONITE PELLET SEAL
S-5	19.0-19.3'	100				BOTTOM OF BORING AT 19.0'		BACKFILL TO 14.5'
				20				
				25				
				30				
				35				

NOTES: MONITORING WELL INSTALLED. 10 FEET OF 2-INCH DIAMETER PVC WELL SCREEN BACKFILLED WITH #4 SAND TO 3 FEET. THERE IS A PROTECTIVE STEEL SLEEVE WITH LOCKING CAP OVER THE STICK-UP. THE BORING WAS ALLOWED TO BACKFILL UP TO 14 FEET AND A 6" BENTONITE PLUG WAS INSTALLED TO SEAL THE HOLE AT 13.5 FEET.

MALCOLM PIRNIE, INC.

SHEET 1 OF 1

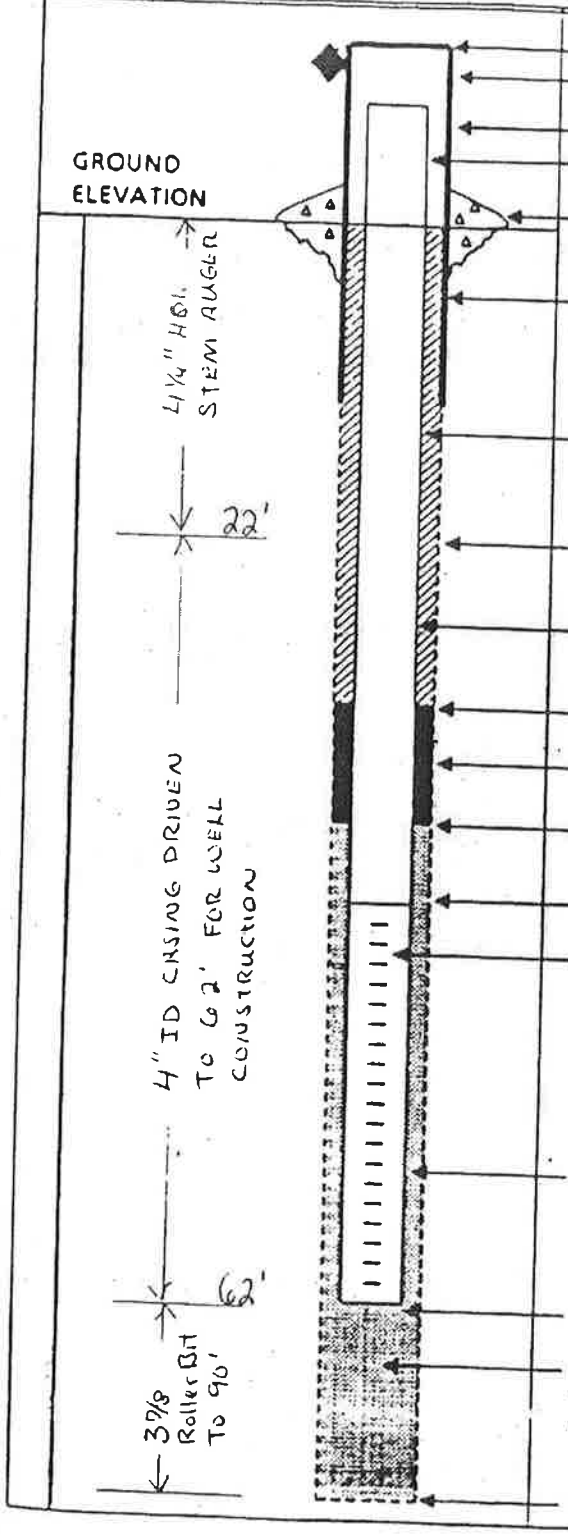
MALCOLM PIRNIE

OVERBURDEN MONITORING WELL SHEET

PROJECT PALMER ST LF
PROJECT NO 0605-10-1
ELEVATION 804.2 ft.
FIELD GEOLOGIST RHO

LOCATION GOWANDA NY
BORING 3D
DATE 8/3/87

DRILLER BUFFALO DRILLING
DRILLING METHOD 4¼" HS / 3⅞" AUGER/MUD ROTARY
DEVELOPMENT METHOD AIR



ELEVATION OF TOP OF SURFACE CASING: 807.38'
ELEVATION OF TOP OF RISER PIPE: 807.22'
STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE :
TYPE OF SURFACE SEAL: CEMENT
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC SCH 40
BOREHOLE DIAMETER: 8" to 22' and 4½" to 62'
TYPE OF BACKFILL: CEMENT/BENTONITE GROUT
ELEVATION / DEPTH TOP OF SEAL: 759'/47'
TYPE OF SEAL: BENTONITE PELLETS
DEPTH TOP OF SAND PACK: 753/51'
ELEVATION / DEPTH TOP OF SCREEN: 747.5/56½'
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: .010 / 5 FT
I.D OF SCREEN: 2"
TYPE OF SAND PACK: #2 Q-ROC
ELEVATION / DEPTH BOTTOM OF SCREEN: 742.5/61½'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 734.5/69½'
TYPE OF BACKFILL BELOW OBSERVATION WELL: CEMENT BENTONITE GROUT
ELEVATION / DEPTH OF HOLE: 722/90'

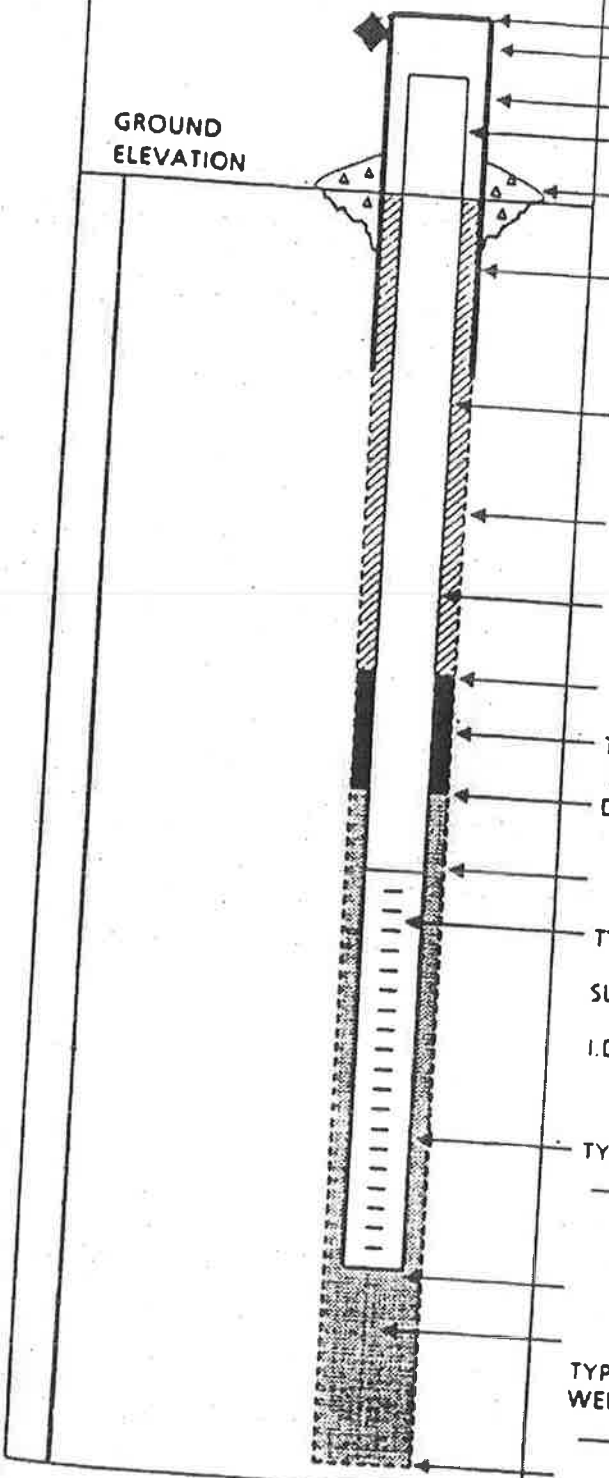
MALCOLM PIRNIE

MONITORING WELL SHEET

PROJECT Moench Tanning — Palmer St.
PROJECT NO. 0605-12-1
ELEVATION 804.79
FIELD GEOLOGIST V. Aloysius

LOCATION Gowanda, NY
BORING 3DR
DATE 8/11/88

DRILLER Buffalo Drilling
DRILLING 6" casing to top of rock, then 6" roller bit.
METHOD
DEVELOPMENT METHOD Surge/bail



ELEVATION OF TOP OF SURFACE CASING :
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE : ~2.5ft
TYPE OF SURFACE SEAL: cement/bentonite grout
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: steel
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Sch 40 PVC
BOREHOLE DIAMETER: 10" above 84'; 6" below 84'
TYPE OF BACKFILL: cement/bentonite grout
DEPTH TOP OF SEAL: 82.0'
TYPE OF SEAL: bentonite pellet
DEPTH TOP OF SAND PACK: 86.0'
DEPTH TOP OF SCREEN: 87.0'
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH: 10 Slot
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: #4 Q-ROK
DEPTH BOTTOM OF SCREEN: 97.0'
DEPTH BOTTOM OF SAND PACK: 100'
TYPE OF BACKFILL BELOW OBSERVATION WELL: #4 Q-ROK Sand
DEPTH OF HOLE: 100'

BORING 4

PROJECT: MOENCH TANNING	PROJECT NO: 605-03-9
DATE: 9-16-83	LOCATION: GOWANDA, N.Y.
DRILLING CONTRACTOR: EARTH DIMENSIONS	INSPECTOR: K. McMANUS
DRILLING METHOD: 3½"-INCH HALLOW STEM AUGER	SAMPLING METHOD: 2-INCH SPLIT SPOON STANDARD PENETRATION TEST
ELEVATION:	DATUM:

SAMPLE no.	SAMPLE depth	blows per 6"	DEPTH	STRATA	SOIL DESCRIPTION (density, color, SOIL, admixtures, moisture, other notes, ORIGIN)	WELL CONST	REMARKS
S-1	0-2'	4 11 / 11 10			FILL, BROWN, LOAMY TOPSOIL		PROTECTIVE STEEL SLEEVE
					FILL, BLACK, CINDERS		CEMENT/ BENTONITE SLURRY
S-2	5-7'	2 3 / 1 11	5		FILL, YELLOW (PAINT BOOTH SLUDGE), ODOROUS		BENTONITE PELLET SEAL
S-3	10-12'	1 1 / 1 4	10		GRADING TO BROWN, FIBROUS. ODOROUS		#4 SAND
					FILL, BLACK, CINDERS WITH BRICK FRAGMENTS, ODOROUS (WATER AT 11.5')		2-INCH MACHINE SLOTTED PVC WELL SCREEN
S-4	15-17'	4 10 / 9 1	15				
					VERY STIFF, GRAY, SILT & CLAY WITH TRACE SAND AND GRAVEL, MOIST, SLIGHTLY PLASTIC		
S-5	20-22'	1 4 / 6 100	20				BENTONITE PELLET SEAL
					LOOSE, GRAY, SAND WITH SOME GRAVEL AND LITTLE SILT, MOIST NON-PLASTIC		BACKFILL TO 18.5'
S-6	25-26'	6 100	25		GRADING TO VERY DENSE, FINE SAND AND SILT, SOME GRAVEL, MOIST, GLACIAL TILL		
S-7	30-30.9'	100	30		BOTTOM OF BORING AT 30'		
			35				

NOTES: MONITORING WELL INSTALLED. 10 FEET OF 2-INCH DIAMETER PVC WELL SCREEN BACKFILLED WITH #4 SAND TO 6.5 FEET. THERE IS A PROTECTIVE STEEL SLEEVE WITH LOCKING CAP OVER THE STICK-UP. THE BORING WAS ALLOWED TO BACKFILL UP TO 18.5 FEET AND A 1 FOOT BENTONITE PLUG WAS INSTALLED TO SEAL THE HOLE AT 17.5 FEET.

MALCOLM PIRNIE INC

MALCOLM PIRNIE

OVERBURDEN MONITORING WELL SHEET

WELL NO. MW-4 Sa 93

PROJECT Well Replacement START DATE 9/16/93 END DATE 9/16/93

PROJECT NO. D605-23-8 FIELD GEOLOGIST J.P. Hilton

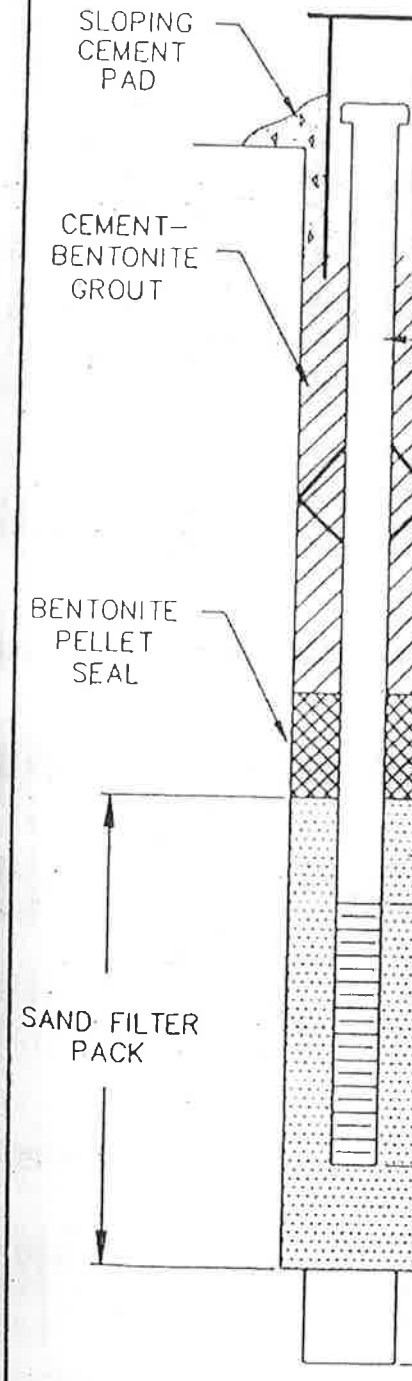
LOCATION Moench Tanning Palmer St. LF

DRILLING CO. Buffalo Dels

DRILLER(S) R. Kephart

DRILLING METHOD(S) 6¼" HSA 0-22'

DEVELOPMENT METHOD(S)



SIZE AND LENGTH OF LOCKABLE PROTECTIVE STEEL CASING 4" X 5.0'

LOCKED? X YES __ NO

STICK-UP 2.0

DEPTH TO TOP OF GROUT/ BOTTOM OF CEMENT Surface

RISER DIAMETER 2" AND MATERIAL Sch 40 PVC

BOREHOLE DIAMETER 10.5"

DEPTH TO CENTRALIZERS N/A

DEPTH 8.2

PELLET SIZE 3/8"

DEPTH 11.0

SAND SIZE #1 Silica Sand

DEPTH 13.0

SCREEN DIAMETER, 2" SLOT SIZE, 0.006 AND MATERIAL Sch 40 PVC

DEPTH 23.0'

DEPTH 23.3

BACKFILL MATERIAL NA

BOTTOM OF BOREHOLE 23.3

NOTE: DEPTHS ARE FEET BELOW GRADE

OMWSHEET.DWG 9-20-90

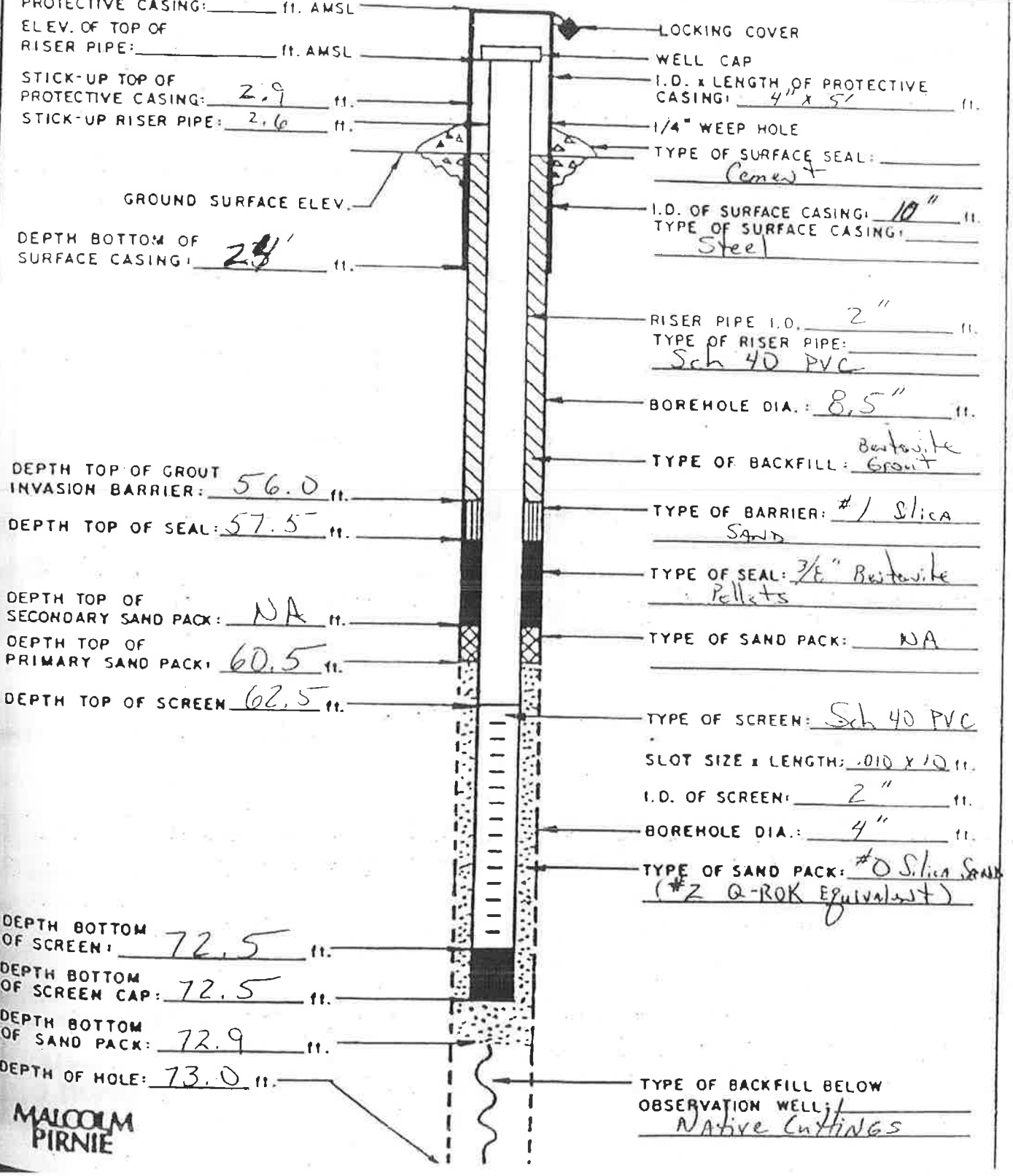
MONITORING WELL CONSTRUCTION LOG

Dow Gradient

PROJECT: Well Installation
PROJECT NO.: 0605-23-8
GROUND ELEV.: _____
FIELD GEOLOGIST: J. P. Hilton

LOCATION: Palmer St LF
BORING: MW-4D-93
DATE: 9/13 - 9/15/93

DRILLER: R. Kephart
DRILLING METHOD: 8¼" HSA 0-24'; 4¼" HSA 24-55; NX Core 55-73
DEVELOPMENT METHOD: _____



MALCOLM PIRNIE

BORING 5

PROJECT: MOENCH TANNING	PROJECT NO: 605-03-9
DATE: 9-14-83	LOCATION: GOWANDA, N.Y.
DRILLING CONTRACTOR: EARTH DIMENSIONS	INSPECTOR: C. KRAEMER / K. McMANUS
DRILLING METHOD: 3½-INCH HALLOW STEM AUGERS	SAMPLING METHOD: 2-INCH SPLIT SPOON STANDARD PENETRATION TEST
ELEVATION:	DATUM:

SAMPLE no.	SAMPLE depth	blows per 6"		DEPTH	STRATA	SOIL DESCRIPTION (density, color, SOIL, admixtures, moisture, other notes, ORIGIN)	WELL CONST	REMARKS
S-1	0-2'	9	48			FILL, COBBLES AND GRAVEL WITH SAND AND SOME LEATHER SCRAPS		PROTECTIVE STEEL SLEEVE
		23	29					
S-2	4.5-6.5'	5	9	5		NO RECOVERY, MOSTLY LEATHER SCRAPS		CEMENT/ BENTONITE SLURRY
		6	8					
S-3	6.5-8.5'	6	6			NO RECOVERY, MOSTLY LEATHER SCRAPS		BENTONITE PELLET SEAL
		5	6					
S-4	9.5-11.5'	3	6	10				#4 SAND
		34	36					
S-5	14.5-16.5'	14	29	15		VERY DENSE, BROWN, GRAVEL WITH LITTLE SILT AND LITTLE SAND, MOIST, NON PLASTIC (WATER AT 13.5')		2-INCH MACHINE SLOTTED PVC WELL SCREEN
		85	21					
S-6	17.5-19.5'	13	26	20		HARD, GRAY, SILT AND CLAY, TRACE GRAVEL, TRACE SAND, MOIST, PLASTIC		BENTONITE PELLET SEAL
		44	74					
S-7	19.5-21.5'	32	74			GRADING TO LITTLE GRAVEL & SAND		BACKFILL TO 18'
		70	64					
S-8	24.5-25.3'	35	100	25		VERY DENSE, GRAY, SAND WITH SOME GRAVEL AND LITTLE SILT, MOIST, NON PLASTIC		
						GRADING TO FINE SAND & SILT, SOME GRAVEL, MOIST, GLACIAL TILL		
S-9	29.5-30.3'	35	100	30		BOTTOM OF BORING AT 29.5'		
				35				

NOTES: MONITORING WELL INSTALLED. 10 FEET OF 2-INCH DIAMETER PVC WELL SCREEN BACKFILLED WITH #4 SAND TO 6 FEET. THERE IS A PROTECTIVE STEEL SLEEVE WITH LOCKING CAP OVER THE STICK-UP. THE BORING WAS ALLOWED TO BACKFILL UP TO 18 FEET AND A 1 FOOT BENTONITE PLUG WAS INSTALLED TO SEAL THE HOLE AT 17 FEET.

BORING 6

PROJECT: MOENCH TANNING	PROJECT NO: 605-03-9
DATE: 9-15-83	LOCATION: GOWANDA, N.Y.
DRILLING CONTRACTOR: EARTH DIMENSIONS	INSPECTOR: K. McMANUS
DRILLING METHOD: 3½"-INCH HALLOW STEM AUGER	SAMPLING METHOD: 2-INCH SPLIT SPOON STANDARD PENETRATION TEST
ELEVATION:	DATUM:

SAMPLE no.	SAMPLE depth	blows per 6"	DEPTH	STRATA	SOIL DESCRIPTION (density, color, SOIL, admixtures, moisture, other notes, ORIGIN)	WELL CONST	REMARKS
S-1	2-4'	29 36 17 16			FILL, COBBLES AND GRAVEL WITH SAND GRADING TO GRAVEL AND SAND		PROTECTIVE STL. SLEEVE CEMENT BENTONITE SLURRY
S-2	4.5-6.5'	3 4 15 23	5		VERY STIFF, BLACK, CLAY WITH SOME SAND AND GRAVEL AND SOME SLAG, MOIST PLASTIC, SOME ROOTS		BENTONITE PELLET SEAL #4 SAND
S-3	9.5-11.5'	3 5 6 9	10		GRADING TO GRAY, CLAY WITH SOME SILT AND GRAVEL, OCCASIONAL COARSE BLACK SAND LENSES (1")		2-INCH MACHINE SLOTTED PVC WELL SCREEN
S-4	14.5-14.8'	100	15		REFUSAL AT 14.6'		
			20				
			25				
			30				
			35				

NOTES: MONITORING WELL INSTALLED. 10 FEET OF 2-INCH DIAMETER PVC WELL SCREEN WITH #4 SAND TO 4 FEET. THERE IS A PROTECTIVE STEEL SLEEVE WITH LOCKING CAP OVER THE STICK-UP.

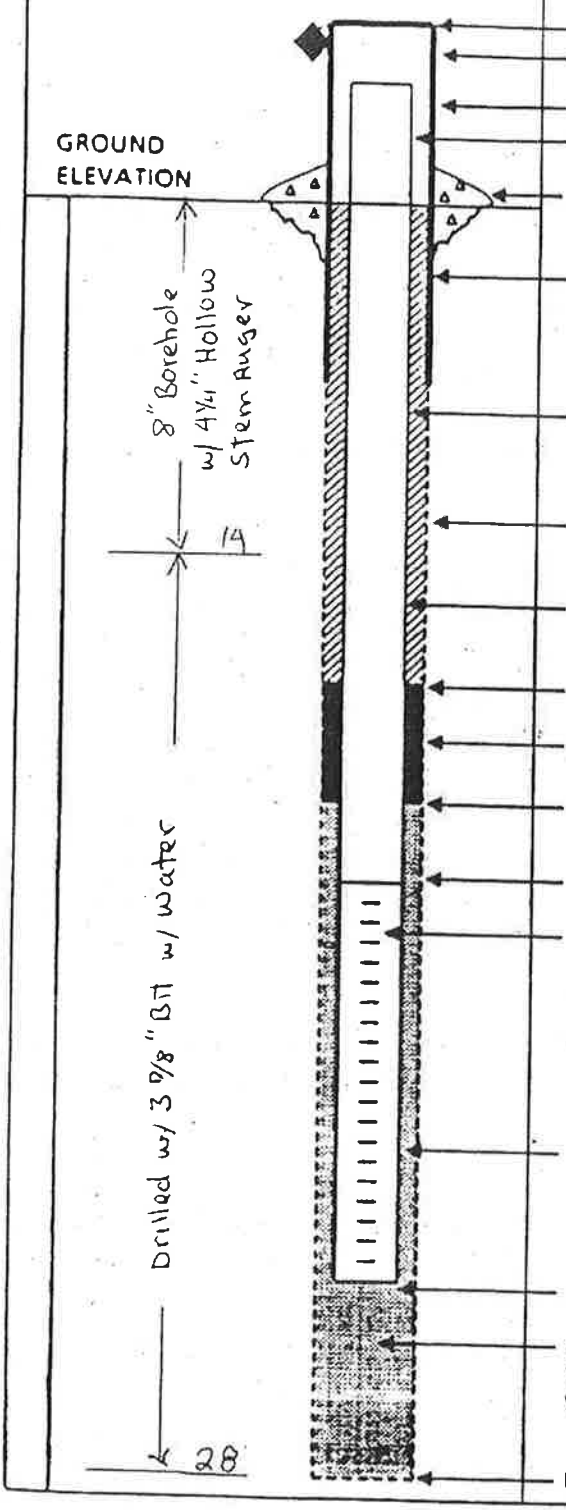
MALCOLM PIRNIE, INC.

MALCOLM PIRNIE

OVERBURDEN MONITORING WELL SHEET

PROJECT PALMER ST. LF. LOCATION GOWANDA, NY
PROJECT NO. 0665-10-1 BORING 7
ELEVATION 795.5ft. DATE 8/10/87
FIELD GEOLOGIST R. O'LASKEY

DRILLER D. ALTROGGIE
DRILLING METHOD 3 7/8" Rotary Bit 4 1/4" H.S. AUGER
DEVELOPMENT METHOD AIR



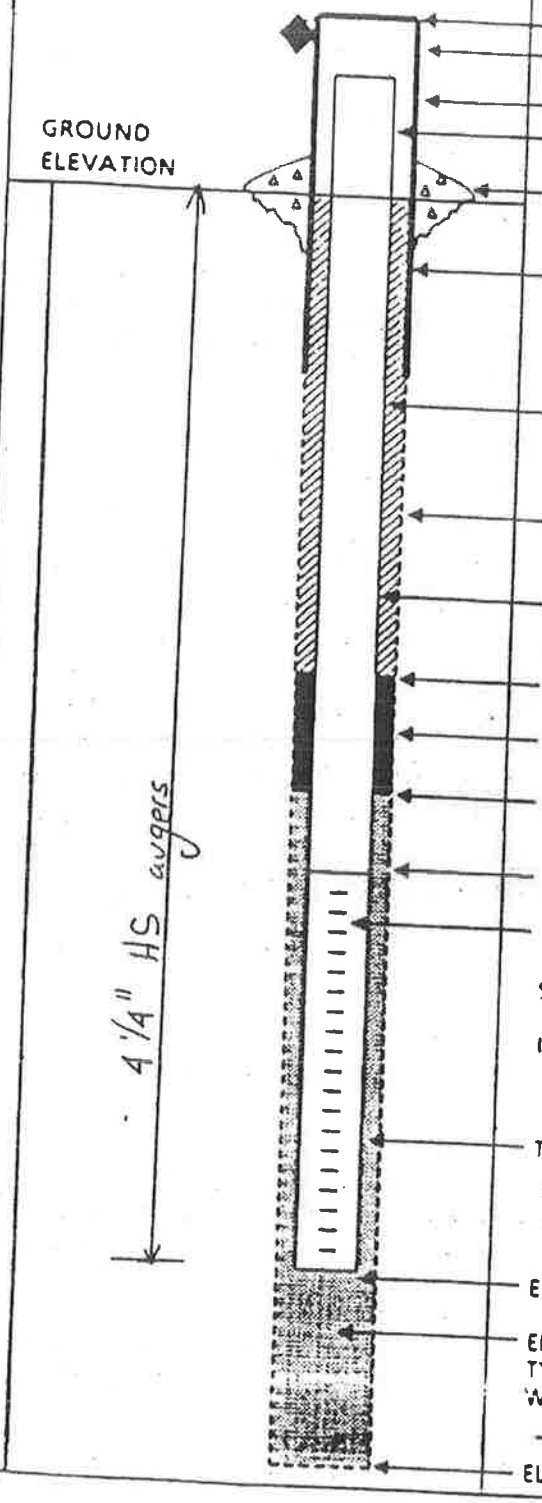
ELEVATION OF TOP OF SURFACE CASING: 800.69'
ELEVATION OF TOP OF RISER PIPE: 800.50'
STICK - UP TOP OF SURFACE CASING: ____
STICK - UP RISER PIPE: ____
TYPE OF SURFACE SEAL: CEMENT
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCH 40 PVC
BOREHOLE DIAMETER: 8" to 14' and 4" to 28'
TYPE OF BACKFILL: CEMENT / BENTONITE
ELEVATION / DEPTH TOP OF SEAL: 780.5/17'
TYPE OF SEAL: BENTONITE PELLETS
DEPTH TOP OF SAND PACK: 776.8/20.7'
ELEVATION / DEPTH TOP OF SCREEN: 775.0/22.5'
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: .010"/5 FT
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: #2 Q-ROC
ELEVATION / DEPTH BOTTOM OF SCREEN: 770.0/27.5'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 769.0/28'
TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A
ELEVATION / DEPTH OF HOLE: 769.0/28'

MALCOLM PIRNIE

OVERBURDEN MONITORING WELL SHEET

PROJECT PALMERST LF. LOCATION GOWANDA, NY
PROJECT NO 0005-10-1 BORING 7S
ELEVATION 792.5' DATE 8/7/87
FIELD GEOLOGIST R O'LASKEY

DRILLER D. ALTROGGIE
DRILLING METHOD 4¼" HS AUGER
DEVELOPMENT METHOD AIR



ELEVATION OF TOP OF SURFACE CASING: 800.54'
ELEVATION OF TOP OF RISER PIPE: 800.38'
STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE :
TYPE OF SURFACE SEAL: CEMENT
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCH 40 PVC
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: CEMENT/BENTONITE
ELEVATION / DEPTH TOP OF SEAL: 795./2½'
TYPE OF SEAL: Bentonite / PELLETS
DEPTH TOP OF SAND PACK: 793.0/4½'
ELEVATION / DEPTH TOP OF SCREEN: 790.5/7'
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: .010" / 5 FT
I.D OF SCREEN: 2"
TYPE OF SAND PACK: #2 Q-ROC
ELEVATION / DEPTH BOTTOM OF SCREEN: 785.5/12'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 784.5/13'
TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A
ELEVATION / DEPTH OF HOLE: 784.5/13'

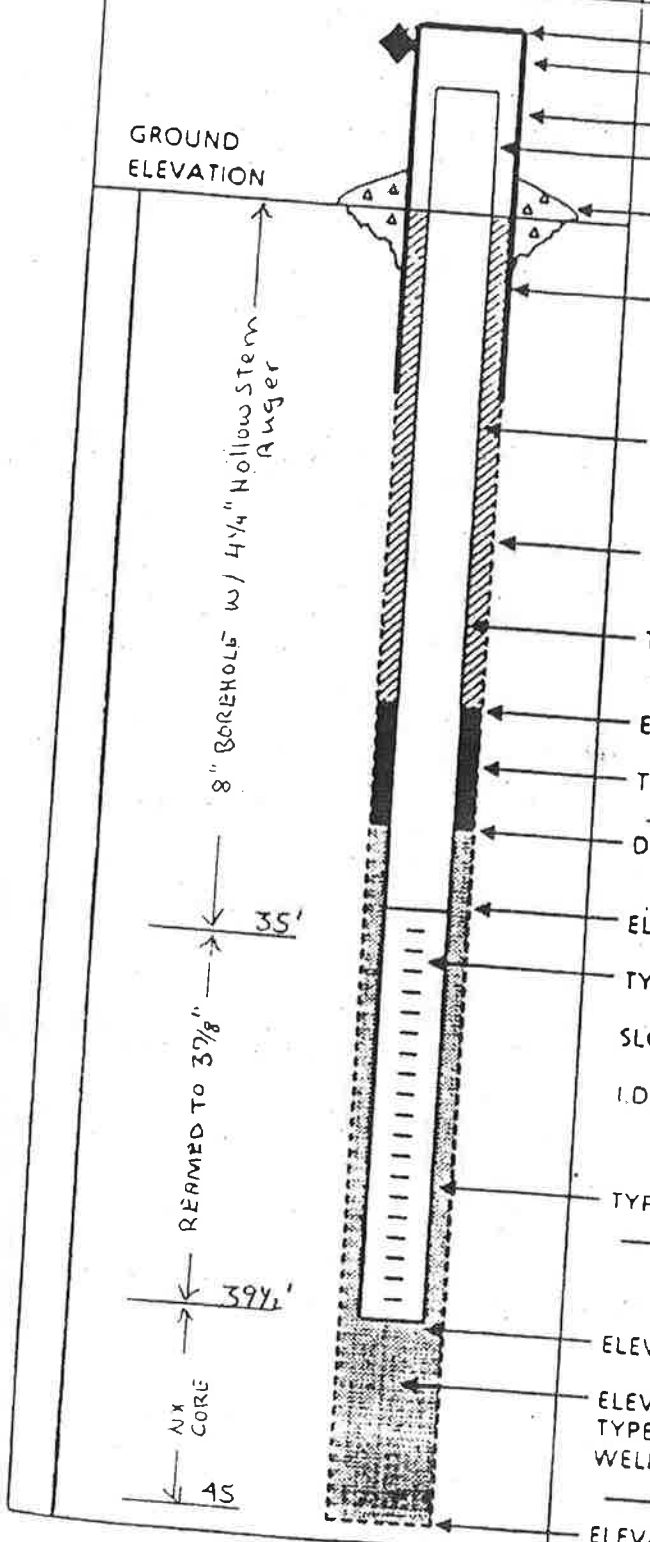
MALCOLM PIRNIE

OVERBURDEN MONITORING WELL SHEET

PROJECT PALMER ST. LF
PROJECT NO 0605-10-1
ELEVATION 797.5'
FIELD GEOLOGIST R. O'Laskey

LOCATION TOWANDA, NY
BORING 7D
DATE 8/6/87

DRILLER D. Altrogge
DRILLING METHOD NX CORE 4¼" HS AUGER
DEVELOPMENT METHOD



ELEVATION OF TOP OF SURFACE CASING: 800.55'
ELEVATION OF TOP OF RISER PIPE: 800.40'
STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE :
TYPE OF SURFACE SEAL: CEMENT
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCH 40 PVC
BOREHOLE DIAMETER: -8" to 35'
-4" to 39½'
-3" to 45'
TYPE OF BACKFILL: CEMENT/BENTONITE
ELEVATION / DEPTH TOP OF SEAL: 769.5/28'
TYPE OF SEAL: bentonite pellets
DEPTH TOP OF SAND PACK: 765.5/32'
ELEVATION / DEPTH TOP OF SCREEN: 763.5/34'
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: 0.010" / 5ft.
I.D OF SCREEN: 2"
TYPE OF SAND PACK: #2 Q-ROC
ELEVATION / DEPTH BOTTOM OF SCREEN: 758.5/39'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 39½
TYPE OF BACKFILL BELOW OBSERVATION WELL: Cuttings from Reaming w/ 3⅞" Bit and #2 Q ROC
ELEVATION / DEPTH OF HOLE: 752.5/45'

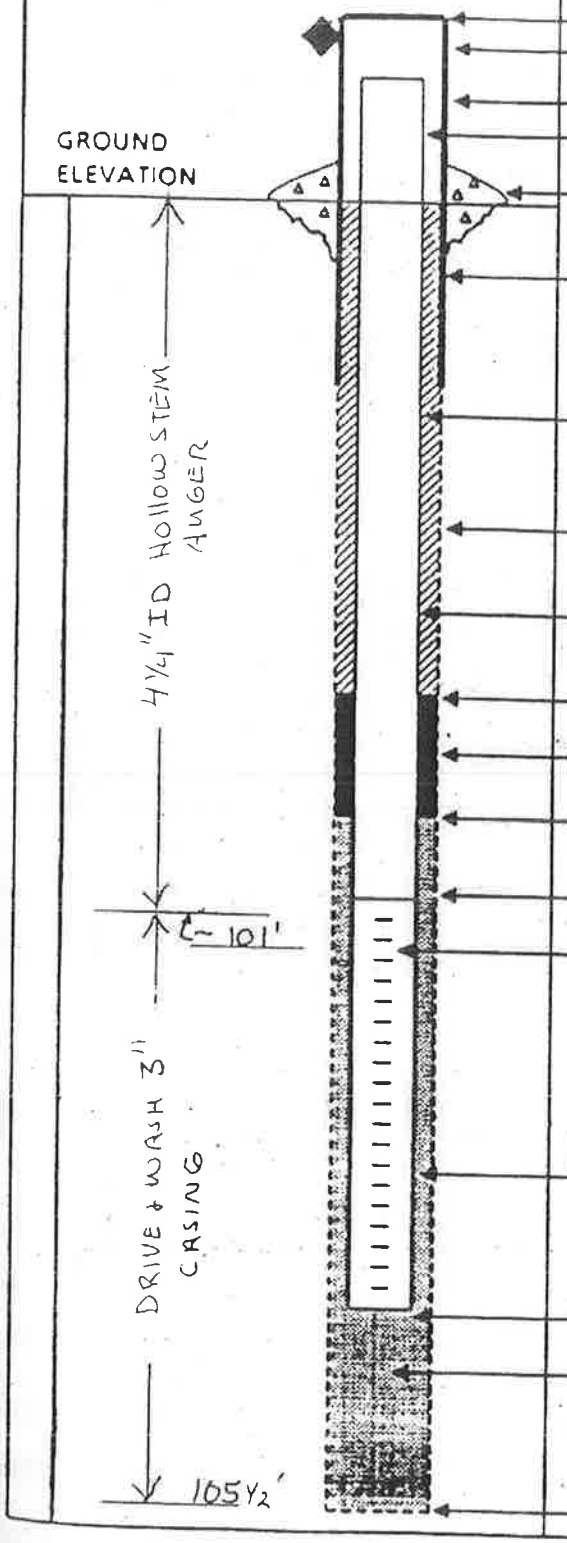
MALCOLM PIRNIE

OVERBURDEN MONITORING WELL SHEET

PROJECT PALMER ST. L.F.
PROJECT NO 0605-10-1
ELEVATION 797.5
FIELD GEOLOGIST R. O'LASKEY

LOCATION GOWANDA, NY
BORING 8
DATE 8/27/87

DRILLER D. ALTROGGIE
DRILLING METHOD as below
DEVELOPMENT METHOD AIR



ELEVATION OF TOP OF SURFACE CASING: 818.53
ELEVATION OF TOP OF RISER PIPE: 818.31

STICK - UP TOP OF SURFACE CASING: ____
STICK - UP RISER PIPE: ____

TYPE OF SURFACE SEAL: CEMENT

I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: STEEL

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 8" to 101'

TYPE OF BACKFILL: CEMENT/BENTONITE

ELEVATION / DEPTH TOP OF SEAL: 717.5/80'

TYPE OF SEAL: BENTONITE SLURRY

DEPTH TOP OF SAND PACK: 700.5/97'

ELEVATION / DEPTH TOP OF SCREEN: 697.0/100.5'

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: .010" / 5 FT

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: COLLAPSED FORMATION (SAND AND GRAVEL)

ELEVATION / DEPTH BOTTOM OF SCREEN: 692.0/105.5'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 692.0/105.5'

TYPE OF BACKFILL BELOW OBSERVATION WELL: Collapsed Sand and Gravel

ELEVATION / DEPTH OF HOLE: 692.0/105.5'

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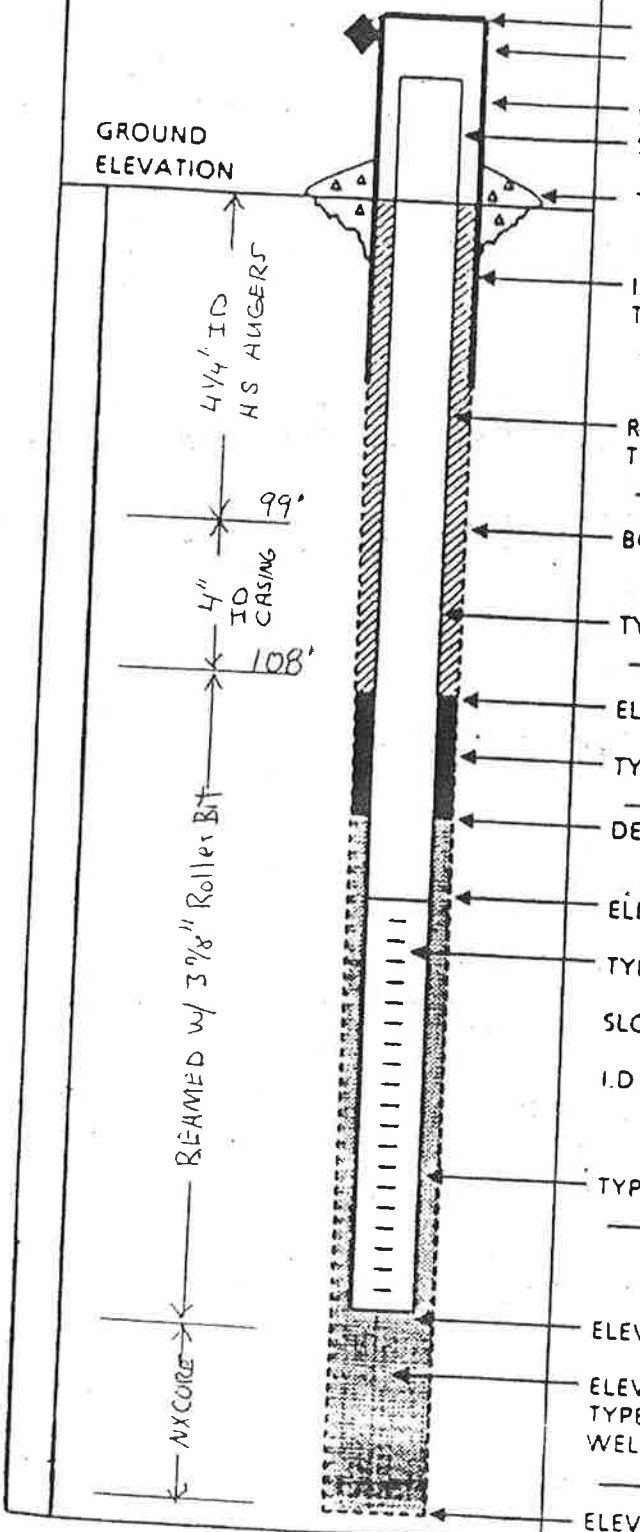
OVERBURDEN MONITORING WELL SHEET

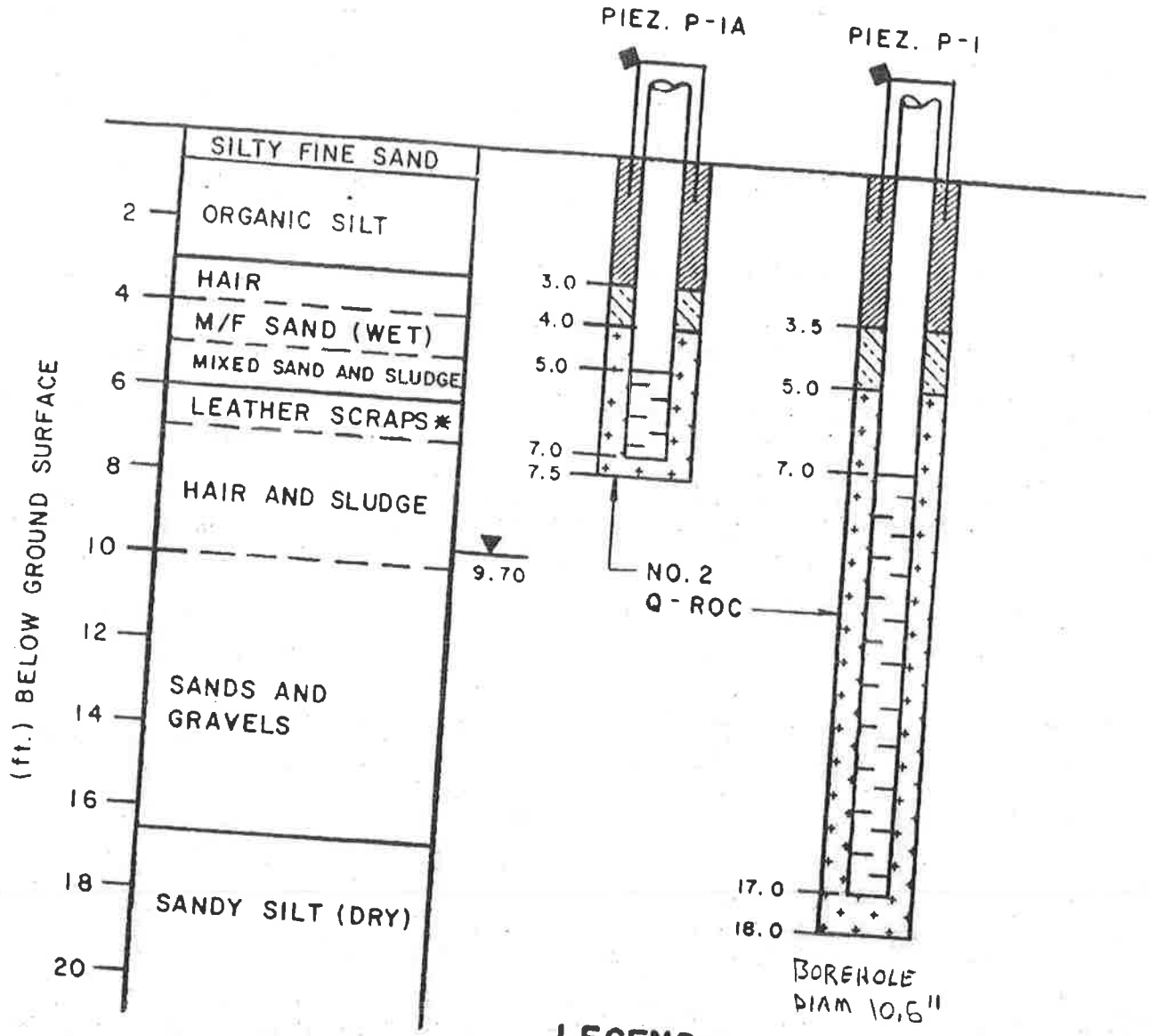
PROJECT PALMER ST. LF
PROJECT NO. 0605-10-1
ELEVATION 816.0'
FIELD GEOLOGIST R. O'LASKEY

LOCATION GOWANDA, NY
BORING BD
DATE 8/21/87

DRILLER D. AITROGGLE
DRILLING METHOD Hollow Stem Auger, Mud Rotary, Drive & Wash
DEVELOPMENT METHOD AIR



ELEVATION OF TOP OF SURFACE CASING: 818.63'
ELEVATION OF TOP OF RISER PIPE: 818.45'
STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE :
TYPE OF SURFACE SEAL: CEMENT
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCH 40 PVC
BOREHOLE DIAMETER: 4" 108' to 122'
TYPE OF BACKFILL: CEMENT / BENTONITE
ELEVATION / DEPTH TOP OF SEAL: 709.0/109'
TYPE OF SEAL: BENTONITE SLURRY
DEPTH TOP OF SAND PACK: 701.5/114.5'
ELEVATION / DEPTH TOP OF SCREEN: 699.0/117'
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: .010" / 5 FT
I.D OF SCREEN: 2"
TYPE OF SAND PACK: #2 Q-ROC
ELEVATION / DEPTH BOTTOM OF SCREEN: 694.0/122'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 693.0/123'
TYPE OF BACKFILL BELOW OBSERVATION WELL: Cuttings from Reaming w/ 3⅞" Bit.
ELEVATION / DEPTH OF HOLE: 689.0/127'



LEGEND

- WATER LEVEL ON 8/2/88
- BENTONITE PELLETS
- SCREENED SOIL/CUTTINGS
- SILICA FLOUR
- POROUS CUP
- CEMENT BENTONITE GROUT
- SAND PACK

NOTE: * SAMPLE SPOON ENCOUNTERED MIXED SLUDGE AND FINE SAND AT 6 FT. IN BORING P-1A, LEATHER SCRAP LAYER WAS ABSENT.

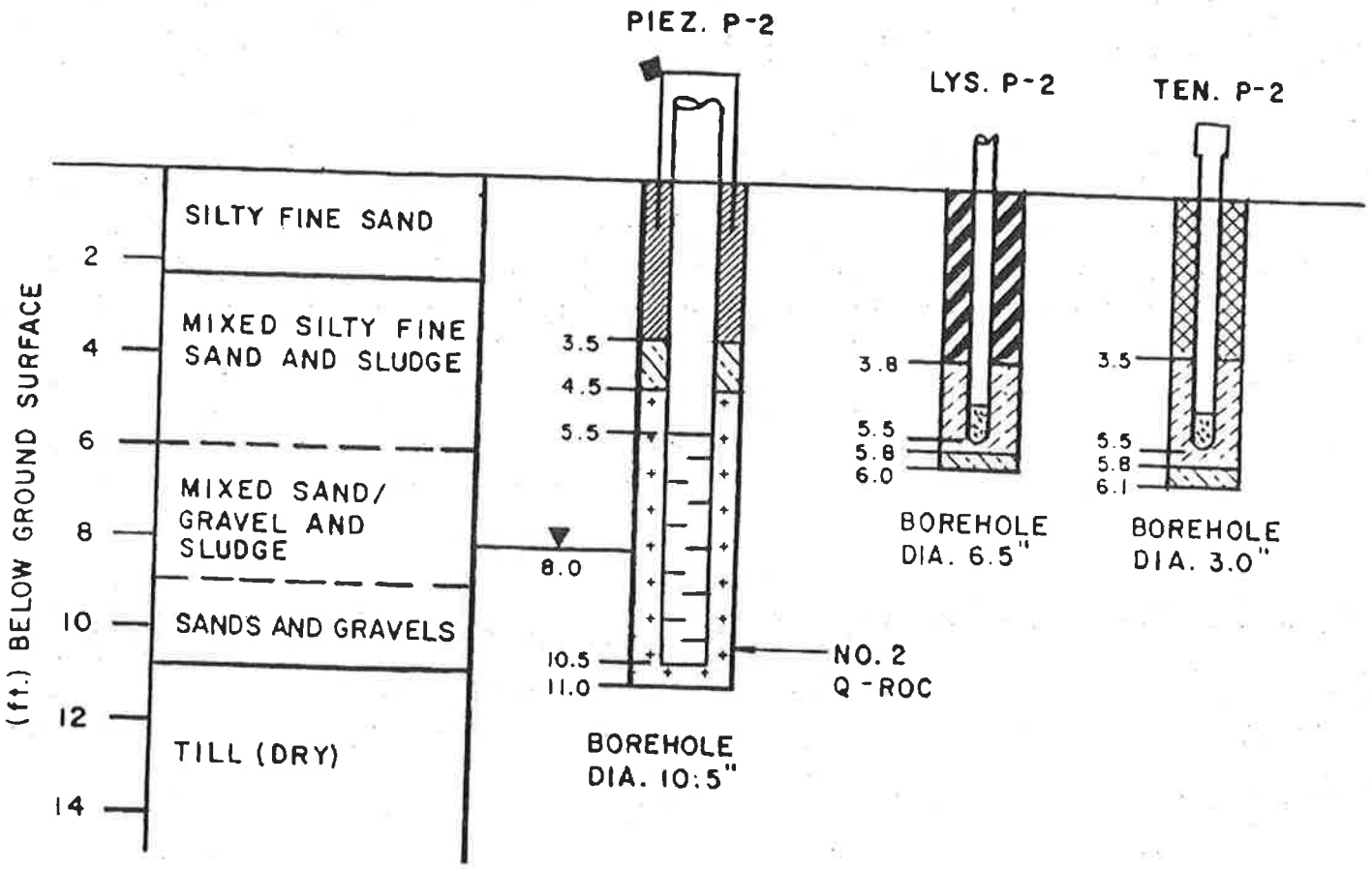
VERT. SCALE : 1" = 4'-0"

MALCOLM PIRNIE

MOENCH TANNING COMPANY
PALMER STREET LANDFILL

PIEZOMETER CONSTRUCTION DIAGRAM
NOVEMBER 1988

FIGURE



LEGEND

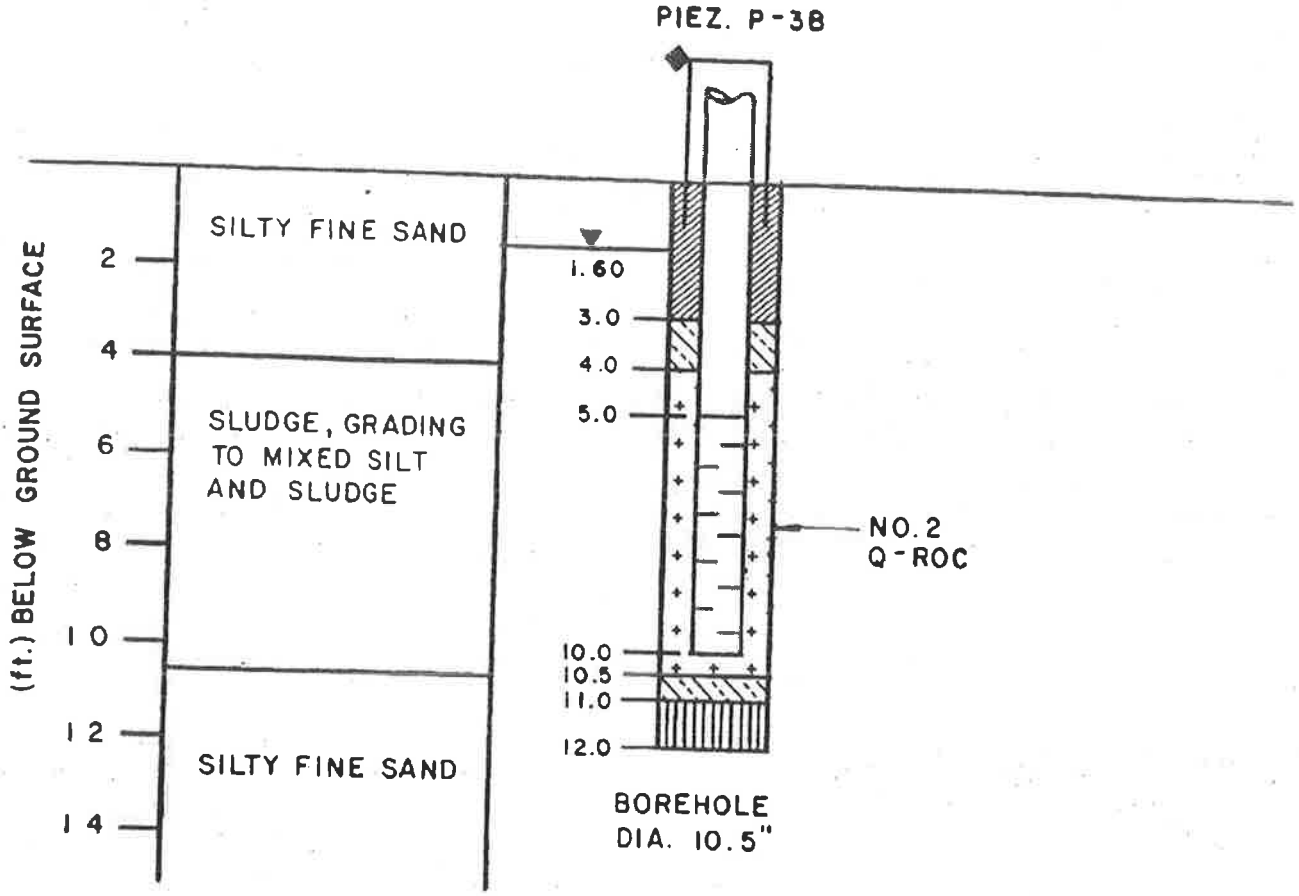
- BENTONITE SLURRY
- WATER LEVEL ON 8/2/88
- BENTONITE PELLETS
- SCREENED SOIL/CUTTINGS
- SILICA FLOUR
- POROUS CUP
- CEMENT BENTONITE GROUT
- SAND PACK

VERT. SCALE : 1"= 4'-0"

MALCOLM PIRNIE

MOENCH TANNING COMPANY
PALMER STREET LANDFILL
PIEZOMETER CONSTRUCTION DIAGRAM
NOVEMBER 1988

FIGURE



LEGEND

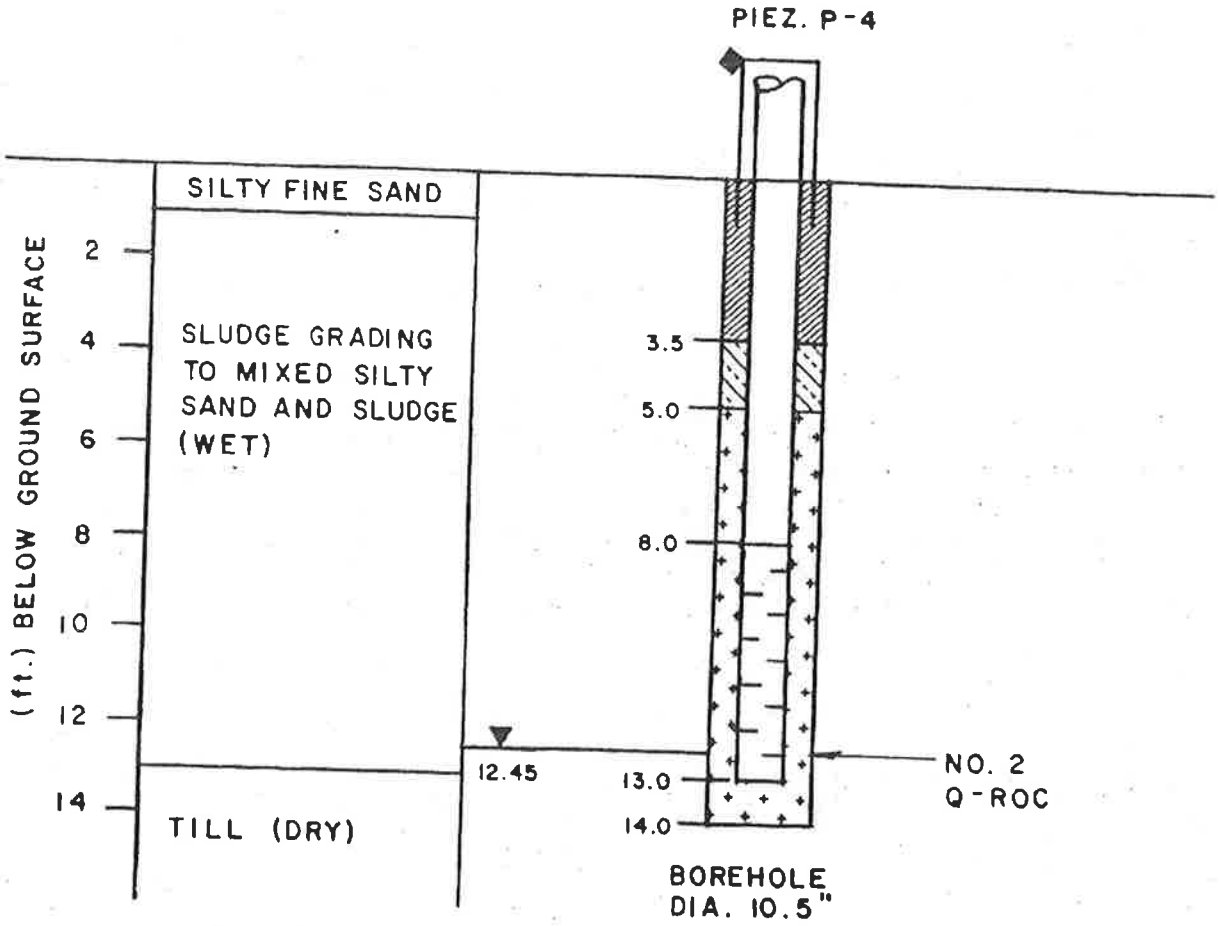
- COLLAPSED FORMATION
- WATER LEVEL ON 8/2/88
- BENTONITE PELLETS
- SCREENED SOIL/CUTTINGS
- SILICA FLOUR
- POROUS CUP
- CEMENT BENTONITE GROUT
- SAND PACK

VERT. SCALE : 1"= 4'-0"

MALCOLM PIRNIE

MOENCH TANNING COMPANY
PALMER STREET LANDFILL
PIEZOMETER CONSTRUCTION DIAGRAM
NOVEMBER 1988

FIGURE



LEGEND

- WATER LEVEL ON 8/2/88
- BENTONITE PELLETS
- SCREENED SOIL/CUTTINGS
- SILICA FLOUR
- POROUS CUP
- CEMENT BENTONITE GROUT
- SAND PACK

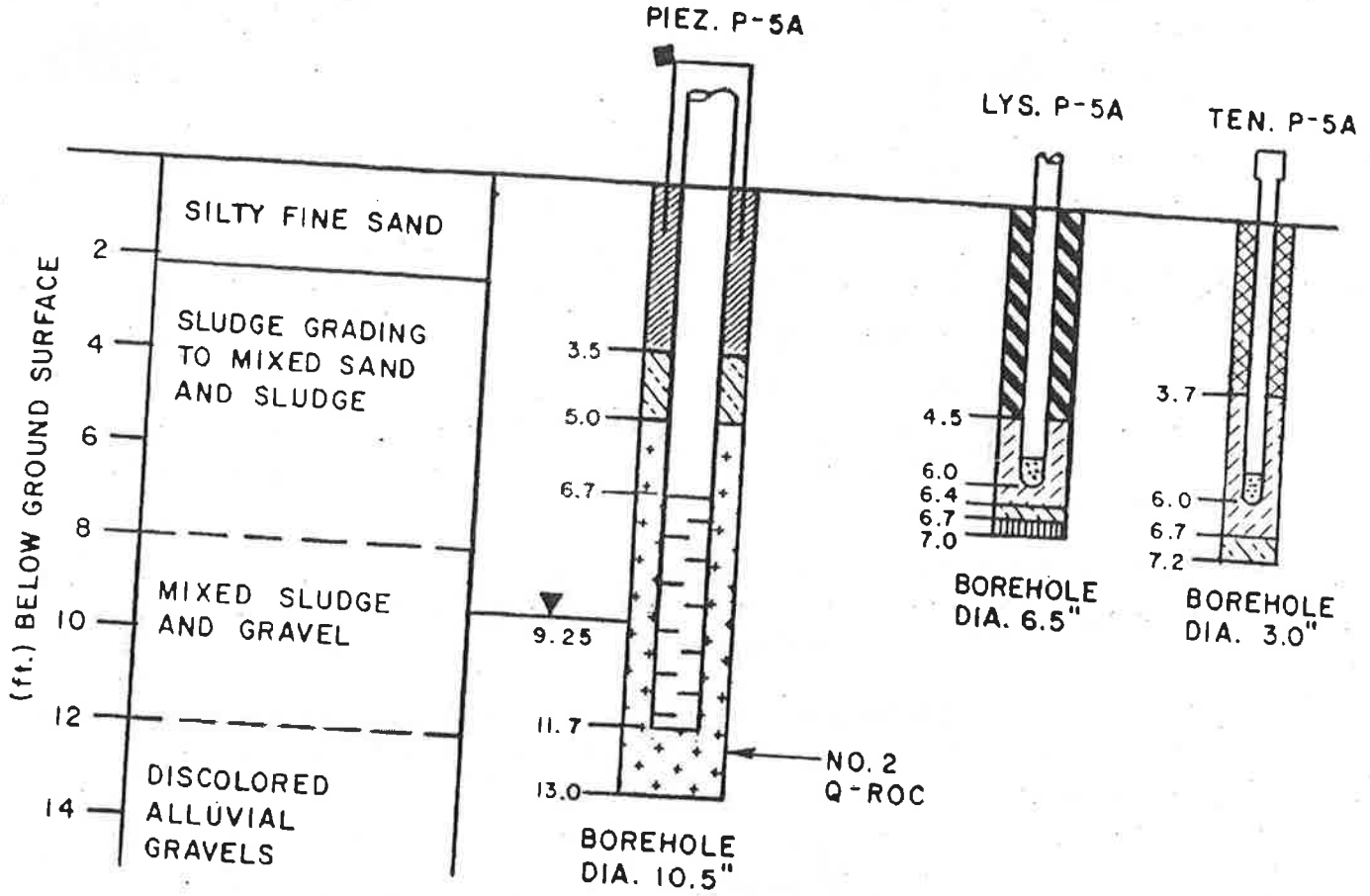
VERT. SCALE : 1"= 4'-0"

MALCOLM PIRNIE

MOENCH TANNING COMPANY
PALMER STREET LANDFILL

PIEZOMETER CONSTRUCTION DIAGRAM
NOVEMBER 1988

FIGURE



LEGEND

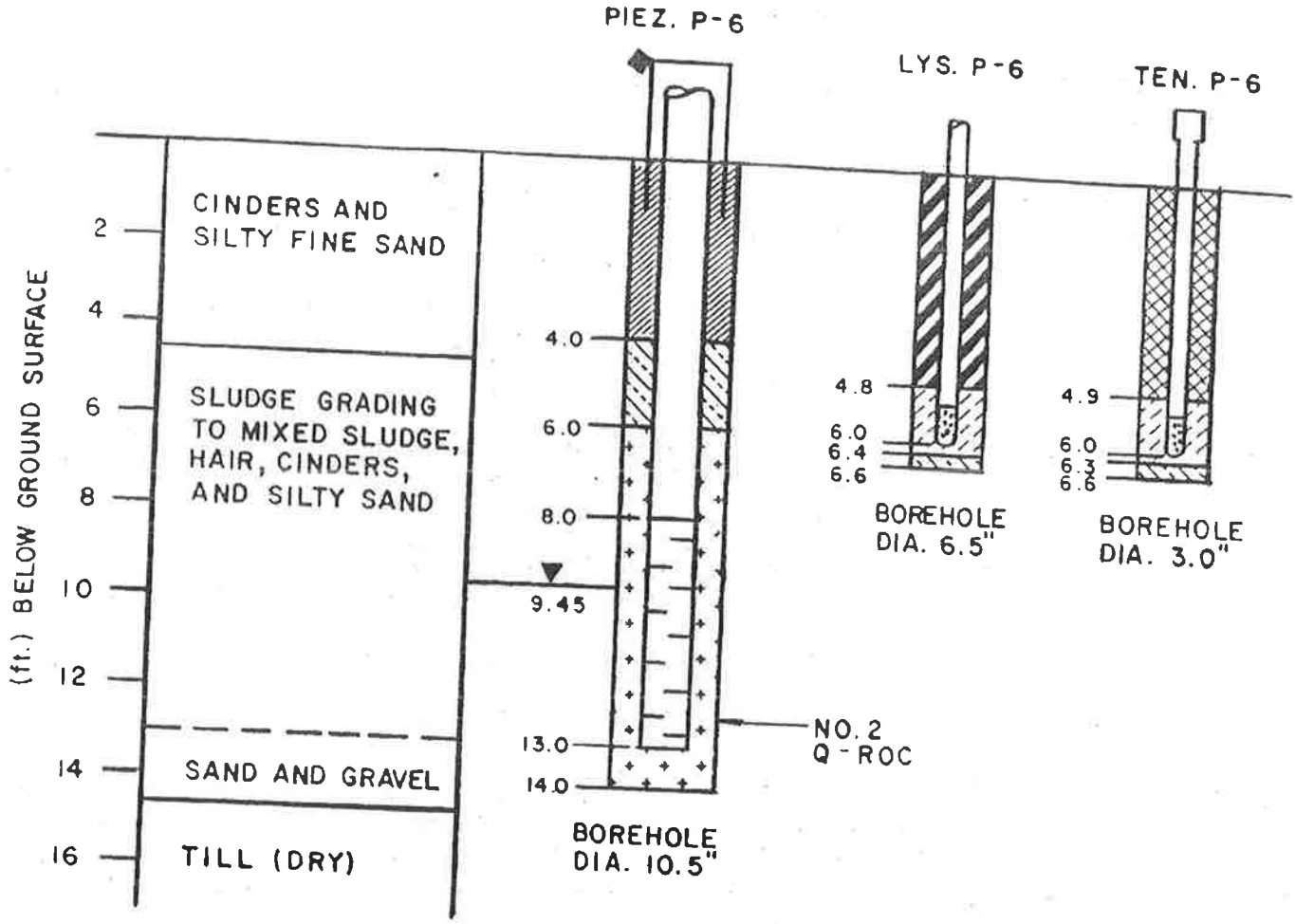
- BENTONITE SLURRY
- COLLAPSED FORMATION
- WATER LEVEL ON 8/2/88
- BENTONITE PELLETS
- SCREENED SOIL/CUTTINGS
- SILICA FLOUR
- POROUS CUP
- CEMENT BENTONITE GROUT
- SAND PACK

VERT. SCALE : 1"= 4'-0"

MALCOLM PIRNIE

MOENCH TANNING COMPANY
PALMER STREET LANDFILL

PIEZOMETER CONSTRUCTION DIAGRAM
NOVEMBER 1988



LEGEND

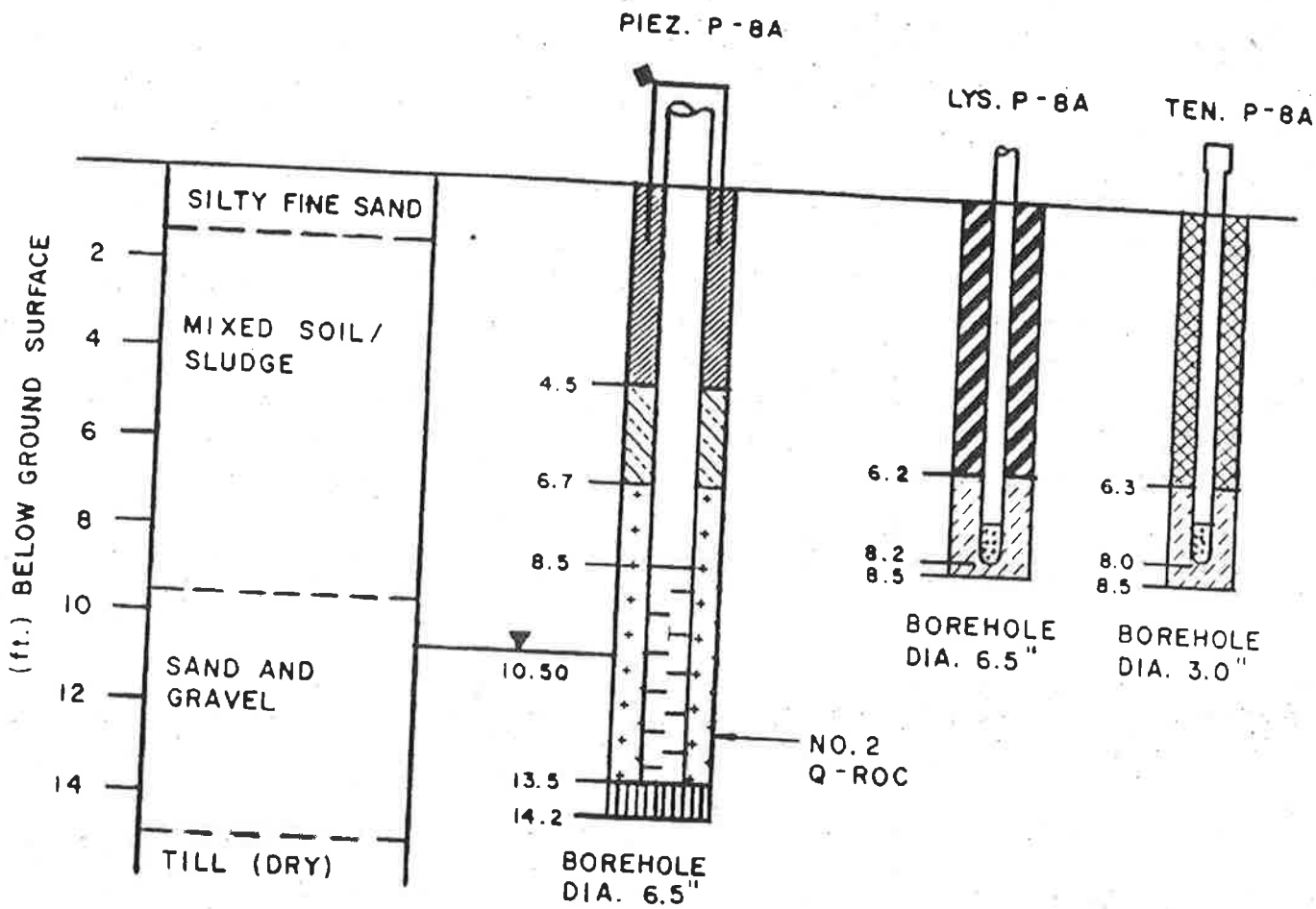
- BENTONITE SLURRY
- WATER LEVEL ON 8/2/88
- BENTONITE PELLETS
- SCREENED SOIL/CUTTINGS
- SILICA FLOUR
- POROUS CUP
- CEMENT BENTONITE GROUT
- SAND PACK

VERT. SCALE : 1"= 4'-0"

MALCOLM PIRNIE

MOENCH TANNING COMPANY
PALMER STREET LANDFILL
PIEZOMETER CONSTRUCTION DIAGRAM
NOVEMBER 1988

FIGURE



LEGEND

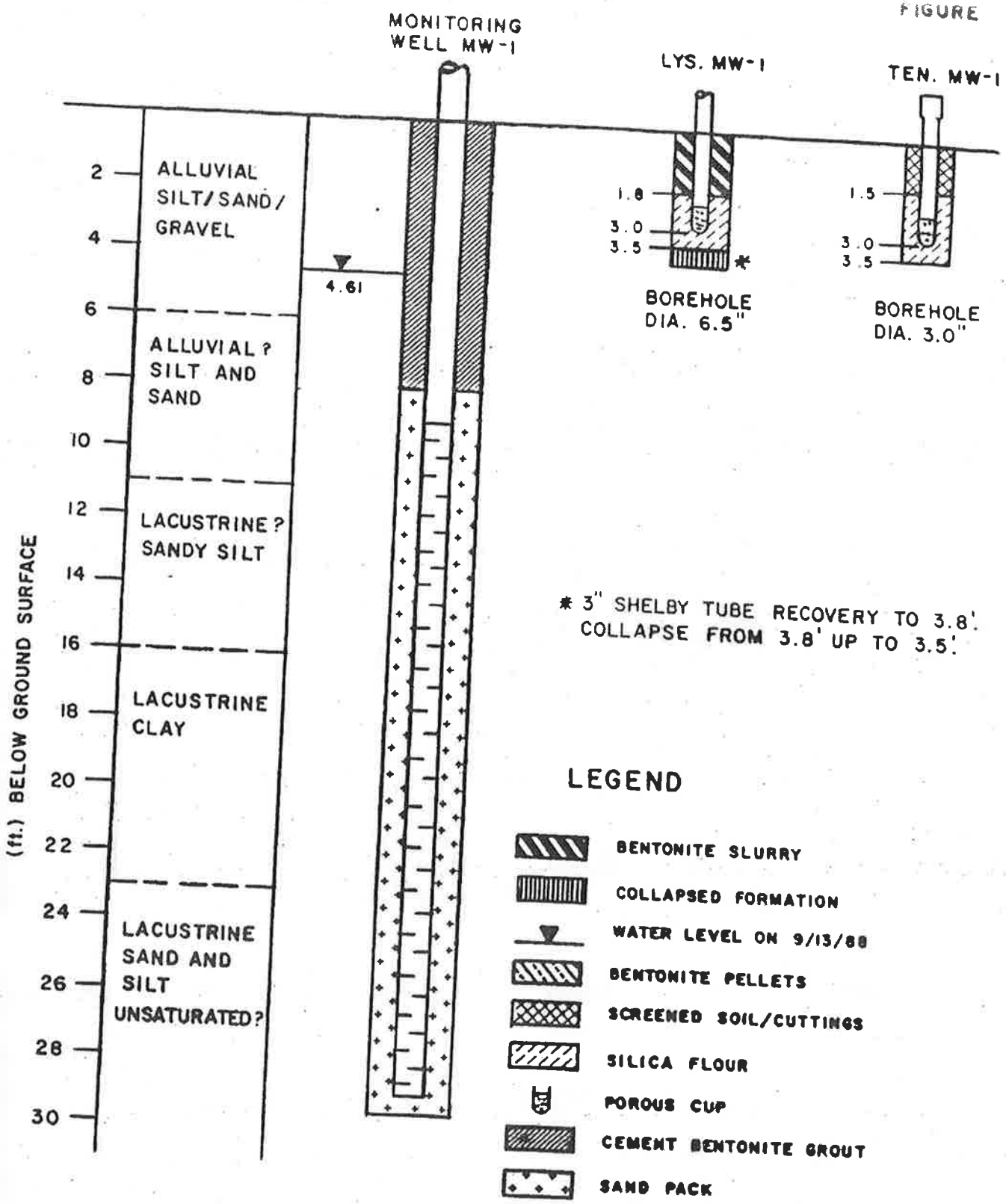
- COLLAPSED FORMATION
- BENTONITE SLURRY
- WATER LEVEL ON 9/13/88
- BENTONITE PELLETS
- SCREENED SOIL/CUTTINGS
- SILICA FLOUR
- POROUS CUP
- CEMENT BENTONITE GROUT
- SAND PACK

VERT. SCALE : 1"= 4'-0"

MALCOLM PIRNIE

MOENCH TANNING COMPANY
PALMER STREET LANDFILL
PIEZOMETER/LYSIMETER CONSTRUCTION DIAGRAM
NOVEMBER 1988

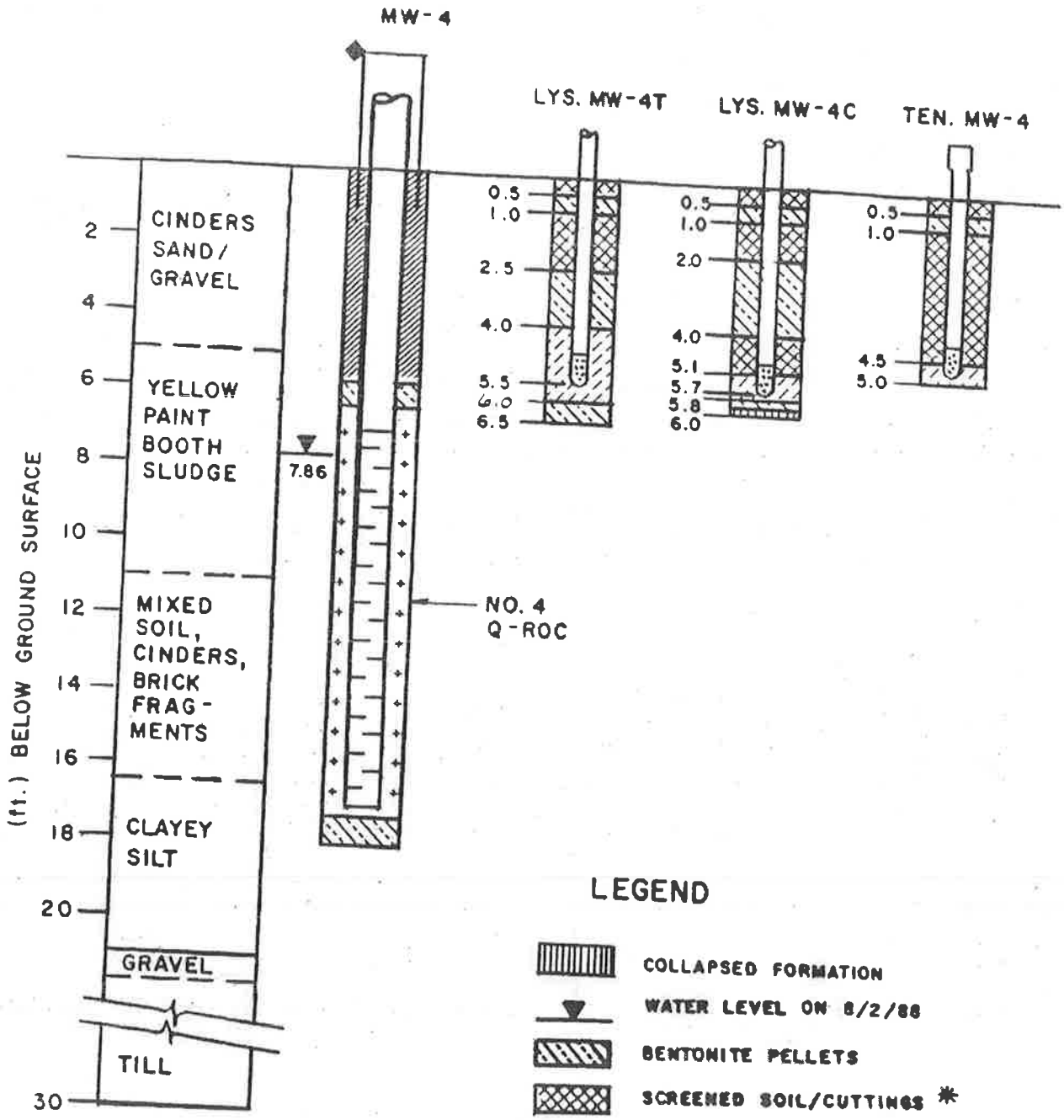
FIGURE



VERT. SCALE : 1"= 4'-0"

MALCOLM PIRNIE

MOENCH TANNING COMPANY
PALMER STREET LANDFILL
PIEZOMETER/LYSIMETER CONSTRUCTION DIAGRAM
NOVEMBER 1988



LEGEND

- COLLAPSED FORMATION
- WATER LEVEL ON 8/2/88
- BENTONITE PELLETS
- SCREENED SOIL/CUTTINGS *
- SILICA FLOUR
- POROUS CUP
- CEMENT BENTONITE GROUT
- SAND PACK

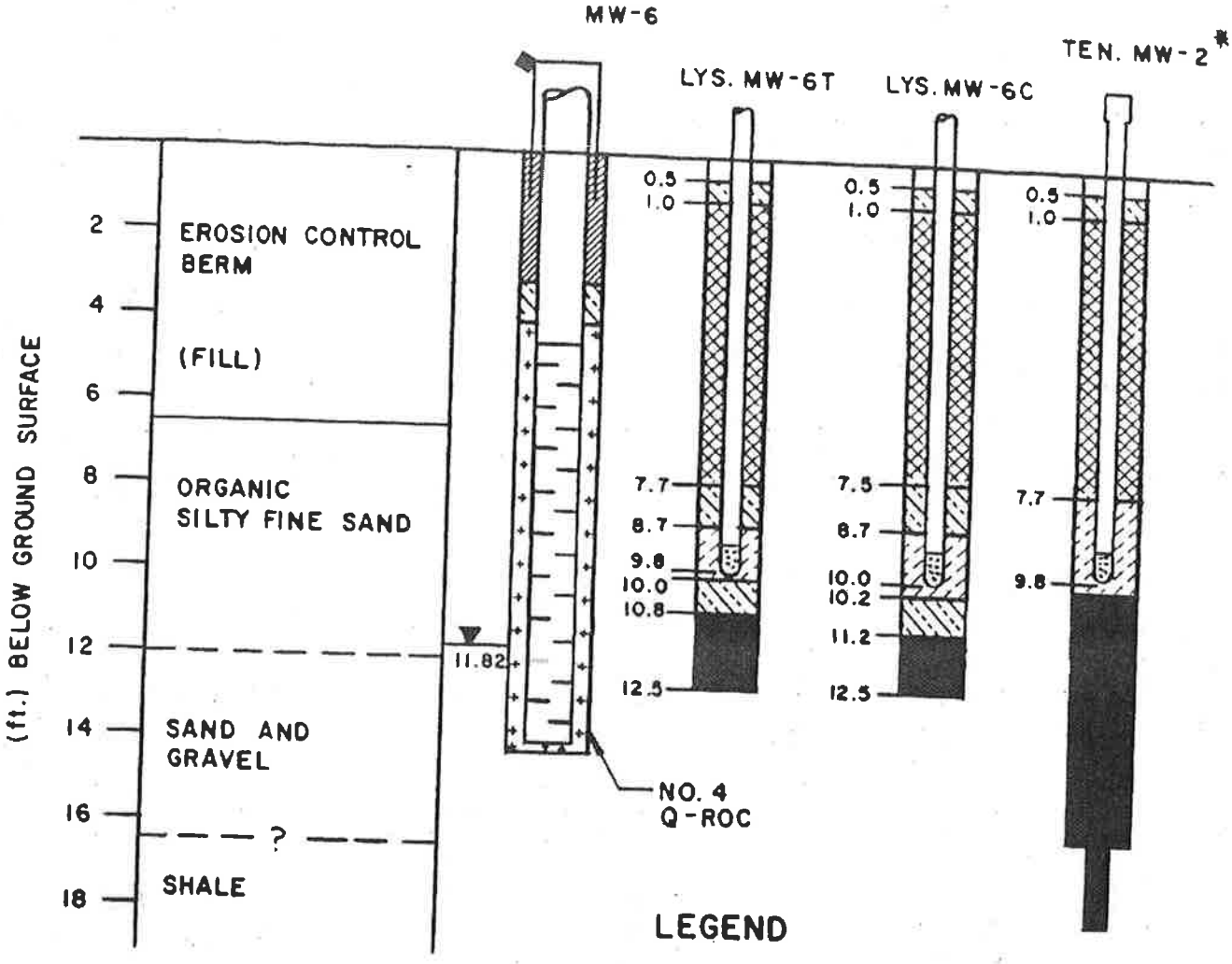
* SCREENED WITH SIEVE TO ≤ 3/8".

VERT. SCALE : 1"= 4'-0"

MALCOLM PIRNIE

MOENCH TANNING COMPANY
PALMER STREET LANDFILL

LYSIMETER CONSTRUCTION DIAGRAM
NOVEMBER 1988



LEGEND

- BACKFILL
- WATER LEVEL ON 8/2/88
- BENTONITE PELLETS
- SCREENED SOIL/CUTTINGS
- SILICA FLOUR
- POROUS CUP
- CEMENT BENTONITE GROUT
- SAND PACK

* BORING LOG INCLUDED IN APPENDIX.

VERT. SCALE : 1"= 4'-0"

MALCOLM PIRNIE

MOENCH TANNING COMPANY
PALMER STREET LANDFILL
LYSIMETER CONSTRUCTION DIAGRAM
NOVEMBER 1988

APPENDIX C

EXCAVATION WORK PLAN

In the unlikely event the cover system is breached, penetrated or temporarily removed, and landfilled material will be disturbed, the work will be conducted under this Excavation Work Plan (EWP), which consists of notifying the NYSDEC of anticipated work, managing the materials removed, restoring the cover system, and protecting the community from air borne emissions.

A qualified environmental professional (QEP) or person under their supervision will oversee invasive work and the excavation and load-out of excavated material. This includes overseeing the community air monitoring plan (Appendix F) to be implemented during invasive activities.

The Site owner and its contractors (and subcontractors) are responsible for safe execution of all invasive and other work performed under this EWP. Contractors performing excavation and handling of contaminated material will comply with 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response (HAZWOPER), including all provisions for personnel training. This also includes development of and working under their own Site-specific health and safety plan (HASP) that meets HAZWOPER requirements.

C.1 Notification

At least 15 days prior to the start of any excavation or soil disturbance in an area under the cover system, a written notification will be provided to the NYSDEC DER. Table C-1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix A.

Table C-1: Notifications*

NYSDEC Regional Remediation Geologist Stan Radon, CPG	716-851-7220/ stanley.radon@dec.ny.gov
NYSDEC DER Project Manager Andrew Zwack	716-851-7220/ andrew.zwack@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact the cover system;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;
- A copy of the contractor's HASP;
- Identification of disposal facilities for potential waste streams;
- Identification of sources of any anticipated backfill, along with any required chemical testing results; and
- Details regarding the restoration of site conditions.

C.2 Managing Removed Materials

Excavations will be conducted such that personnel and equipment will limit contact with contaminated material to the greatest extent practical.

C.2.1 Soil Screening Methods

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed by a qualified environmental professional during excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed when invasive work, including but not limited to excavations for foundations and utility work and erosion control measures, is done.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-site as soil beneath a cover or if the material can be used as cover soil. It is not anticipated that soils will be removed from the Site for off-Site disposal.

C.2.2 Soil Staging Methods

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be kept covered at all times unless material is actively being added or removed with appropriately anchored tarps or plastic sheeting sufficient to prevent windblown erosion and infiltration of precipitation. Stockpiles will be routinely inspected, and damaged tarp covers will be promptly replaced.

Additional erosion controls will be identified, implemented, and inspected by the QEP throughout the excavation and restoration work.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC.

C.2.3 Materials Excavation and Load-Out

A QEP or person under their supervision will oversee invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of invasive and other work performed under this EWP.

The presence of utilities and easements on the site will be investigated by the QEP, and a determination on whether these utilities or easements pose a risk or impediment to the planned work will be made.

Equipment that encounters contaminated material will be properly decontaminated prior to leaving the Site. For most minor or limited excavations, a temporary decontamination zone, which will consist of poly sheeting and a basin or tub for collection of decontamination fluids, will be set up near the excavation. Decontamination fluids will be collected and properly disposed of at an approved off-site disposal facility.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and New York State Department of Transportation requirements (and all other applicable transportation requirements). Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Trucks will be restricted to paved surfaces and avoid entering contaminated areas to the greatest extent practical. Truck loading will also be performed in a manner to minimize spillage. In most cases, these practices will alleviate the need for a truck wash. However, if Site conditions require trucks to encounter contaminated materials (i.e. drive into contaminated areas), a truck wash will be operated on-Site, as appropriate. The QEP will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the activities performed under this section are complete. Truck wash waters will be collected and properly disposed off-Site.

Locations where vehicles enter or exit the Site will be inspected daily for evidence of site-derived soil tracking.

The QEP will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

Trucks will be prohibited from stopping and idling in the neighborhood outside the Site. Queuing of trucks will be performed on-Site in order to minimize off-Site disturbance. Off-Site queuing will be prohibited.

C.2.4 Materials Transport Off-Site

Material excavated for off-Site disposal will be sampled and analyzed as needed to make a hazardous waste determination and to generate a waste profile for acceptance at a permitted disposal facility. Haulers will be appropriately licensed in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364, and trucks will be properly placarded.

C.2.5 Materials Disposal Off-Site

The materials taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6 NYCRR Part 360-1.2. Unregulated off-Site management of materials from this Site will not occur without formal NYSDEC approval.

Off-Site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate (e.g., hazardous waste disposal facility, solid waste landfill). Actual disposal quantities and associated documentation will be reported to the NYSDEC in the PRR or under separate cover following completion of the excavation. This documentation will include waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts, as applicable.

C.2.6 Materials Reuse On-Site

The QEP will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-Site. Contaminated on-Site material, including historic fill and contaminated soil, that is acceptable for reuse on-Site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Demolition material proposed for reuse on-Site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-Site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site will not be reused on-Site.

C.2.7 Fluids Management

Liquids to be removed from the Site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the Site, and will be managed off-Site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

C.3 Restoration of Cover System

After completion of soil removal and any other invasive activities, the cover system will be restored in a manner that complies with the Consent Order. The areas of disturbed cover system will be restored to pre-excavation conditions or constructed in such a manner to prevent contact with remaining contamination (e.g., a soil cover is replaced by asphalt). Any change in cover system due to construction will be submitted for review and approval by the NYSDEC.

C.3.1 Backfill from Off-Site Sources

All materials proposed for import onto the Site will be approved by the QEP and will comply with provisions in this SMP prior to receipt at the Site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager allowing a minimum of five (5) business days for review.

Materials imported to the Site as backfill will adhere to the backfill requirements provided in DER-10, Appendix 5 and will follow the provisions of this EWP prior to receipt at the Site. Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

APPENDIX D

TASK HAZARD ANALYSIS

TASK HAZARD ANALYSIS

PART A – SITE SAFETY PLAN

A.1. PROJECT/TASK INFORMATION

TASK:	Annual Groundwater Sampling & Site Maintenance		
Project Name:	Palmer Landfill	**Project Number/Org:**	BR0365
Project Address:	465 Palmer St, Gowanda, NY		
Description of Task & Worksite:	This site consists of a capped landfill, a parking area and a small garage. The site is zoned as industrial and is currently vacant. The owner at the time of the Site Management Plan (SMP) issuance is Caleres, Inc. *5* (Caleres). Personnel will conduct annual groundwater sampling from monitoting wells across the site and site inspections/maintenance (e.g., lawn mowing) as needed and described in the SMP. If addional work, outside of the scope of this THA, is performed a separate THA or HASP will be developed by the personnel to conduct the work.		

Title	Name	Desktop Office Phone	Mobile Phone
Site Lead/HS Officer	Michael Best (Caleres)	716-532-2201	
Director of Corporate Facilities	David Rodgers (Caleres)	314-854-4032	
Engineer of Record	Susan Welt (Beech & Bonaparte Engineering, PC)	978-206-5776	

A.2. EMERGENCY RESPONSE

Based on analysis of worksite factors, client/regulatory requirements, availability of emergency services.

Consider all Relevant Risk Factors & Response Procedures *(fire/explosion, medical, chemicals/spills, security, site factors, weather, communications).*
EXPLANATORY NOTES, CLARIFICATIONS:

Available Means of Jobsite Emergency Communication/Alerting	☒ Verbal ☐ Mobile Phone ☐ Land Line ☐ 2-Way Radio ☐ On-site alarm/signal system ☐ Other:
To Summon Emergency Services Police, Fire, Ambulance	☒ **DIAL 911**, for external responders ☐ **Other**:
Other Emergency Contacts, as needed *(such as security, spill responder, utility):*	
Nearest Emergency Medical Services	Hospital Name: Lakeshore Hospital Address: 845 Route 5 and 20 Irving , NY Phone #: 716-934-2654 ☒ See Attached Directions
Job-site **Evacuation** Procedure, Rally Point, Place of refuge:	Meet in the parking lot located adjacent to the site.
Special Emergency Equipment/Procedures	N/A

IMPORTANT: After initial emergency response actions and incident stabilization, contact appropriate project personnel listed in Part A.1.

A.3. SUMMARY OF WORK STEPS, HAZARDS, CONTROLS

Based on **PART B, "HAZARD ANALYSIS,"** and worksite/client/project factors.

Summary/outline of work steps/hazards/controls, with references to applicable Sections in Parts B and C, as applicable:

WORK STEPS	HAZARDS	CONTROLS
1. *Travel to and from Site*	*Routine Driving Hazards*	*Safe driving practices (Section B.1) Allow ample time for travel to site, use safe driving practices appropriate for conditions.*
2. *Groundwater Sampling/ Site Maintenance*	*Heavy lifting, slip/trips/falls, sample preservatitives (acid and bases), and calibration solutions, weather-related stress* *Operaton of lawn mower*	*Wear PPE (protective clothing, safety glasses, and steel toed boots), stay hydrated,pay close attention and don't hurry, follow safe lifting procedures, dress for the weather conditions.* *Known equipment and how to operate lawn mower. Follow safe driving skills and requirements. Maintain stability of equipment as go over slopes.*

A.4. HS&E EQUIPMENT LIST List worksite equipment for worker protection; provide details in Explanatory Notes, Clarifications.

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**ROUTINE PPE**	☒ Standard work clothes appropriate for task ☒ Hard-toed boots/shoes ☐ Hardhat ☒ Safety glasses	☒ Work gloves appropriate for task ☐ Noise/hearing protection ☐ High-visibility/reflective vest
		☐ Basic PPE for protection from low-hazard chemical contact & dust (nitrile gloves, Tyvek suit, dust mask, boot covers).	
☒	**ROUTINE HS&E EQUIPMENT/GEAR**	☒ First Aid Kit ☒ Fire extinguisher ☒ Emergency eyewash bottle(s) ☒ Insect control (repellant, wasp spray, other) ☐ Caution tape	☒ Sun protection (sunscreen, shade canopy, other) ☒ Project-supplied drinking water and/or hygiene facilities ☐ Absorbent matting/roll ☐ Vehicle emergency kit (flares, lights, reflective device) ☐ Traffic control warning devices (cones, or similar)
		☒ Other: Poison Ivy skin wash (Technu or similar)	
☒	**DECON, PPE DISPOSAL**	☒ Receptable for disposable PPE ☐ Hand washing provisions ☐ Decon solution, related supplies	
		☐ Other:	

PART B – HAZARD ANALYSIS and CONTROLS *Complete Section B.1., then subsequent sections as applicable to the task(s).*

B.1. ROUTINE HAZARD PREPAREDNESS

Explanatory Notes, Clarifications:

General Safety, Wellness, Preparedness – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **General premises** hazards - housekeeping, rough terrain, trip hazards, steep slope, remote location.
☒ **Weather/climate-related hazards** – heat stress/cold stress measures, sun screen, severe weather shelter/refuge, "30/30 rule" for lightning
☒ **Plant/Insect/Animal Hazards** - Precautions: poison ivy wash; insect repellant; check for ticks; hornet nest spray; animal precautions.
☐ **Worksite traffic hazards** – Implement measures to protect personnel (high visibility/reflective clothing, on-person lighting, traffic control measures).
☐ **Illumination hazards/night work** - Illuminate work areas and/or access routes, use reflective/hi-visibility clothing or on-person lighting, as appropriate.
☒ **Lifting, manual material handling** – use proper lifting procedures, seek help for >50 lbs.

Routine Personal Protection – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **Head protection from overhead hazards** - Wear hardhat or "bump cap" as appropriate for hazard.
☒ **Hand protection** - Wear protective work gloves appropriate for the hazard and work tasks.
☒ **Eye protection** - Wear safety glasses (with side shield or wrap around, either clear or shaded for sun protection), or other appropriate eye protection.
☒ **Foot protection, rough terrain** - Wear work boots/shoes with hard toes, ankle support, puncture resistance, traction, as appropriate for conditions.
☐ **Hearing protection** – use earplugs, earmuffs (or both) as appropriate for conditions; at a minimum where noise levels exceed 85dBA.
☐ **Dust, unsanitary conditions** – For general protection against minimal non-specific hazards, use protective clothing and/or disposable dust mask, as needed.

Tools, Equipment, Machinery – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Manual hand tools -** proper tool for the job, maintain in good condition, use vise/clamp to hold work piece, proper follow through, stay clear of "line of fire."
☒ **Knives, cutting tools -** Utility/folding/collapsible knives and fixed open-bladed knives/cutting tools are *not* permitted, unless specifically authorized. Cutting tools with automatically-retracting blades, or with enclosed/guarded blades are permitted. .
☒ ***Working near*** **powered tools/equipment/machinery** – safe distance, heed warning signs, stay out of "line of fire," use PPE (for eye/hearing/dust protection).
☒ ***Operation/use of*** **powered tools/equipment/machinery – See Section B.2.**

Routine Driving Hazards – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Routine work travel** - Use routine safe/defensive driving practices (seat belts, safe speeds, eyes ahead, no tailgating, limit distractions, safe cell phone use, no texting, clear windows, account for weather/road conditions, adequate sleep, other measures as appropriate).
☐ **Unfamiliar location** - Plan travel route before driving (assemble maps, enter destination in GPS).
☐ **Long Distance or During Sleep Hours** – Minimize fatigue: rest breaks, light snacks (avoid heavy meals), stay hydrated, fresh air, no loud music, clean windshield.
☐ **Unfamiliar vehicle** – Become familiar with vehicle operational controls and handling characteristics before operating vehicle.

B.2. POWERED TOOLS, EQUIPMENT, MACHINERY

EXPLANATORY NOTES, CLARIFICATIONS: Equipment needed to conduct site maintenance includes lawn mowers.

☒	**POWERED HAND TOOLS** ☒ Battery-operated ☒ Electric-powered, 120v/240v ☒ Fuel-powered ☐ Pneumatic ☐ Powder-actuated Hazards: Eye/hand/body injury, fuel-related hazards, Inhalation hazards, noise, sparks, heat, fire hazard, electrical hazards	☒ For all power tools: • Inspect tools to ensure safe operating condition before each use. • Use tool in accordance with manufacturer's specifications. • Ensure guards are in place and no hazardous equipment modifications. • Use PPE or other safety practices, as appropriate, for eye/hearing/hand/head/body protection. • Provide training or verify operator competency for use of power tool. • Stay clear of hazard zone, "line of fire," when working near where power tools are used. • For spark/heat generating tool, control fire hazards, segregate combustible/flammable materials. • Use vise/clamp/work bench or other appropriate means to hold/secure the work piece. ☒ See fuel-safety practices in Section B.3., "Commercial Chemical Products."
☒	**OPERATION OF EQUIPMENT/MACHINERY** ☐ Point-of-operation hazards ☒ Pinch points, moving parts ☒ 'Struck-by,' 'caught between' ☐ Hot surfaces, heat ☐ Extension cords, flexible wire ☐ Fuel related (gas or liquid) ☐ Hydraulic pressure ☐ Pneumatic pressure ☐ Kinetic, stored energy ☒ Noise ☒ Emissions, discharge gases ☐ Working at heights, falls ☐ Lifting, repetitive motion ☐ Illumination ☐ Electrical	☒ <u>General safety requirements for equipment, machinery:</u> • Arrange worksite for safe access to equipment/machinery. • Use equipment/machinery in accordance with manufacturer's use and safety instructions. • Ensure point-of-operation, mechanical power transmission, other moving parts are guarded with protective devices; do not override interlocks, guards, protective devices. • Secure long hair/loose clothing/hanging jewelry near moving/rotating parts. • Heed warning signs/labels, keep safe distance; avoid locations of "struck by" and "caught between" hazards. • Implement lockout/tagout for repairs/adjustments/tooling changes. ☐ Use safe lifting practices for movement of heavy portable equipment ☐ Implement safe work practices for compressed air, pressurized systems (pneumatic/hydraulic), stored energy. ☐ ☒ Operate fuel-powered equipment in well ventilated location. ☒ Use safe practices for fuels, see Section B.3., "Commercial Chemical Products."

B.3 COMMERCIAL CHEMICAL PRODUCTS

EXPLANATORY NOTES, CLARIFICATIONS: Fuel for lawn equipment; sample preservatives used during groundwater sampling.

☐	**PRODUCTS REGULATED BY HAZARD COMMUNICATION STANDARD**	☐ Safety Data Sheets available, either on site or readily available within same work shift, containers labelled properly, workers trained/oriented on hazards ☐ For subcontractor use of chemical products, coordinate/discuss during safety meetings. ☐ Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☒	**FLAMMABLE/COMBUSTIBLE LIQUIDS**	☒ Proper storage (flam. storage cabinets, other storage precautions). ☒ Use proper fuel safety can (metal fuel can preferred). ☒ Control ignition sources. ☐ Grounding and bonding where appropriate.
☒	**ACIDS, CAUSTICS, OTHER CORROSIVES**	☒ Handle with care, use appropriate eye/face/skin protection. ☐ Eyewash, deluge shower, drench hose, hand washing (with water), as appropriate.
☒	**EMISSIONS FROM FUEL COMBUSTION, INDUSTRIAL PROCESSES** ☒ Gasoline ☒ Diesel ☒ Vehicle/equipment exhaust ☐ Other	☒ Position outdoor personnel upwind of exhaust source. ☐ Use blowers, fans to provide fresh air to work area and dissipate atmospheric hazards. ☐ Use respiratory protection for high levels of smoke, exhaust particulates, soot.
☐	**OTHER HAZARDS**	☐ Describe other hazardous substances and safety measures under "Explanatory Notes, Clarifications," above.
☐	**CHEMICAL/HAZMAT STORAGE** Check this when jobsite requirements include special provisions for chemical storage.	☐ Chemical storage cabinet, cage, storage room, or similar. ☐ Ensure incompatible chemicals are segregated. ☐ Provide secondary containment. ☐ Locate special safety equipment near chemical storage

PART C – APPROVALS, ACKNOWLEDGEMENTS

C.1. THA PREPARATION, REVIEW/APPROVAL SIGNATURES - THA typically prepared by project staff, reviewed/approved by Project Manager, Supervisor, qualified/knowledgeable designee, with support of HS personnel as deemed appropriate by the Project Manager.

	Printed Name	*Signature*	*Date*
THA PREPARED BY: (minimum one person)	Marissa Simpson		3/27/2018
THA REVIEWED/ APPROVED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*

C.2. FIELD CREW ACKNOWLEDGEMENTS

Please sign below to acknowledge you reviewed and understand this THA, participated in project safety briefing and had an opportunity to ask questions about the information herein.

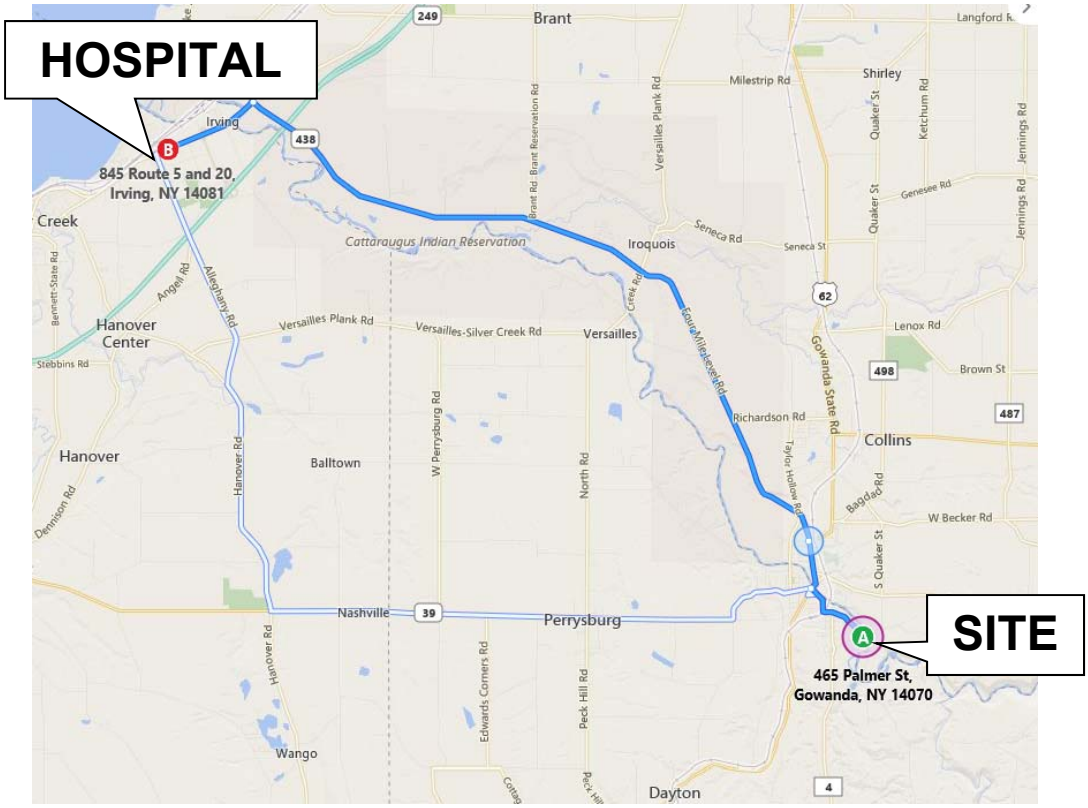
Printed Name	**Signature**	**Employee No.**	**Date**

SUBCONTRACTOR'S FIELD CREW

Please sign below to acknowledge that this THA was made available to you, and you had an opportunity to ask questions about the information herein.

Printed Name	**Signature**	**Company Name**	**Date**

ROUTE TO HOSPITAL and/or URGENT CARE FACILITY



Lakeshore Hospital
716-934-2654
845 Route 5 and 20
Irving, NY

Written Directions to Hospital from Site:

A **465 Palmer St, Gowanda, NY 14070**

↑	1.	Depart **Palmer St** toward Broadway Rd / CR-4	1.2 mi
↱	2.	Turn **right** onto **US-62 / RT-39 / W Main St**	466 ft
↰	3.	Turn **left** to stay on **US-62 / RT-39 / Buffalo St**	0.7 mi
↑	4.	Keep **straight** onto **RT-438 / Buffalo St**	11.8 mi, 15 min
↻	5.	At roundabout, take **4th** exit onto **US-20 / RT-5 / Erie Rd**	1.5 mi
	6.	Arrive at **US-20 / RT-5 / Main Rd** If you reach Seneca Rd, you've gone too far	

B **845 Route 5 and 20, Irving, NY 14081**

APPENDIX E

SITE INSPECTION CHECKLIST

Site Inspection Checklist
Palmer Landfill
Gowanda, New York

Date:
Inspected By:

Topic	Condition		Maintenance Performed	Remark (e.g. litter observed)
	Acceptable	Not Acceptable		
1. Vegetation Cover				
a. Landfill Site				
b. Drainage Ditch				
c. Seeding				
d. Fertilizing				
e. Topsoil replaced				
f. Removal of Undesired Vegetation				
2. Integrity of Drainage Ditches				
a. Sediment Build-up				
b. Pooling or Ponding				
c. Slope Intergrity				
d.Overall adequacy				
e.Anti-erosion Matting				
f. Lining				
g. Excavation				
h. Landfill Cap Replacement				
i. Fill				
j. Regrading				
k. Vegetative Cover Placement				
l. Stone Lining Replacement				
3. Integrity of Gas Vents				
a. Excavation				
b. Gravel Fill				
c. Vent Pipe				
d. Screen				
e. Cover				
4. Condition of Access Road				
a. Road Condition				
b. Gates/Locks				
c. Fill				
d. Grading				
e. Signs				
5. Integrity of Groundwater				
a. Monitoring Wells				
i. Drilling				
ii. Screening				
iii. Casing				
iv. Pipe				
v. Fill/Grout				
vi. Cap				
6. Integrity of Landfill Cap				
a. Erosion Damage				
b. Leachate Breakthrough				
c. Settlement				
d. Cracking				
e. Excavation				
f. Cover				
g. Compaction				
h. Testing				
i. Grading				
j. Vegetation Cover				
7. Condition of Creek: Bank, East Slope, 150' immediately upstream of concrete headwall				

APPENDIX F

COMMUNITY AIR MONITORING PLAN

During excavation activities, continuous air monitoring for volatile organic compounds (VOCs), particulates, and odor will be performed to ensure the work does not impact the community, as described below. The monitoring results and actions taken will be recorded and be made available for State (NYSDEC and NYSDOH) and County Health personnel to review.

F.1 Monitoring VOCs

VOCs will be monitored at the downwind perimeter of the immediate work area (exclusion zone) with a photoionization detector (PID) with a 10.6 electron Volt bulb capable of calculating 15-minute running average concentrations. Upwind concentrations will also be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The equipment will be calibrated at least daily in accordance with the manufacturer's instructions. Downwind VOC measurements will be compared against the following action levels:

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15- minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 parts per million (ppm) over background, work activities can resume with continued monitoring.
2. If total organic vapor levels at the downwind perimeter of the work area persist at levels more than 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the work area or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

F.2 Monitoring Dust

Continuous monitoring of particulate concentrations will be conducted at the upwind and downwind perimeters of the work area zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time

monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. Particulate levels will be compared to the following action levels:

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques (e.g., use of an on-site water truck to wet roads, excavations and stockpiles) will be employed. Clearing and grubbing of large areas will be done in stages to limit the area of exposed, un-vegetated soils vulnerable to dust production. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work will be stopped, and a re-evaluation of activities initiated. Work can resume if dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

F.3 Monitoring Odors

If nuisance odors are identified at the Site boundary, or if odor complaints are received, work will be halted, and the source of odors will be identified and corrected. Work will not resume until nuisance odors are controlled. NYSDEC and NYSDOH will be notified of all odor events and/or odor complaints.

Primary measures to be implemented to control odors, if necessary, include limiting the area of open excavations and stockpiles, shrouding open excavations with tarps and covers, and direct load-out of soils to trucks for off-Site disposal.