

**MALCOLM  
PIRNIE**

# **ENVIRONMENTAL MONITORING PLAN**

**Former American Valve  
Manufacturing Facility**

**Site No. 4-20-002  
Coxsackie, New York**

**New York State Department of  
Environmental Conservation**

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0331025

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## 1.0 INTRODUCTION

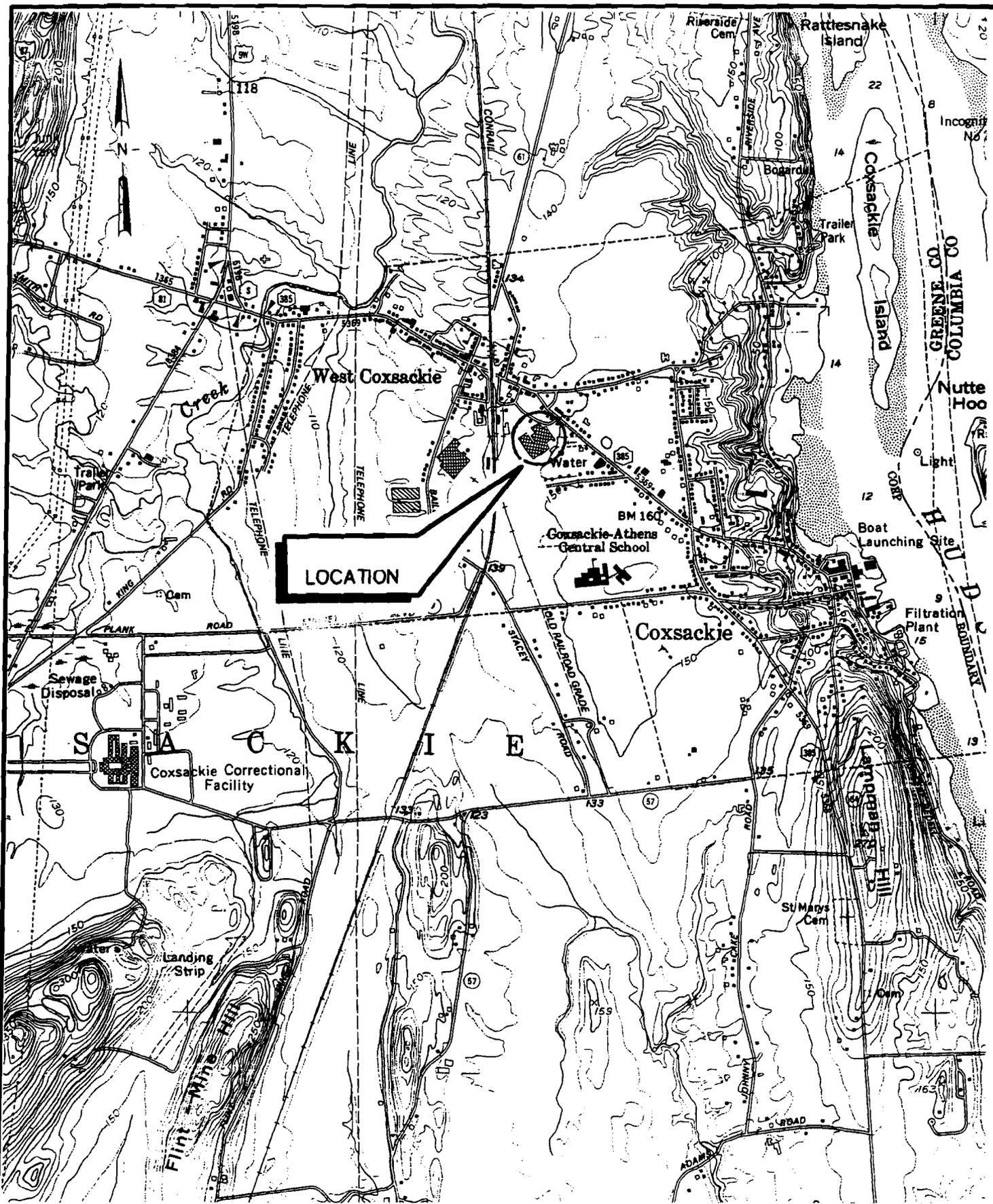
### 1.1 SITE DESCRIPTION

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The former American Valve Manufacturing (AVM) site is located in the Village of Coxsackie in Greene County, New York as shown on Figure 1-1. The property is located at 170 Mansion Street, which is also designated as County Route 385. The property covers approximately 15.5 acres and has an eight-foot high chain-link fence along its perimeter. A capped foundry sand landfill (disposal site) encompasses approximately 5 acres and is situated in the southwest portion of the property. The former AVM site is generally bounded by the CSX railroad right-of-way to the west, Cato Street to the northwest, Mansion Street to the east, and Spencer Boulevard to the south. Residential homes are present on the sides of the site along Cato and Mansion Streets and Spencer Boulevard. The nearest home is approximately 50 feet from the site. A Village cemetery and water tower are adjacent to the east-central edge of the property.

During the 2001, 2002, and part of the 2003 construction seasons, low temperature thermal desorption technology was used to treat on-site, solvent-contaminated soils. During the latter part of 2003, some solvent-contaminated soils were removed from the site for off-site treatment. These soils were generally located below and in close proximity to the former main building complex in the northern portion of the property. Following treatment, soil was sampled to demonstrate compliance with Universal Treatment Standard (UTS) levels. The treated soil was then used as backfill, generally in the excavations from which it had been originally removed. Prior to backfilling, all excavation walls and floors were sampled to confirm compliance with the Standards, Criteria and Guideline (SCG) levels established for the contaminants of concern. Additional clean soils were imported to the site to be used as supplemental backfill. These materials were generally used as grading material being deposited at, or near the final ground surface.

The landfill or "disposal site" was originally created by the dumping of foundry sands containing elevated concentrations of metals generated during the production of



NYS DOT QUAD.: HUDSON NORTH  
7.5 MINUTE SERIES, 1976



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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
AMERICAN VALVE MFG. CORP., COXSACKIE, NEW YORK

**SITE LOCATION MAP**

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**FIGURE 1-1**

valves at the AVM site. On- and off-site foundry sand wastes were consolidated into the disposal site during the 2001 and 2002 construction seasons under a contract implemented by New York State Department of Environmental Conservation (NYSDEC). The foundry sand disposal site was capped (closed) during the 2002 construction season, again under a contract implemented by the NYSDEC. The cap cross section generally consists of an intermediate cover layer, geosynthetic clay liner (GCL), 60 mil textured linear low density polyethylene (LLDPE) geomembrane, barrier protection layer, and vegetative layer (topsoil and seed). Five landfill gas collection sumps with vents to the ambient air were installed in the cap. The post-closure topography of the disposal site and the balance of the AVM site are shown on Plate 1.

## **1.2 PURPOSE**

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This Environmental Monitoring Plan (EMP) describes the procedures and protocols to be carried out for the long-term monitoring of groundwater, surface water, site drainage sediments, and landfill gas at the former American Valve Manufacturing site during the post-closure period. Additionally, this EMP describes the post-closure operations and maintenance procedures that will be performed during the monitoring period. This EMP describes the following:

- Locations of the sampling points;
- Sampling protocol and frequency;
- Sampling analysis;
- Record keeping; and
- Reporting requirements.

When implemented, this EMP will enable changes in groundwater and surface water quality to be documented. Groundwater monitoring will be performed to track potential migration of any residual volatile organic compound (VOC) contamination. Surface water and sediment monitoring will be performed at the site outfall in an effort to document any foundry sand and/or residual VOC migration through the site drainage system.

The execution and completion of the monitoring activities at the former AVM site should occur for a period of 30 years. Maintenance activities will also be necessary during that period. Based on future monitoring results, appropriate modifications to the EMP may be made.

## 2.0 BACKGROUND

### 2.1 WASTE CHARACTERIZATION

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The waste materials identified at the former AVM site generally consisted of two types. The facility is reported to have started as an iron and brass foundry in 1904, and subsequently operated as a brass foundry until its closure in 1986. Waste shell molds, consisting of fine sands and phenolic binders, and non-cohesive spent sands were disposed on the site. During the Remedial Investigation (RI), laboratory analysis showed high levels of zinc, copper, and lead in the foundry sand waste. In addition, over 50 percent of the foundry sand samples failed TCLP analysis for lead, resulting in the foundry sand being classified as hazardous. During the site closure construction, foundry sand waste was excavated from on- and off-site areas, and relocated to a landfill in the southwest portion of the property for permanent disposal.

Solvent-contaminated soil was another waste identified at the former AVM site. During the facility's operations, chlorinated hydrocarbon-based solvents were disposed through various pits and sumps located within the former main building complex. Laboratory analysis of groundwater and soil during the RI showed elevated levels of several VOCs and evidence of dense non-aqueous phase liquid (DNAPL). The primary contaminants were trichloroethene (TCE), tetrachloroethene (PERC), dichloroethene (DCE), and vinyl chloride. During the site closure construction, removal and low temperature thermal desorption (LTTD) technology was used to treat solvent-contaminated soil. Once treated soil was demonstrated to meet the specified UTS levels, it was used as backfill in the excavations. Prior to backfilling, all excavation faces were sampled to demonstrate compliance with the specified SCG levels.

## **2.2 SITE GEOLOGY**

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### **2.2.1 Climate**

The climate of New York State is generally considered humid continental and is characteristic of the northeastern United States. The nearest weather monitoring station to the site is located at the Albany County Airport, located approximately 30 miles north of Coxsackie. Precipitation for the region is nearly uniformly distributed throughout the year with an average annual precipitation of 36.5 inches. However, most of the precipitation during the summer months is associated with thunderstorms, which are shorter and more intense than normal precipitation events. Monthly average temperatures range from 33°F in January to 72.3°F in July. Prevailing winds at the site are from the north and northwest.

### **2.2.2 Regional Geology**

The consolidated deposits underlying this portion of Greene County consist of the Ordovician aged Normanskill and Deepkill Shales (Berdan, 1954). The Normanskill shale overlies the Deepkill shale and is characterized by gray arkosic sandstone with some chert and gray to black shale. The Deepkill shale is an interbedded unit, characterized by green siliceous shale, sandy shale, black shale and thin beds of limestone and chert. The Normanskill shale in Greene County is approximately 1,000 feet thick. The thickness of the Deepkill formation at Stuyvesant in Columbia County, to the east of the Hudson River, is at least 200 feet; however, the thickness in Greene County is unknown. The Normanskill and Deepkill shales are highly folded and fractured. The shale beds within the formation form intricate closed folds. However, the more competent beds of sandstone and chert form open folds. The more competent sandstone beds are broken by numerous fractures and joints.

The depth to the top of bedrock varies considerably in this portion of the Hudson River Valley. A north-south trending buried bedrock valley is present west of the site at the base of the escarpment to the west. This bedrock valley is at least 165 feet deep in some locations (Berdan, 1954). Bedrock is nearer the surface in the vicinity of the AVM site and has been shown to be as shallow as several tens of feet.

The unconsolidated deposits in Greene County have a thickness of 200 feet or more in some areas. The majority of the unconsolidated deposits of Greene County are comprised of glacial deposits. The surficial glacial deposits are overlain by alluvium along some streams.

The glacial deposits in the portion of the Hudson River Valley in which the site is located are characterized by glacial till which is overlain by glaciolacustrine sediments. These glaciolacustrine sediments are primarily varved silts and clays although glaciolacustrine sand units are also present (Cadwell, 1987). The Village of Coxsackie and the AVM site are mapped as being underlain by glaciolacustrine sands and glaciolacustrine silt and clay. The thickness of these glaciolacustrine sediments in the area of the site is approximately 40 feet. At depth, these deposits are underlain by glacial till.

### **2.2.3 Regional Hydrogeology**

Bedrock groundwater is derived mainly from the secondary porosity in fractures. Average well yields from these units are approximately six to 10 gallons per minute (Berdan, 1954). The depth to water within the Normanskill shales has a wide range, from one to 125 feet, with an average of 20 feet (Berdan, 1954). Groundwater flow within the bedrock regime is believed to be to the east, discharging to the Hudson River, a regional discharge area.

Groundwater within the unconsolidated deposits is primarily derived from primary porosity in the interstitial grain spaces. The glacial till, silts, and clays present in the overburden are not considered primary sources of potable groundwater due to their low permeabilities. Regional groundwater flow within these units is towards the Hudson River, although Coxsackie Creek, located northwest of the site, may be a local groundwater discharge zone.

### **2.2.4 Regional Surface Water Hydrology**

All of Greene County, with the exception of the western corner, is drained by tributaries of the Hudson River. The Hudson River is located approximately 3,000 feet east of the site and has an elevation of roughly 10 feet above mean sea level (amsl). The

longest stream in the area is the Catskill Creek, which runs parallel to the northeast Catskill Mountain front and drains a substantial part of the Hooeberge. Cocksackie Creek, a north-flowing stream which is tributary to the Hudson River, is located approximately 5,000 feet to the west of the AVM site.

The AVM facility and the Village of Cocksackie are served by a municipal water supply system, which obtains its water from the Climax and Medway reservoirs that are located approximately six to eight miles west of the site.

## 3.0 ENVIRONMENTAL MONITORING

### 3.1 GENERAL

---

The semi-annual monitoring program is designed to evaluate conditions at the former American Valve Manufacturing facility over time. Furthermore, the program will assist in evaluating the long-term effectiveness of remedial activities performed at the site. The following section details the monitoring locations and procedures that will be used to evaluate groundwater, surface water and sediment quality.

### 3.2 GROUNDWATER SAMPLING

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Groundwater samples will be collected from the wells listed in Table 3-1 on a semi-annual basis beginning upon completion of remedial activities. Well construction logs for each of the monitoring wells are included in Appendix A. The locations of each monitoring well are shown on Plate 1.

Semi-annual groundwater monitoring will be conducted for a period of three years, after which the sampling frequency and sample collection points may be reduced based on the results of the initial three-year monitoring period. Low-flow purging techniques will be used to collect representative, low-turbidity samples. During sampling, field parameters will be measured to evaluate geochemical characteristics of groundwater at the site. These parameters will include temperature, pH, specific conductance, and turbidity. Groundwater samples will be analyzed for total lead and volatile organic compounds (VOCs) by USEPA Methods 6010B and 8260, respectively with NYSDEC Analytical Services Protocol (ASP) Category B deliverables.

Prior to groundwater sampling, the depth to groundwater will be measured in each well and the groundwater elevation above mean sea level will be evaluated for each monitoring point.

**TABLE 3-1  
MONITORING WELL SUMMARY  
FORMER AMERICAN VALVE MANUFACTURING FACILITY**

<b>Well ID</b>	<b>Total Depth (feet, bgs)</b>	<b>Screened Interval (feet, bgs)</b>	<b>Measuring Point Elevation (feet, amsl)</b>
MPI-1S	20.5	9.8 - 19.8	145.64
MPI-1D	50.0	40.0 - 50.0	145.75
MW-2S	20.5	9.5 - 19.5	148.62
MW-3S	21.0	10.0 - 20.0	151.06
MW-3D	31.0	25.0 - 30.0	151.57
MW-4S	15.0	4.0 - 14.0	145.66
MW-5S	15.0	4.0 - 14.0	149.25
MW-5D	36.0	25.0 - 35.0	148.90
MPI-6S	20.5	10.0 - 20.0	150.96
MPI-7S	20.5	10.0 - 20.0	153.77
MPI-7D	35.1	25.1 - 35.1	154.77
MW-8SR	15.5	5.5 - 15.5	151.92
MW-9S	15.0	4.0 - 14.0	145.17
MW-10S	15.0	4.0 - 14.0	147.39
MW-11S	15.0	4.0 - 14.0	148.17
MPI 12S	13.5	3.0 - 13.0	152.26
MW-13D	51.0	40.0 - 50.0	151.46
MW-14S	15.0	4.0 - 14.0	151.75
MW-14D	46.0	35.0 - 45.0	151.27
MPI-15S	20.0	9.5 - 19.5	153.98
MPI-15D	32.0	24.5 - 29.5	154.33
MW-16S	24.0	13.0 - 23.0	151.20
MW-16D	41.0	30.0 - 40.0	150.71
MPI-17*	16.5	6.0 - 16.0	152.14
MW-18S*	15.0	4.0 - 14.0	151.92
MW-18D*	26.0	20.1 - 25.1	151.99
MW-19S	15.0	4.0 - 14.0	151.82
MW-19D	41.0	30.0 - 40.0	151.74
MW-20S	15.0	4.0 - 14.0	149.10
MW-20D	41.0	30.0 - 40.0	149.18
MW-21S	15.0	4.0 - 14.0	148.58
MW-21D	41.0	30.0 - 40.0	148.97
MW-22S	13.0	3.0 - 13.0	156.35
MW-22D	35.0	25.0 - 35.0	155.79
MW-23S	13.0	3.0 - 13.0	149.92
MW-23D	32.5	22.5 - 32.5	149.51

bgs - below ground surface

amsl - above mean sea level

\* Contingent Monitoring Well

### **3.2.1 Groundwater Monitoring Well Sampling**

Detailed groundwater sampling procedures are provided in Appendix B. Prior to collecting groundwater samples, each monitoring well will be inspected for the following:

- Damage to the protective casing;
- Erosion of soil in the area immediately surrounding the casing;
- Operable lock; and
- Damage to well surface seal.

Each monitoring well will be purged with a submersible pump prior to sampling. Field parameters will be measured before, during, and after purging. Samples will be collected in laboratory prepared bottles in the following order:

1. In-situ measurements: temperature, pH, specific conductance, and turbidity;
2. Volatile Organic Compounds; and
3. Total lead.

Purged well water will be discarded on the ground adjacent to each well. In the event that a monitoring well is surrounded by an impermeable surface, purge water will be discarded at the nearest permeable area.

Sample preservation, handling and transportation, chain-of-custody, and quality assurance/quality control procedures are also described in Appendix B.

### **3.2.2 Residential Well Sampling**

Residences and businesses located in the Village of Coxsackie are served by a municipal water supply system, which obtains its water from the Climax and Medway reservoirs, located six to eight miles west of the former AVM facility. Previously, groundwater samples were collected from three, large diameter, dug wells on residential properties in the area of the former AVM site. These wells were not used for potable consumption. Following a review of analytical results from residential well samples, the New York State Department of Health did not require further sampling or evaluation of these residential water wells. Based on historical analytical data evaluation, limitations

of groundwater use, and sampling inefficiencies, the residential wells will not be included in the long-term monitoring program.

Two former production wells located at the former AVM facility have been abandoned in accordance with NYDEC guidelines. No other water wells are known to exist in the area immediately adjacent to the AVM site.

### **3.3 SURFACE WATER AND SEDIMENT SAMPLING**

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Surface water and sediment sampling will be conducted at an outfall located near the northern corner of the foundry sand disposal site. The sample location point is shown on Plate 1. If no water is present at the time of sampling, only a sediment sample will be collected from the outfall area. During surface water sampling, field parameters will be measured to evaluate geochemical characteristics of the surface water. These parameters will include temperature, pH, specific conductance, and turbidity. The water and sediment samples will be analyzed for total lead, VOCs by USEPA Method 8260, and semi-volatile organic compounds (SVOCs) by USEPA Method 8270 with NYSDEC ASP Category B Deliverables. Surface water and sediment sampling may be discontinued after evaluation of the first three years of semi-annual sampling data.

Details concerning surface water sampling procedures, sample preservation, handling and transportation, chain-of-custody, and quality assurance/quality control procedures are described in Appendix B.

No other surface water bodies are located at or immediately adjacent to the AVM site.

### **3.4 LANDFILL GAS MONITORING**

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Gas vents were installed in the foundry sand disposal site to prevent the build up of potentially explosive gases commonly associated with the biological metabolism of organic wastes. The production and accumulation of such gases under the cap is not likely, as waste in the former AVM disposal site is largely composed of foundry sands. Regardless, the perimeter of the disposal site will be inspected with a meter capable of

measuring air concentrations of methane (CH<sub>4</sub>), oxygen gas (O<sub>2</sub>), carbon dioxide (CO<sub>2</sub>) and will be managed as outlined in the Response/Contingency Plan presented in Section 4.2.1 of this EMP. Perimeter gases that are measured in concentrations greater than 25 percent of the lower explosive limit (LEL).

## 4.0 OPERATIONS AND MAINTENANCE PLAN

### 4.1 GENERAL

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The vegetated cover of the "disposal site," or landfill cap, and the vegetated cover of the balance of the site will require mowing and maintenance. The landfill and surrounding areas will be mowed on an as-needed basis to prevent the establishment of deep-rooted vegetation. Vegetation that restricts the flow of surface water through on-site swales and drainage courses will be similarly maintained. At a minimum, mowing will occur each spring and fall. Access roads on the site will be plowed during the winter months on an as-needed basis.

### 4.2 SITE INSPECTION PROCEDURES

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The landfill cap and surrounding property will be inspected on a semi-annual basis over a 30-year monitoring period. These inspections will help to identify hazards, potential hazards, damage, and deterioration so that appropriate response actions may be taken. Actions may involve minor repair or, if necessary, a contingency action. Summaries of these inspections will be submitted to the NYSDEC.

A checklist-type inspection form (see Appendix C) will be used to document the facility inspections. The following table summarizes the items to be inspected and related concerns:

Inspection Item	Concerns	Inspection Frequency
Capped Area	<ul style="list-style-type: none"><li>- Erosion damage</li><li>- Burrowing rodents</li><li>- Undesirable vegetation</li><li>- Bare areas in vegetative cover</li><li>- Settlement, low spots, or ponding</li><li>- Evidence of cracks or subsidence</li></ul>	Semi-annually and following major rainfall events*

Inspection Item	Concerns	Inspection Frequency
Paved Areas and Access Roads	<ul style="list-style-type: none"> <li>- Surface breakup or potholes</li> <li>- Settlement, low spots or ponding</li> </ul>	Semi-annually and following major rainfall events*
Site Drainage System	<ul style="list-style-type: none"> <li>- Erosion damage</li> <li>- Obstructions/Animals</li> <li>- Vegetation or sedimentation in swales and culverts</li> <li>- Ponding</li> <li>- Sloughing</li> </ul>	Semi-annually and following major rainfall events*
Monitoring Wells	<ul style="list-style-type: none"> <li>- Damage to protective casing</li> <li>- Locks and seals intact and wells secured</li> </ul>	Semi-annually and during well sampling
Gas Vents	<ul style="list-style-type: none"> <li>- Broken or damaged risers</li> <li>- Broken or missing insect screens</li> </ul>	Semi-annually and following turf maintenance
Site Security	<ul style="list-style-type: none"> <li>- Damaged gates or signs</li> <li>- Damaged perimeter security fence</li> <li>- Locks intact</li> </ul>	Semi-annually
* A major rain event is defined as a five-year, 24-hour storm.		

#### 4.2.1 Response/Contingency Plan

If problems are identified during the inspections, they must be reported to the NYSDEC and the following responses initiated. In the event that the problem involves damage to the cover system due to erosion of the cap system or significant differential settlement, gas buildup, or similar problem, the NYSDEC will immediately be contacted and the appropriate actions taken as outlined below:

- Perform necessary repairs to the site drainage controls, cap vegetative layer or gas vents. All eroded areas will be brought back to final closure grades according to the procedures described for constructing the cap system. All bare spots in the soil portion of the cap will be reseeded and fertilized as necessary. Vegetative cover will be mowed at least twice a year to promote

adequate growth. Any undesirable species will be removed if their presence is expected to deteriorate the integrity of the cap system.

- The NYSDEC will assess any settlement or subsidence and will evaluate for the effect on the overall positive drainage of storm water off the capped landfill. Repairs to the cover will be required if an evaluation of the settlement or subsidence show that the functionality of the cap has been impaired. Repairs to the cap system, other than the vegetative layer, shall be made only following approval by the NYSDEC or its representatives.
- The NYSDEC shall immediately be notified if gases measured at the perimeter of the disposal site are greater than 25 percent of the LEL.

#### **4.2.2 Vandalism**

Vandalism will be reported to the Village of Coxsackie Police Department. If vandal(s) gain entry to the site, appropriate measures will be taken to eliminate or restrict future access. Damage caused by vandalism will be repaired immediately.

## **5.0 REPORTING AND RECORD KEEPING**

### **5.1 RECORD KEEPING**

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All data collected in the field will be recorded in indelible ink in bound field notebooks. Notebook entries will include the time, date, personnel on-site, weather conditions, and all other information pertinent to site monitoring.

### **5.2 REPORTING REQUIREMENTS**

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The results of the EMP will be summarized in a semi-annual report which will include the following:

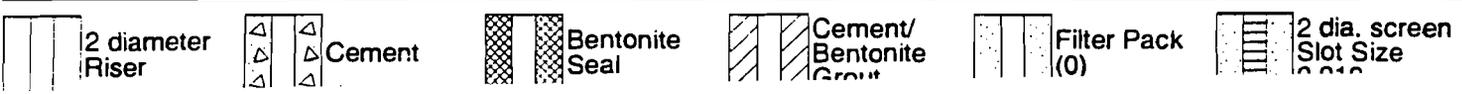
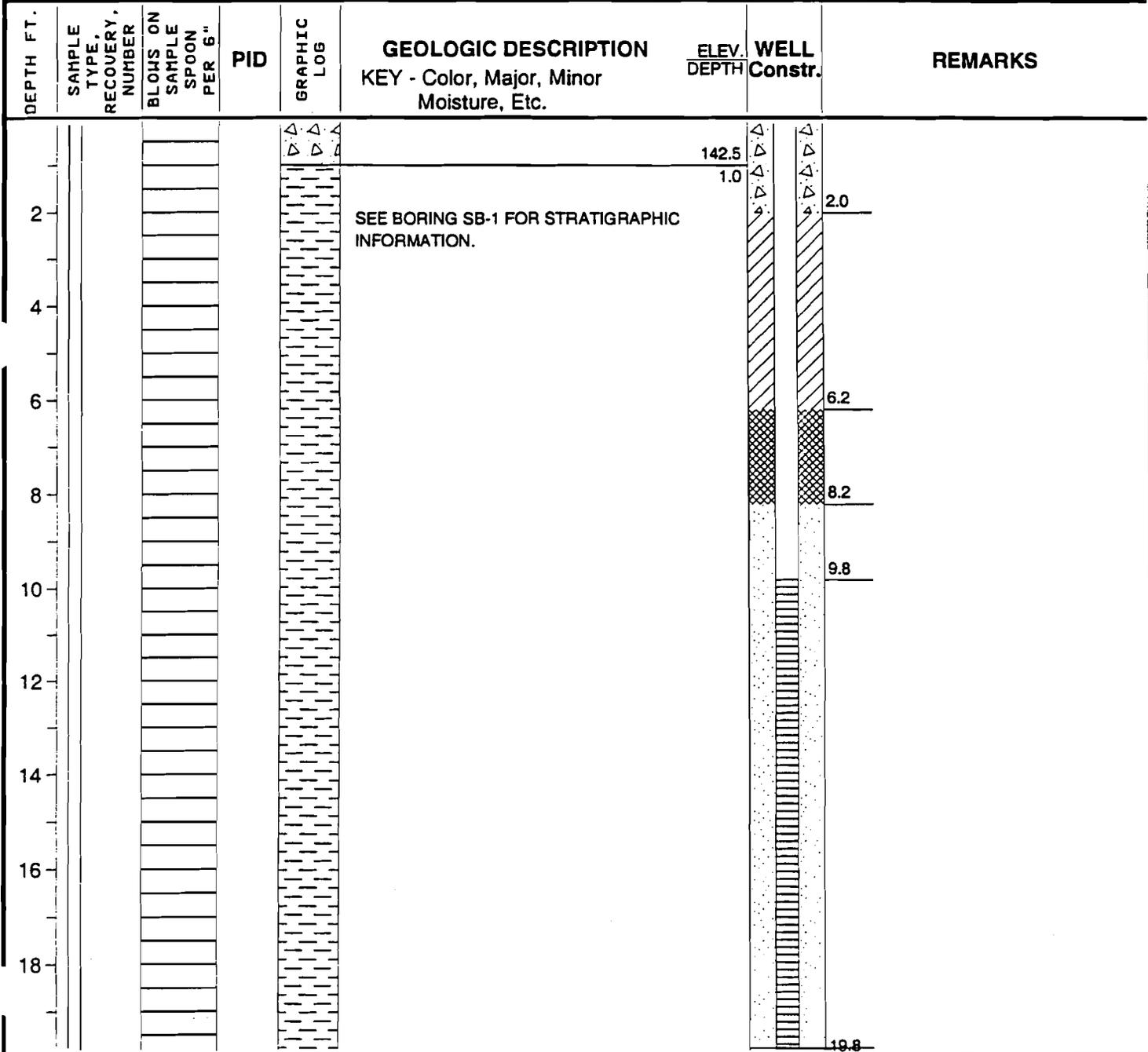
- Monitoring well purge logs;
- Results of groundwater sample analyses in summary tables;
- Appended laboratory data sheets;
- A comparison of analytical results to historic data, NYSDEC Class GA standards, and USEPA MCLs;
- Potentiometric contour map for the shallow glaciolacustrine varved silt and clay unit;
- A discussion of the semi-annual inspections of the monitoring wells and gas vents, including a description of repairs, if required; and
- A discussion of the semi-annual inspections of the disposal site capped area, paved areas and access roads, site drainage system, and site security fence and locks.

The semi-annual report will be prepared within 60 days of receipt of the analytical data from each sampling event.

**APPENDIX A**

Monitoring Well Construction Logs

PROJECT	American Valve	LOCATION	Coxsackie, NY			SHEET	1 OF 2
CLIENT	NYSDEC	PROJECT No.	0266-312				
DRILLING CONTRACTOR	SJB SERVICES Inc.				MEAS. PT. ELEV.	145.64	
PURPOSE	Remedial Investigation				GROUND ELEV.	143.5	
WELL MATERIAL	PVC				DATUM	Grade	
DRILLING METHOD(S)	Hollow Stem Auger	SAMPLE	CORE	CASING	DATE STARTED	8/12/93	
DRILL RIG TYPE	CME 550	TYPE	SS	NX	HSA	DATE FINISHED	8/13/93
GROUND WATER DEPTH		DIA.	2"	2	6 1/4	DRILLER	K SWINICH
MEASURING POINT	PVC	WEIGHT	140 #			PIRNIE STAFF	C GAULE
DATE OF MEASUREMENT		FALL	30"				



# MALCOLM PIRNIE

## TEST BORING LOG

BORING No. MPI-1S

PROJECT American Valve

LOCATION Cocksackie, NY

SHEET 2 OF 2

CLIENT NYSDEC

PROJECT No. 0266-312

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOBS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
						123.0		
						20.5		

 2 diameter Riser

 Cement

 Bentonite Seal

 Cement/Bentonite Grout

 Filter Pack (0)

 2 dia. screen Slot Size



# MALCOLM PIRNIE

## TEST BORING LOG

BORING No. MPI-1D

PROJECT American Valve

LOCATION Cossackie, NY

SHEET 2 OF 3

CLIENT NYSDEC

PROJECT No. 0266-312

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
22								
24								
26								
28								
30								
32								
34								
36						36.0		
38						38.3		
40						40.0		
42								
44								

2 diameter Riser

Cement

Bentonite Seal

Cement/Bentonite Grout

Filter Pack (0)

2 dia. screen Slot Size

# MALCOLM PIRNIE

## TEST BORING LOG

BORING No. MPI-1D

PROJECT American Valve

LOCATION Coxsackie, NY

SHEET 3 OF 3

CLIENT NYSDEC

PROJECT No. 0266-312

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
48								
50						93.6 50.0	 50.0	

2 diameter Riser	Cement	Bentonite Seal	Cement/Bentonite Grout	Filter Pack (O)	2 dia. screen Slot Size
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# MALCOLM PIRNIE

## TEST BORING LOG

**BORING No. MW-2S**

PROJECT <b>AVM</b>	LOCATION <b>Coxsackie, New York</b>	SHEET <b>1 OF 2</b>
CLIENT		PROJECT No. <b>0331025</b>
DRILLING CONTRACTOR <b>SLC</b>		MEAS. PT. ELEV.
PURPOSE <b>Environmental Monitoring</b>		GROUND ELEV.
WELL MATERIAL <b>2" PVC</b>		DATUM
DRILLING METHOD(S) <b>6 1/4" HSA</b>	SAMPLE	CORE
DRILL RIG TYPE <b>TMR</b>	TYPE	
GROUND WATER DEPTH	DIA.	"
MEASURING POINT	WEIGHT	#
DATE OF MEASUREMENT	FALL	"
		DATE STARTED <b>12/17/03</b>
		DATE FINISHED <b>12/17/03</b>
		DRILLER <b>Ron Brown</b>
		PIRNIE STAFF <b>D. Zehrhuhs</b>

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
0.8	1	1	0		Dark brown clay with trace gray clay; firm, dry. 0-0.3': Frost.			
2.0	2	2	0		Same as above. No gray clay. Medium plasticity, slightly moist. 0-0.2': Slough.	2.0		
4.0	2	2	0		Same as above. Firm, dry. 0-0.2': Slough. 1-1.2': Trace gray clay.	4.0		
6.0	2	2	0		Same as above. Trace gray clay throughout sample. 1.5-1.6': Moist.	6.0		6.0
8.0	2	2	0		Alternating bands of dark brown clay; firm, low plasticity, dry and dark brown clay; soft, medium plasticity, dry. Some gray clay throughout the sample.	8.0		8.0
10.0	2	2	0		Same as above. Predominantly gray clay. Firm bands were slightly moist; soft bands were moist.	10.0		
12.0	2	2	0		0-1': Same as above. All gray clay. 1-2': No alternating bands. Gray clay; soft, medium plasticity, slightly moist.	12.0		
14.0	1	2	0		Same as above. Banding present, but not as pronounced.	14.0		
16.0	1.5	2	0		Gray clay; soft, medium plasticity, slightly moist. 0-1': Moist.	16.0		
18.0	2	2	0		Same as above.	18.0		19.5

PROJECT **AVM**

LOCATION **Coxsackie, New York**

SHEET **2** OF **2**

CLIENT

PROJECT No. **0331025**

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
						20.0		20.5
						20.5		







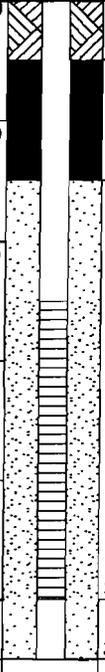
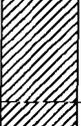
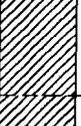
PROJECT **AVM**

LOCATION **Coxsackie, New York**

SHEET **2 OF 2**

CLIENT

PROJECT No. **0331025**

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
		WTH				20.0		
	2		0		soft, high plasticity, dry. 0-0.2': Slough. Same as above. No alternating bands. Gray clay; soft, high plasticity, slightly moist. 0-0.4': Slough.			Musty odor.
22		WTH				22.0		
	2	1 1	0		No alternating bands. Gray clay; slightly soft, high plasticity, slightly moist. 0-0.5': Slough. 0.5-1': Alternating bands of gray clay; slightly soft, high plasticity, slightly moist and gray clay; soft, high plasticity, moist.			
24		WTH				24.0		
	2		0		Same as above. 0-0.1': Slough. 0.1-1': Three 1" thick bands of gray clay; soft, moist.			Musty odor.
26		WTH				26.0		
	2		0		Same as above. Loose, low plasticity.			
28		WTH				28.0		
	2		0		Alternating bands of gray clay; slightly soft, high plasticity, slightly moist and gray clay; soft, high plasticity, slightly moist. 1-1.3', 1.8-2': Gray clay with some silt; very soft, wet. 1.4-1.8': Gray clay; very soft, wet.			
30						30.0		
						31.0		





PROJECT <b>AVM</b>	LOCATION <b>Coxsackie, New York</b>	SHEET <b>1 OF 2</b>
CLIENT	PROJECT No. <b>0331025</b>	
DRILLING CONTRACTOR <b>SLC</b>	MEAS. PT. ELEV.	
PURPOSE <b>Environmental Monitoring</b>	GROUND ELEV.	
WELL MATERIAL <b>2" PVC</b>	DATUM	
DRILLING METHOD(S) <b>6 1/4" HSA</b>	SAMPLE	CORE
DRILL RIG TYPE <b>TMR</b>	TYPE	
GROUND WATER DEPTH	DIA.	"
MEASURING POINT	WEIGHT	#
DATE OF MEASUREMENT	FALL	"
	DATE STARTED <b>12/18/03</b>	
	DATE FINISHED <b>12/18/03</b>	
	DRILLER <b>Ron Brown</b>	
	PIRNIC STAFF <b>D. Zehrhuhs</b>	

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
0.6		3	0		0-0.2': Snow/frost. 0.2-0.4': Dark brown clay; firm, dry. 0.4-0.6': Dark brown medium sand; loose, slightly moist.			
2	0.8	3	0		0-0.4': Dark brown clay with trace gray clay; firm, dry. 0.4-0.8': Soft, medium plasticity, moist.	2.0		
4	2	3	0		Dark gray clay; firm, dry. 0-0.3': Slough.	4.0		
6	2	7	0					
6		9	0					
6	2	6	0		Same as above. Slightly soft, high plasticity, dry. 0-1.2': Slough.	6.0		
8		4	0					
8	2	3	0		Same as above.	8.0		
10		3	0					
10	2	3	0		Alternating bands of dark gray clay; soft, high plasticity, slightly moist and dark gray clay; slightly soft, rigid, slightly moist.	10.0		
12		2	0					
12	2	2	0		No alternating bands. Dark gray clay; very soft, slightly moist. 0-0.6': Slightly soft.	12.0		
14		2	0					
14	2	2	0		Same as above. Soft. 0-0.3': Slough.	14.0		
16		1	0					
16	2	1	0					
16		1	0					
16		WTH	0		Same as above.	16.0		
18		1	0					
18	2	1	0					
18		1	0					
18		WTH	0		Same as above. Some alternating bands. Same as described in the 10-12' sample.	18.0		

PROJECT **AVM**

LOCATION **Coxsackie, New York**

SHEET **2 OF 2**

CLIENT

PROJECT No. **0331025**

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
		2				20.0		
	0	WTH	0	[Diagonal Hatching]	No alternating bands. Dark gray clay; soft, high plasticity, slightly moist.			
22		WTH	0		Same as above.	22.0		
	2		0					
24		WTH	0		Same as above. 1-1.1': Wet.	24.0		
	2		0					
26		WTH	0		Same as above. Slightly soft.	26.0		
	2		0					
28		WTH	0		Same as above. Alternating bands. Same as described in the 10-12' sample.	28.0		
	2		0					
30		WTH	0		Same as above. 0-0.3': Slough.	30.0		
	2		0					
32		WTH	0	Same as above. Very soft, moist.	32.0			
	2		0					
34		WTH	0	Same as above. Slightly soft, slightly moist. 1.5-1.8': Very soft, moist.	34.0			
	2		0					
36						36.0		

# MALCOLM PIRNIC

## TEST BORING LOG

BORING No. MPI-6S

PROJECT	American Valve	LOCATION	Coxsackie, NY	SHEET	1 OF 2
CLIENT	NYSDEC	PROJECT No.	0266-312		
DRILLING CONTRACTOR	SJB SERVICES Inc.	MEAS. PT. ELEV.	150.96		
PURPOSE	Remedial Investigation	GROUND ELEV.	148.4		
WELL MATERIAL	PVC	DATUM	Grade		
DRILLING METHOD(S)	Hollow Stem Auger	SAMPLE	CORE	CASING	DATE STARTED
DRILL RIG TYPE	CME 550	TYPE	SS	HSA	8/23/93
GROUND WATER DEPTH		DIA.	2"	6 1/4"	DATE FINISHED
MEASURING POINT	PVC	WEIGHT	140 #		8/23/93
DATE OF MEASUREMENT	FALL	30"			DRILLER
					K SWINICH
					PIRNIC STAFF
					C GAULE

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOBS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
10								
9	S-1		ND	△△△	Dkbr \$, sfS, tfG; bits of plastic			Dry
5					(FILL)	146.4	2.0	
5						2.0		
4	S-2		ND	×××	Br \$, &fS; mtld gr			Dry
5						144.4		
2						4.0		
4	S-3		ND		Br \$yC; occ fS seam, mtld gr			Dry
6							6.0	
6	S-4		ND		Br \$yC; mtld Dkbr			Dry 3.75 tons/sqft
8							8.0	
10	S-5		ND		Gr \$yC; mtld br			Dry/Moist 2.75 tons/sqft
12							10.0	
12	S-6		ND		Gr \$yC			Moist/Wet 1.0 tons/sqft 0.5 tons/sqft
14								
14	S-7		ND		As above			WET 0.1 tons/sqft
16								
16	S-8	WOH	ND		Gr \$yC, vvd			WET
18		WOH						
18	S-9	WOH	ND		Gr C&\$; vvd			WET
20		1						
20	S-10	WOH	ND		Gr C&\$; vvd			WET
		WOH						
		WOH						
		WOH						
		WOH						

2 diameter Riser    
 Cement    
 Bentonite Seal    
 Cement/Bentonite Grout    
 Filter Pack (0)    
 2 dia. screen Slot Size

# MALCOLM PIRNIE

## TEST BORING LOG

BORING No. MPI-6S

PROJECT American Valve

LOCATION Coxsackie, NY

SHEET 2 OF 2

CLIENT NYSDEC

PROJECT No. 0266-312

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOBS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
						127.9		
					Bottom of Boring	20.5		



2 diameter Riser



Cement



Bentonite Seal



Cement/  
Bentonite  
Grout



Filter Pack  
(0)



2 dia. screen  
Slot Size  
0.010

# MALCOLM PIRNIE

## TEST BORING LOG

BORING No. MPI-7S

PROJECT	American Valve	LOCATION	Coxsackie, NY	SHEET	1 OF 2
CLIENT	NYSDEC	PROJECT No.	0266-312		
DRILLING CONTRACTOR	SJB SERVICES Inc.			MEAS. PT. ELEV.	153.77
PURPOSE	Remedial Investigation			GROUND ELEV.	151.4
WELL MATERIAL	PVC			DATUM	Grade
DRILLING METHOD(S)	Hollow Stem Auger	SAMPLE		DATE STARTED	8/24/93
DRILL RIG TYPE	CME 550	TYPE	SS	DATE FINISHED	8/24/93
GROUND WATER DEPTH		DIA.	2"	DRILLER	K SWINICH
MEASURING POINT	PVC	WEIGHT	140 #	PIRNIE STAFF	C GAULE
DATE OF MEASUREMENT	FALL		30"		

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOBS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
0		2						
0.5	S-1	3	ND		Br \$, &fS, tfg;l cinders roots and reeds			Dry
1		2			(FILL/MARSH)			
1.5		1						
2		2						2.0
2.5	S-2	2	ND					
3		2						
3.5		3						
4		WOH						
4.5	S-3	3	ND					
5		3						
5.5		4				145.4		
6		8			Br \$, &fS; mtld gr	6.0		
6.5	S-4	5	ND		Br \$yC, mtld gr	144.9		6.7 Wet/Moist
7		7				6.5		
7.5		7						
8		PUSH						
8.5	S-5	3	ND		Gr C&\$			8.5 Moist
9		4						
9.5		3						
10		WOH						10.0
10.5	S-6	1	ND		Gr \$yC; vvd			Moist WET
11		2						
11.5		2						
12		2						
12.5	S-7	3	ND		Gr \$yC; vvd			WET
13		3						
13.5		2						
14		WOH						
14.5	S-8	WOH	ND		Gr \$yC; vvd			WET
15		WOH						
15.5		WOH						
16		2						
16.5	S-9	WOH	ND		Gr \$yC; vvd			WET
17		2						
17.5		2						
18		WOH						WET
18.5		WOH						
19		WOH						
19.5		WOH						20.0

 2 diameter Riser	 Cement	 Bentonite Seal	 Cement/Bentonite	 Filter Pack (0)	 2 dia. screen Slot Size
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# MALCOLM PIRNIE

## TEST BORING LOG

BORING No. MPI-7S

PROJECT American Valve

LOCATION Cossackie, NY

SHEET 2 OF 2

CLIENT NYSDEC

PROJECT No. 0266-312

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOBS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
						130.9		
						20.5		
					Bottom of Boring			

 2 diameter Riser	 Cement	 Bentonite Seal	 Cement/Bentonite	 Filter Pack (N)	 2 dia. screen Slot Size
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# MALCOLM PIRNIE

## TEST BORING LOG

BORING No. MPI-7D

PROJECT **AVM**

LOCATION **Coxsackie, New York**

SHEET **2 OF 2**

CLIENT **NYS Dept. of Environmental Conservation**

PROJECT No. **0331025**

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
22				[Diagonal Hatching]	Gray; clay; moist; no odors observed.	20.0	[Diagonal Hatching]	
24			Gray; clay; moist; no odors observed.		24.0	[Solid Black]	24.0	
26			Gray; clay; soft; no odors observed.		30.0	[Dotted]	26.0	
30				[Diagonal Hatching]	Gray; clay; soft; no odors observed.	30.0	[Dotted]	
32								
34								
36						36.0	36.0	



# MALCOLM PIRNIC

## TEST BORING LOG

**BORING No. MW-9S**

PROJECT **AVM**

LOCATION **Coxsackie, New York**

SHEET **1 OF 1**

CLIENT

PROJECT No. **0331025**

DRILLING CONTRACTOR **SLC**

MEAS. PT. ELEV.

PURPOSE **Environmental Monitoring**

GROUND ELEV.

WELL MATERIAL **2" PVC**

DATUM

DRILLING METHOD(S) **6 1/4" HSA**

SAMPLE

CORE

CASING

DATE STARTED **12/16/03**

DRILL RIG TYPE **TMR**

TYPE

DATE FINISHED **12/16/03**

GROUND WATER DEPTH

DIA.

"

DRILLER **Ron Brown**

MEASURING POINT

WEIGHT

#

PIRNIC STAFF **D. Zehrhuhs**

DATE OF MEASUREMENT

FALL

"

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
0	1	9	0		Dark brown silt with some dark gray streaks; loose, dry. 0-0.5': Snow/frost.			
2	2	12	0		Same as above. 1.2-2': Slightly moist. 1.6-2': Brown clay; firm, low plasticity, slightly moist.	2.0		2.0
4	2	5	0		Brown clay; firm, low plasticity, dry.	4.0		
6	2	10	0		Same as above. 0-0.5': Slough. 1.3-2': Some gray clay with trace silt.	6.0		
8	2	3	0		0-1.5': Dark gray clay with some brown clay; slightly moist. Moisture and plasticity increase with depth. 1.5-2': Wet.	8.0		
10	2	1	0		Same as above. Dark gray clay with trace silt; moist. 0-0.5': Slough.	10.0		
12	2	1	0		Same as above. Very moist. 0-0.5': Slough.	12.0		
14						14.0		14.0
						15.0		15.0



PROJECT <b>AVM</b>	LOCATION <b>Coxsackie, New York</b>	SHEET <b>1 OF 1</b>
CLIENT		PROJECT No. <b>0331025</b>
DRILLING CONTRACTOR <b>SLC</b>		MEAS. PT. ELEV.
PURPOSE <b>Environmental Monitoring</b>		GROUND ELEV.
WELL MATERIAL <b>2" PVC</b>		DATUM
DRILLING METHOD(S) <b>6 1/4" HSA</b>	SAMPLE	CORE
DRILL RIG TYPE <b>TMR</b>	TYPE	
GROUND WATER DEPTH	DIA.	"
MEASURING POINT	WEIGHT	#
DATE OF MEASUREMENT	FALL	"
		DRILLER <b>Ron Brown</b>
		PIRNIC STAFF <b>D. Zehrhuhs</b>

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
0	1	2	0		Brown-gray fine grained sand with trace gray, angular gravel (0.5-1" diam.); loose, slightly moist. 0-0.3': Snow/frost.			
2	0.8	2	0		Brown-gray medium grained sand with some gray, angular gravel (0.5-1" diam.); loose, slightly moist.	2.0		2.0
4	1.6	5	0		Brown medium-coarse grained sand; compact, slightly moist. 0-0.5': Slough.	4.0		3.0
6	2	3	0		Brown clay with trace gray clay; firm, dry. 0-0.2': Slough. 0.2-0.8': Brown medium-coarse grained sand; compact, slightly moist.	6.0		
8	2	4	0		Same as above. Slightly moist. Some gray clay. A few 1" bands of gray clay with silt; moist. 0-0.2': Slough.	8.0		
10	2	6	0		Same as above. Gray clay concentration increases with depth. Predominantly gray clay in bottom foot of sample; medium plasticity, moist. 0-0.3': Slough.	10.0		
12	2	5	0		0-0.7': Dark brown clay with trace gray clay and trace gray, angular gravel (0.1-0.3" diam.); wet. 0.7-1.3': Dark gray clay with trace brown clay; soft, high plasticity, slightly moist. 1.3-2': Dark gray / clay; soft, high plasticity, slightly moist.	12.0		
14		3				14.0		14.0
		4				14.0		15.0
		4				15.0		

# MALCOLM PIRNIÉ

## TEST BORING LOG

BORING No. MPI-12S

PROJECT	American Valve	LOCATION	Coxsackie, NY	SHEET	1 OF 1
CLIENT	NYSDEC	PROJECT No.	0266-312	MEAS. PT. ELEV.	152.26
DRILLING CONTRACTOR	SJB Services, Inc.	GROUND ELEV.	149.7	DATUM	Grade
PURPOSE	Remedial Investigation	DATE STARTED	3/28/96	DRILLER	A KOSKE
WELL MATERIAL	PVC	DATE FINISHED	3/28/96	PIRNIÉ STAFF	D LANG
DRILLING METHOD(S)	Hollow Stem Auger	SAMPLE		CORE	
DRILL RIG TYPE	CME 750	TYPE	SS		HSA
GROUND WATER DEPTH	0.3'	DIA.	2"		6 1/4"
MEASURING POINT	PVC Riser	WEIGHT	140 #		
DATE OF MEASUREMENT	4/30/96	FALL	30"		

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
						148.8		
	S-1	1	ND	△△△△	Med-dk bm f/m SAND; organic to 4" (FILL)	0.9		1.0
2		1		x x x x	L bm SILT w/ f. SAND			2.0
	S-2	4	ND	x x x x				3.0
4		2		x x x x		145.2		
	S-3	3	ND		Light bm/gry CLAY and SILT	4.5		
6		4						
	S-4	5	ND		L gry CLAY low-med. plastic	142.7		
8		12				7.0		
	S-5	2	ND		As above			
10		3						
	S-6	3	ND		As above			
12		4						
	S-7	WOH	ND		As above			
		WOH						
		WOH						
		2						
		WOH	ND		As Above			
		2				136.2		13.0
		2						13.5
		2			Bottom of Boring	13.5		

2 diameter Riser
  Cement
  Bentonite Seal
  Cement/Bentonite
  Filter Pack (m)
  2" dia. screen Slot Size



PROJECT **AVM**

LOCATION **Coxsackie, New York**

SHEET **2 OF 3**

CLIENT

PROJECT No. **0331025**

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
	2	WTH	0		No alternating bands. Gray clay; slightly soft, high plasticity, slightly moist.	20.0		
22	2	WTH	0		Same as above. Dry. 0-0.2': Slough.	22.0		
24	2	WTH	0		Same as above. Alternating bands. Same as described in the 16-18' sample.	24.0		
26	2	WTH	0		No alternating bands. Gray clay, slightly soft, high plasticity, slightly moist.	26.0		
28	0.9	WTH	0		Same as above. 0.1-0.2': Firm. 0.2-0.9': Slightly soft.	28.0		
30	1.2	WTH	0		Same as above. Slightly soft. 0-0.2': Slough. 0.2-0.4': Gray silt with some clay; slightly soft, dry.	30.0		
32	2	WTH	0		Alternating bands of gray clay; slightly soft, moist and gray silt with some clay; very soft, wet. 0-0.3': Slough.	32.0		
34	1.2	WTH	0		Same as above. Silt bands; moist.	34.0		
36	2	WTH	0		Same as above. Silt bands; wet.	36.0		
38	1.6	3 3 2 1	0		Same as above. Clay bands; slightly soft, dry.	38.0		
40	1	WTH	0		Gray clay; slightly soft, dry.	40.0		
42	2	WTH	0		0-0.2': Slough. 0.2-0.7': Gray silt with some gray clay; slightly soft, moist. 0.7-2': Gray clay; slightly soft, dry.	42.0		
44	2	WTH	0		Gray clay; soft, dry. 0-0.4': Slough. 1.2-1.3': Gray silt with some clay; slightly soft, wet.	44.0		

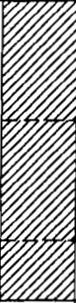
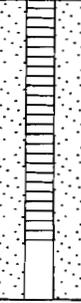
PROJECT **AVM**

LOCATION **Coxsackie, New York**

SHEET **3 OF 3**

CLIENT

PROJECT No. **0331025**

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
48	1.5	WTH	0		Alternating bands of gray clay; soft, moist and gray silt with some clay; very soft, wet. 0-0.2': Slough.	46.0		
	2	WTH	0		Gray clay; soft, moist. 0-0.3': Slough.	48.0		
50						50.0	50.0	
						51.0	51.0	

PROJECT <b>AVM</b>	LOCATION <b>Coxsackie, New York</b>	SHEET <b>1 OF 1</b>
CLIENT		PROJECT No. <b>0331025</b>
DRILLING CONTRACTOR <b>SLC</b>		MEAS. PT. ELEV.
PURPOSE <b>Environmental Monitoring</b>		GROUND ELEV.
WELL MATERIAL <b>2" PVC</b>		DATUM
DRILLING METHOD(S) <b>6 1/4" HSA</b>	SAMPLE	DATE STARTED <b>1/7/04</b>
DRILL RIG TYPE <b>TMR</b>	TYPE	DATE FINISHED <b>1/7/04</b>
GROUND WATER DEPTH	DIA.	DRILLER <b>Ron Brown</b>
MEASURING POINT	WEIGHT	PIRNIC STAFF <b>D. Zehrhuhs</b>
DATE OF MEASUREMENT	FALL	

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
2								
4								
6								
8								
10								
12								
14								
								Soil samples were not collected. For lithology information, see MW-14D log.





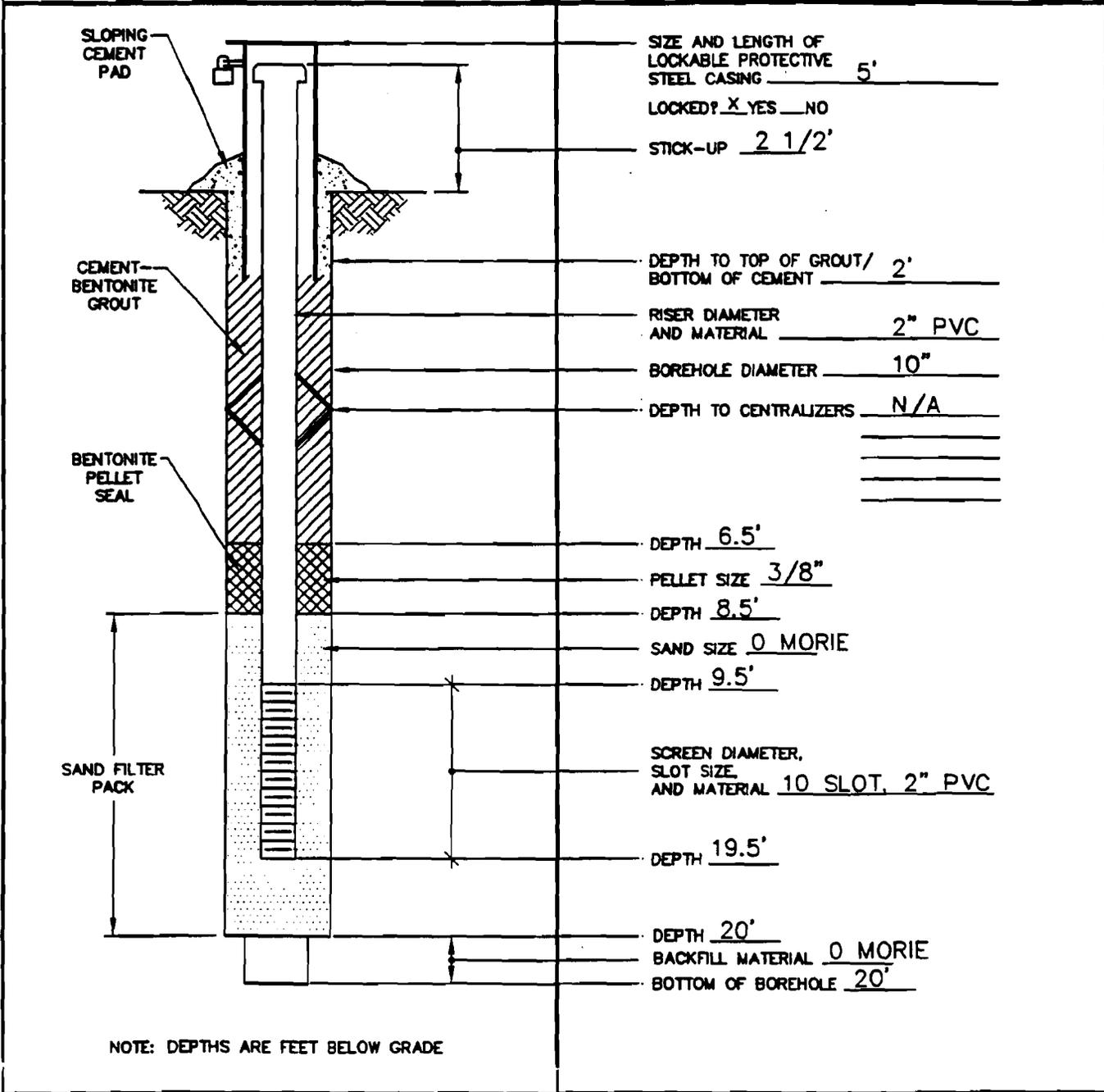
PROJECT **AVM**LOCATION **Coxsackie, New York**SHEET **3** OF **3**

CLIENT

PROJECT No. **0331025**

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
						46.0		

PROJECT <u>AMERICAN VALVE</u>	START DATE <u>4/29/98</u>	END DATE <u>4/29/98</u>	DRILLING CO. <u>BUFFALO DRILLING</u>
PROJECT NO. <u>0266-312</u>	FIELD GEOLOGIST <u>J. KAPPEL</u>		DRILLER(S) <u>D. RAMBECK</u> <u>T. BOSTOFF</u>
LOCATION <u>COXSACKIE, NY</u>			DRILLING METHOD(S) <u>HSA 6 1/4"</u>
			DEVELOPMENT METHOD(S) <u>BAILER</u>



NOTE: DEPTHS ARE FEET BELOW GRADE

# MALCOLM PIRNIE

## TEST BORING LOG

BORING No. 15D

PROJECT	American Valve Mfg	LOCATION	Coxsackie, New York	SHEET	1 OF 2	
CLIENT					PROJECT No.	0266312
DRILLING CONTRACTOR	Buffalo Drilling				MEAS. PT. ELEV.	154.33
PURPOSE	DNAPL Investigation				GROUND ELEV.	151.5
WELL MATERIAL	PVC				DATUM	grade
DRILLING METHOD(S)	HSA	SAMPLE	CORE	CASING		
DRILL RIG TYPE	CME 75	TYPE	SS	PVC	DATE STARTED	4/28/98
GROUND WATER DEPTH		DIA.	2"	2"	DATE FINISHED	4/29/98
MEASURING POINT		WEIGHT	140 #			
DATE OF MEASUREMENT		FALL	30"	DRILLER	Don Rambeck	
				PIRNIE STAFF	Jason Kappel	

DEPTH FT.	SAMPLE TYPE, RECOVERY NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
1.2	3	7	1 ppm		Fill- top 10" spoon. Sand- medium, orange yellow, moist, bottom 4" of spoon.	149.5		(Same lithology for MW-15S)
2	4	4				2.0		
1.45	5	6	0		Sand- well graded, yellow to orange yellow, visible iron staining, wet.	147.5		
4	7	7				4.0		
1.8	3	5	2		Sand- well graded, yellow to orange yellow, visible iron staining, wet, top 4" spoon. Bottom of spoon- Silt and Clay- gray, stiff, moist, friable.	145.5		
6	7	8				6.0		
1.9	8	8	0		Clay- gray, stiff, moist, not easily molded. Some areas of minor silt.	143.5		
8	8	8				8.0		
1.9	5	7	1		As above. Moist, easily molded.	141.5		
10	7	5				10.0		
2.0	2	3	2		Clay- gray clay varved with gray brown silt, damp to moist.	139.5		
12	3	3				12.0		
1.85	3	3	1		As above. Trace silt, moist, spoon is dry, clay is easily molded.	137.5		
14	4	3				14.0		
2.0	1	2	1		As above. Trace silt, sticky, wet, clay.	135.5		
16	2	1				16.0		
2.0	2	2	0		Clay and Silt- gray, clay with silt varves, wet.	133.5		
18	2	2				18.0		
2.0	2	2	0		As above. Wet.			
	WOH							
	1		0					
	1							
	1							

# MALCOLM PIRNIE

## TEST BORING LOG

BORING No. 15D

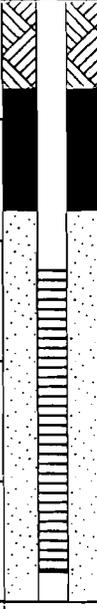
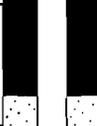
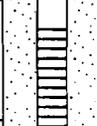
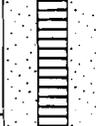
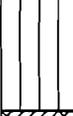
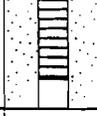
PROJECT American Valve Mfg

LOCATION Coxsackie, New York

SHEET 2 OF 2

CLIENT

PROJECT No. 0266312

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
22	1.95	WOH	1		As above. Wet.	131.5		
		20.0						
24	2.0	2	0		As above.	129.5		21.5
		22.0						
26	1.95	WOH	1		As above.	127.5		23.5
		24.0						
28	1.80	2	0		As above.	125.5		24.5
		26.0						
30	1.60	WOR	0		Silt- gray, homogeneous, wet. Bottom of spoon- Till- medium sand, angular shale fragments, silt.	123.5		29.5
		28.0						
30	0	4	0		Augers gringing on rock at 30'.	121.5		30.0
		6						
		100/2"						
		50/0"						
								No recovery, spoon bounced on rock.
						119.5		
						32.0		





PROJECT <b>AVM</b>	LOCATION <b>Coxsackie, New York</b>	SHEET <b>1 OF 2</b>		
CLIENT	PROJECT No. <b>0331025</b>			
DRILLING CONTRACTOR <b>SLC</b>	MEAS. PT. ELEV.			
PURPOSE <b>Environmental Monitoring</b>	GROUND ELEV.			
WELL MATERIAL <b>2" PVC</b>	DATUM			
DRILLING METHOD(S) <b>6 1/4" HSA</b>	SAMPLE	CORE	CASING	
DRILL RIG TYPE <b>TMR</b>	TYPE			
GROUND WATER DEPTH	DIA.	"		
MEASURING POINT	WEIGHT	#		
DATE OF MEASUREMENT	FALL	"		
			DATE STARTED <b>12/23/03</b>	
			DATE FINISHED <b>12/23/03</b>	
			DRILLER <b>Ron Brown</b>	
			PIRNIE STAFF <b>D. Zehrhuhs</b>	

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
2	1.2	4	0		Brown, fine-medium grained sand with gray, angular gravel (0.1-0.3" diam.), small gray, white, and red-brown flecks, and trace clay; compact, dry.	2.0		Some staining (gray globular streaks). No odor.
		5						
		7						
		9						
4	1	9	0		Same as above. 0-0.3': Slough.	2.0		
		16						
		16						
6	1.7	14	0		Same as above. Trace gray clay. 0-0.1': Slough.	4.0		
		5						
		7						
8	1.9	8	0		Same as above. Clay composition increases with depth. 0-0.3': Slough.	6.0		
		8						
		15						
10	0.2	12	0		0-0.2': Slough.	8.0		
		6						
		6						
12	1.6	2	0		Gray clay; slightly soft, high plasticity, dry. A few bands of gray clay; soft, slightly moist in bottom 4". 0-0.3': Slough.	10.0		
		3						
		2						
14	2	2	0		Same as above. Alternating bands of gray clay; soft and gray clay; firm.	12.0		
		2						
		2						
16	2	1	0		Gray clay; slightly soft, high plasticity, dry. 0-0.2': Slough.	14.0		
		1						
		1						
18	2	1	0		Alternating bands. Same as described in the 12-14' sample. 0-0.2': Slough. 0.2-0.4': Gray clay; very soft, wet.	16.0		
		1						
		1						
	2	1	0		Gray clay; slightly soft, high plasticity, dry. No alternating bands.	18.0		
		WTH	0					

PROJECT **AVM**

LOCATION **Coxsackie, New York**

SHEET **2 OF 2**

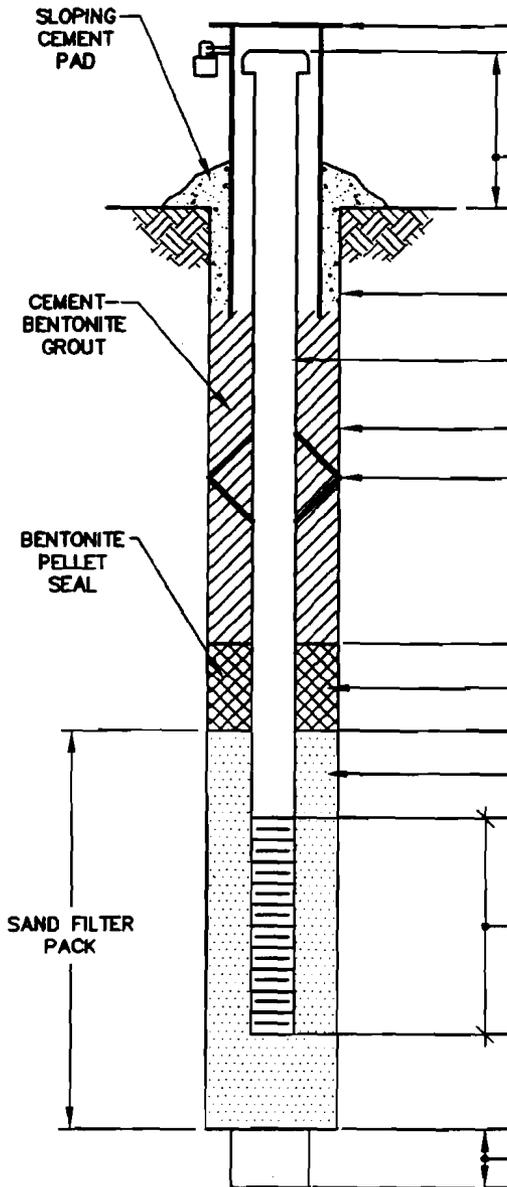
CLIENT

PROJECT No. **0331025**

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
20.0	2	1 WTH 1	0		Alternating bands. Same as described in 12-14' sample. 0-0.2': Slough. 1.6-1.7': Gray clay; very soft, moist.	20.0		
22.0	2	1 WTH 1	0		Same as above. 0.1-1': Gray clay; very soft, moist.	22.0		
24.0	2	1 WTH 1	0		Gray clay; soft, high plasticity, dry.	24.0		
26.0	2	1 WTH 1	0		Alternating bands. Same as described in 12-14' sample. (Band = 0.6' thickness). 0-0.2': Slough.	26.0		26.0
28.0	2	1 WTH 1	0		Alternating bands of gray clay; very soft, wet and gray clay; soft, slightly moist.	28.0		28.0
30.0	2	1 WTH 1	0		Same as above.	30.0		
32.0	1	2 2 2	0		Gray clay; soft, high plasticity, slightly moist.	32.0		
34.0	2	1 WTH 1	0		Alternating bands. Same as described in 12-14' sample.	34.0		
36.0	2	2 WTH 2	0		0-0.3': Slough. 0.3-0.6': Gray clay; very soft, moist. 0.6-1.2': Gray silt with clay; wet. 1.2-2': Gray silt with clay; compact, moist.	36.0		
38.0	2	2 WTH 2	0		Gray silt with clay; wet. 1.5-2': Gray clay; soft, high plasticity, moist.	38.0		
40.0						40.0		40.0
						40.0		41.0

PROJECT AMERICAN VALVE START DATE 5/7/98 END DATE 5/8/98  
 PROJECT NO. 0266-312 FIELD GEOLOGIST J. KAPPEL  
 LOCATION COXSACKIE, NY

DRILLING CO. BUFFALO DRILLING  
 DRILLER(S) D. RAMBECK  
T. BOSTOFF  
 DRILLING METHOD(S) HSA 6 1/4"  
 DEVELOPMENT METHOD(S) BAILER



SIZE AND LENGTH OF LOCKABLE PROTECTIVE STEEL CASING FLUSH MOUNT  
 LOCKED? YES  NO   
 STICK-UP NONE  
 DEPTH TO TOP OF GROUT/ SACKRETE  
 BOTTOM OF CEMENT  
 RISER DIAMETER AND MATERIAL 2" PVC  
 BOREHOLE DIAMETER 10"  
 DEPTH TO CENTRALIZERS N/A  
 DEPTH 3'  
 PELLET SIZE 3/8"  
 DEPTH 5'  
 SAND SIZE 0 MORIE  
 DEPTH 6'  
 SCREEN DIAMETER, SLOT SIZE, AND MATERIAL 10 SLOT, 2" PVC  
 DEPTH 16'  
 DEPTH 15.5'  
 BACKFILL MATERIAL 0 MORIE  
 BOTTOM OF BOREHOLE 20.5'

NOTE: DEPTHS ARE FEET BELOW GRADE

PROJECT AMERICAN VALVE START DATE 5/12/98 END DATE 5/12/98

PROJECT NO. 0266-312 FIELD GEOLOGIST J. KAPPEL

LOCATION COXSACKIE, NY

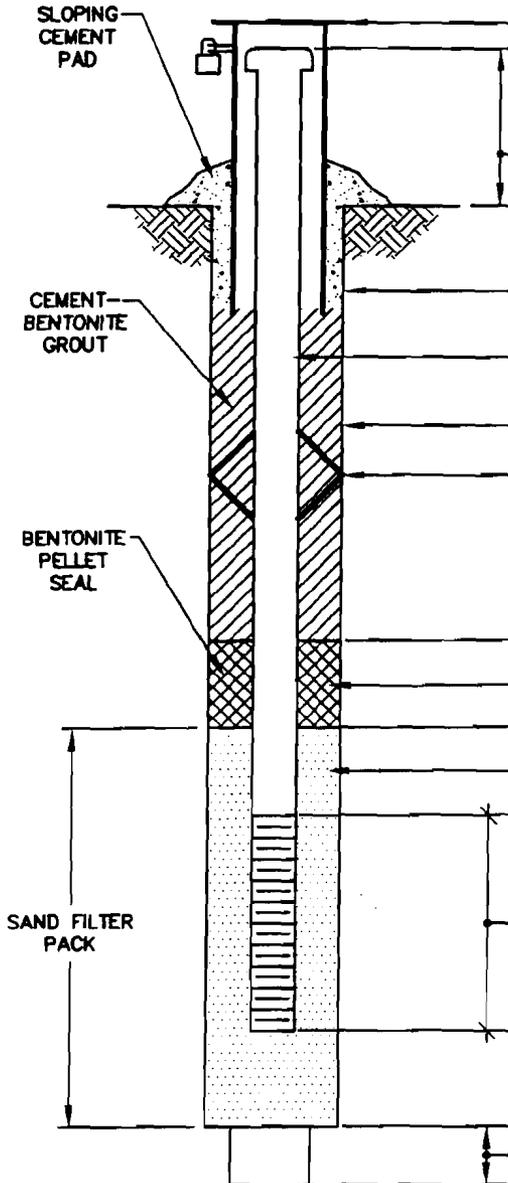
DRILLING CO. BUFFALO DRILLING

DRILLER(S) D. RAMBECK

T. BOSTOFF

DRILLING METHOD(S) HSA 6 1/4"

DEVELOPMENT METHOD(S) BAILER



SIZE AND LENGTH OF LOCKABLE PROTECTIVE STEEL CASING FLUSH MOUNT

LOCKED?  YES  NO

STICK-UP NONE

DEPTH TO TOP OF GROUT/ BOTTOM OF CEMENT 2'

RISER DIAMETER AND MATERIAL 2" PVC

BOREHOLE DIAMETER 10"

DEPTH TO CENTRALIZERS N/A

DEPTH 2'

PELLET SIZE 3/8"

DEPTH 3'

SAND SIZE 0 MORIE

DEPTH 4'

SCREEN DIAMETER, SLOT SIZE, AND MATERIAL 10 SLOT, 2" PVC

DEPTH 14'

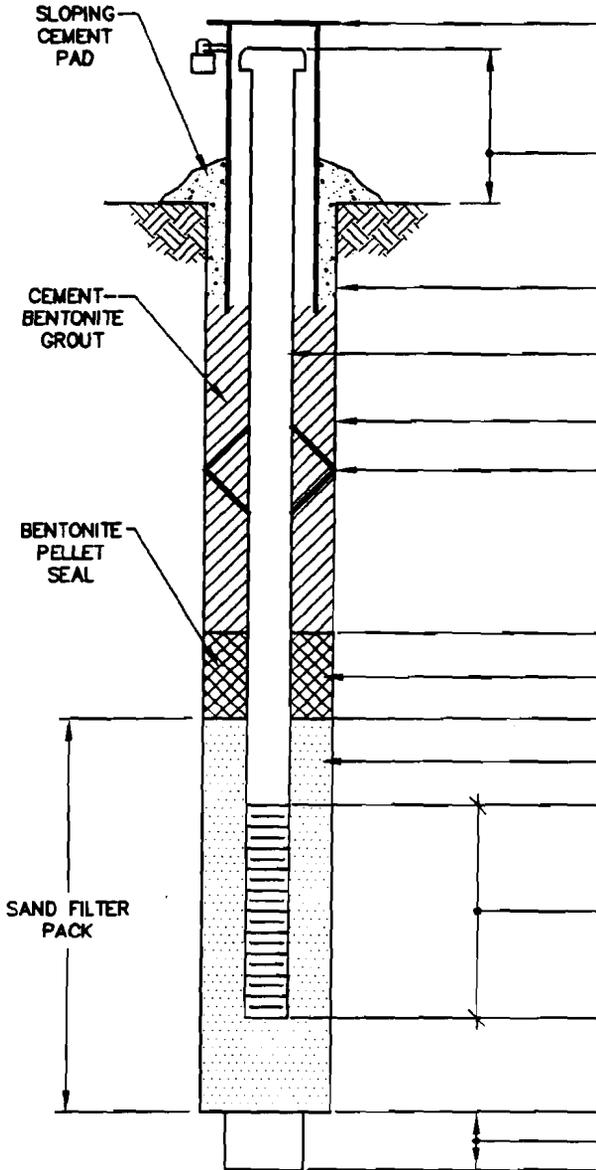
DEPTH 14'  
BACKFILL MATERIAL 0 MORIE

BOTTOM OF BOREHOLE 15'

NOTE: DEPTHS ARE FEET BELOW GRADE

PROJECT AMERICAN VALVE START DATE 5/12/98 END DATE 5/12/98  
 PROJECT NO. 0266-312 FIELD GEOLOGIST J. KAPPEL  
 LOCATION COXSACKIE, NY

DRILLING CO. BUFFALO DRILLING  
 DRILLER(S) D. RAMBECK  
T. BOSTOFF  
 DRILLING METHOD(S) HSA 6 1/4"  
 DEVELOPMENT METHOD(S) BAILER



SIZE AND LENGTH OF LOCKABLE PROTECTIVE STEEL CASING FLUSH MOUNT  
 LOCKED?  YES  NO  
 STICK-UP NONE  
 DEPTH TO TOP OF GROUT/ BOTTOM OF CEMENT 2'  
 RISER DIAMETER AND MATERIAL 2" PVC  
 BOREHOLE DIAMETER 10"  
 DEPTH TO CENTRALIZERS N/A  
 DEPTH 17'  
 PELLET SIZE 3/8"  
 DEPTH 19'  
 SAND SIZE 0 MORIE  
 DEPTH 20.1  
 SCREEN DIAMETER, SLOT SIZE, AND MATERIAL 10 SLOT, 2" PVC  
 DEPTH 25.1'  
 DEPTH 26'  
 BACKFILL MATERIAL 0 MORIE  
 BOTTOM OF BOREHOLE 26'

NOTE: DEPTHS ARE FEET BELOW GRADE

# MALCOLM PIRNIE

## TEST BORING LOG

**BORING No. MW-19S**

PROJECT <b>AVM</b>	LOCATION <b>Coxsackie, New York</b>	SHEET <b>1 OF 1</b>
CLIENT		PROJECT No. <b>0331025</b>
DRILLING CONTRACTOR <b>SLC</b>		MEAS. PT. ELEV.
PURPOSE <b>Environmental Monitoring</b>		GROUND ELEV.
WELL MATERIAL <b>2" PVC</b>		DATUM
DRILLING METHOD(S) <b>6 1/4" HSA</b>	SAMPLE	CORE
DRILL RIG TYPE <b>TMR</b>	TYPE	
GROUND WATER DEPTH	DIA.	"
MEASURING POINT	WEIGHT	#
DATE OF MEASUREMENT	FALL	"
		DATE STARTED <b>1/5/04</b>
		DATE FINISHED <b>1/6/04</b>
		DRILLER <b>Ron Brown</b>
		PIRNIE STAFF <b>D. Zehrhuhs</b>

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
2								
4								
6								
8								
10								
12								
14								
								No soil samples were collected. For lithology information, see MW-19D log.

PROJECT <b>AVM</b>	LOCATION <b>Coxsackie, New York</b>	SHEET <b>1 OF 2</b>
CLIENT	PROJECT No. <b>0331025</b>	
DRILLING CONTRACTOR <b>SLC</b>	MEAS. PT. ELEV.	
PURPOSE <b>Environmental Monitoring</b>	GROUND ELEV.	
WELL MATERIAL <b>2" PVC</b>	DATUM	
DRILLING METHOD(S) <b>6 1/4" HSA</b>	SAMPLE	CORE
DRILL RIG TYPE <b>TMR</b>	TYPE	
GROUND WATER DEPTH	DIA.	"
MEASURING POINT	WEIGHT	#
DATE OF MEASUREMENT	FALL	"
	DRILLER <b>Ron Brown</b>	
	PIRNIE STAFF <b>D. Zehrhuhs</b>	

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
1.6	4	4	0		0-0.4': Dark brown, medium grained sand with gray, angular gravel (0.1-0.4" diam.); slightly moist. 0.4-1.6': Brown fine grained sand; loose, dry.			
2	4	4	0		0-0.5': Dark brown medium grained sand with gray, angular gravel (0.1-0.4" diam.); moist. 0.5-0.7': Brown fine grained sand; loose, slightly moist. 0.7-1.3': Brown clay with trace gray clay and silt; firm, dry.	2.0		
1.3	3	2	0		Gray clay concentration increases with depth.	4.0		
4	5	9	0		Dark gray clay; firm, high plasticity, dry.			
1.8	10	14	0		Same as above. Slightly soft. 0-0.4': Slough. 0.4-0.8': Brown silt with trace gray clay; loose, dry.	6.0		
6	10	12	0		Alternating bands of gray clay; firm, dry and gray clay; soft, dry. 0-0.3': Slough.	8.0		
2	10	10	0		Same as above. 0-0.3': Slough.	10.0		
8	4	3	0					
2	3	3	0					
10	3	1	0					
2	1	WTH	0					
12	2	3	0		No alternating bands. Gray clay; slightly soft, high plasticity, dry. 0-0.2': Slough. 0.9-1': Brown silt with trace gray clay, dry.	12.0		
2	3	3	0		Same as above. 0-0.4': Slough.	14.0		
14	3	WTH	0					
2	2	2	0		Same as above. 0-0.5': Slough.	16.0		
16	2	2	0					
2	2	2	0					
18	1	1	0		Alternating bands. Same as described in 8-10' sample. Slightly moist. 1.5-2': Gray clay; slightly soft, high plasticity, slightly moist. No alternating bands.	18.0		
2	1	WTH	0					

PROJECT **AVM**

LOCATION **Coxsackie, New York**

SHEET **2 OF 2**

CLIENT

PROJECT No. **0331025**

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
20.0	2	WTH 1	0		Same as above. Dry. 0-0.2': Slough.	20.0		
22.0	2	2 2 2	0		No alternating bands. Gray clay; slightly soft, high plasticity, dry.	22.0		
24.0	2	WTH	0		Alternating bands of gray clay; slightly soft, slightly moist and gray clay; very soft, wet.	24.0		
26.0	2	WTH	0		Same as above.	26.0		26.0
28.0	1.6	WTH	0		Gray clay; slightly soft, high plasticity, slightly moist. 0-0.2': Slough. 0.2-0.6': Alternating bands. Same as described in the 8-10' sample. 0.6-0.7': Gray silt with some clay; wet.	28.0		28.0
30.0	1	WTH	0		Same as above. 0.8-1': Gray silt with some clay; dry.	30.0		
32.0	2	WTH 2 3	0		Same as above. 0-0.3': Gray silt with some clay; dry.	32.0		
34.0	2	WTH	0		Alternating bands of gray clay; slightly soft, high plasticity, slightly moist and gray silt with some clay; slightly moist. 0.5-0.7' (Clay), 1.3-1.8' (Silt): Wet.	34.0		
36.0	2	WTH 1 1 1	0		Same as above. 0-0.4', 1.3-2' (Silt), 0.4-0.5' (Clay) Wet.	36.0		
38.0	1.8	WTH	0		Same as above.	38.0		
40.0						40.0		40.0
						41.0		41.0

PROJECT **AVM**

LOCATION **Coxsackie, New York**

SHEET **1 OF 1**

CLIENT

PROJECT No. **0331025**

DRILLING CONTRACTOR **SLC**

MEAS. PT. ELEV.

PURPOSE **Environmental Monitoring**

GROUND ELEV.

WELL MATERIAL **2" PVC**

DATUM

DRILLING METHOD(S) **6 1/4" HSA**

SAMPLE

CORE

CASING

DATE STARTED **12/23/03**

DRILL RIG TYPE **TMR**

TYPE

DATE FINISHED **12/23/03**

GROUND WATER DEPTH

DIA.

"

DRILLER **Ron Brown**

MEASURING POINT

WEIGHT

#

PIRNIE STAFF **D. Zehrhuhs**

DATE OF MEASUREMENT

FALL

"

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
2								
4								
6								
8								
10								
12								
14								
								No soil samples were collected. For lithology information, see MW-20D log.

# MALCOLM PIRNIC

## TEST BORING LOG

BORING No. MW-20D

PROJECT <b>AVM</b>	LOCATION <b>Coxsackie, New York</b>	SHEET <b>1 OF 2</b>
CLIENT	PROJECT No. <b>0331025</b>	
DRILLING CONTRACTOR <b>SLC</b>	MEAS. PT. ELEV.	
PURPOSE <b>Environmental Monitoring</b>	GROUND ELEV.	
WELL MATERIAL <b>2" PVC</b>	DATUM	
DRILLING METHOD(S) <b>6 1/4" HSA</b>	SAMPLE	CORE
DRILL RIG TYPE <b>TMR</b>	TYPE	
GROUND WATER DEPTH ' DIA. "		
MEASURING POINT	WEIGHT #	
DATE OF MEASUREMENT	FALL "	
	DRILLER <b>Ron Brown</b>	
	PIRNIC STAFF <b>D. Zehrhuhs</b>	

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
1.6		28 30 33 40	0		Brown and gray medium grained sand; loose, dry. 0-0.5': Snow/frost. 0.5-0.7': Gray, angular gravel (0.2-1" diam.); loose dry.			
2.0		21				2.0		
0.8		8 8 8	0		Same as above. Gray, angular gravel (0.2-0.6" diam.).			
4.0		4				4.0		
1.7		5 8 10	0		Brown clay with trace gray clay; firm, dry. Gray clay composition increases with depth. 0-0.3': Slough. 1.4-1.7': Gray clay; firm, dry.			
6.0		8				6.0		
2		9 9 10	0		Gray clay, rigid, dry. 0-0.3': Slough			
8.0		2				8.0		
1.8		2 2 2	0		Same as above. Slightly soft, high plasticity. A few bands of brown clay; firm, dry.			
10.0		2				10.0		
1.7		2 2	0		Same as above. Softness of clay increases with depth. 0-0.2': Slough.			
12.0		1				12.0		
2		1 2 2	0		Same as above. Soft. 0-0.2': Slough.			
14.0		WTH 2	0		Same as above. 0-0.2': Slough.	14.0		
16.0		WTH 2 2	0		Same as above.	16.0		
18.0		WTH 1	0		Alternating bands of gray clay; slightly soft, medium plasticity, dry and gray clay; soft, high plasticity, dry.	18.0		

PROJECT **AVM**

LOCATION **Coxsackie, New York**

SHEET **2 OF 2**

CLIENT

PROJECT No. **0331025**

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
	2	WTH 2	0		Same as above.	20.0		
22	2	WTH 2	0		Gray clay; soft, high plasticity, dry.	22.0		
24	2	WTH	0		Alternating bands. Same as described in the 18-20' sample.	24.0		
26	2	WTH 2 2	0		Alternating bands of gray clay; soft, high plasticity, slightly moist and gray clay; very soft, wet.	26.0		26.0
28	2	WTH	0		Alternating bands. Same as described in the 18-20' sample.	28.0		28.0
30	2	WTH	0		Same as above. 1.2-1.5': Gray clay; very soft, wet. 1.5-2': Gray clay; slightly soft, high plasticity, slightly moist.	30.0		
32	2	WTH	0		Same as above. 0-0.3': Slough. 1.7-1.9': Gray clay; very soft, moist.	32.0		
34	2	WTH	0		Alternating bands. Same as described in the 26-28' sample.	34.0		
36	2	WTH	0		Same as above.	36.0		
38	2	WTH	0		Same as above.	38.0		
40						40.0		40.0
						41.0		41.0

PROJECT <b>AVM</b>	LOCATION <b>Coxsackie, New York</b>	SHEET <b>1 OF 1</b>		
CLIENT	PROJECT No. <b>0331025</b>			
DRILLING CONTRACTOR <b>SLC</b>	MEAS. PT. ELEV.			
PURPOSE <b>Environmental Monitoring</b>	GROUND ELEV.			
WELL MATERIAL <b>2" PVC</b>	DATUM			
DRILLING METHOD(S) <b>6 1/4" HSA</b>	SAMPLE	CORE	CASING	
DRILL RIG TYPE <b>TMR</b>	TYPE			
GROUND WATER DEPTH	DIA.	"		
MEASURING POINT	WEIGHT	#		
DATE OF MEASUREMENT	FALL	"		
			DATE STARTED <b>12/22/03</b>	
			DATE FINISHED <b>12/22/03</b>	
			DRILLER <b>Ron Brown</b>	
			PIRNIE STAFF <b>D. Zehrfuhs</b>	

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
2								
4								
6								
8								
10								
12								
14								
								Soil samples were not collected. For lithology information, see MW-21D log.

# MALCOLM PIRNIE

## TEST BORING LOG

BORING No. MW-21D

PROJECT <b>AVM</b>	LOCATION <b>Coxsackie, New York</b>	SHEET <b>1 OF 2</b>
CLIENT	PROJECT No. <b>0331025</b>	
DRILLING CONTRACTOR <b>SLC</b>	MEAS. PT. ELEV.	
PURPOSE <b>Environmental Monitoring</b>	GROUND ELEV.	
WELL MATERIAL <b>2" PVC</b>	DATUM	
DRILLING METHOD(S) <b>6 1/4" HSA</b>	SAMPLE	CORE
DRILL RIG TYPE <b>TMR</b>	TYPE	
GROUND WATER DEPTH ' DIA. "		
MEASURING POINT WEIGHT #		
DATE OF MEASUREMENT FALL "		
	DATE STARTED <b>12/19/03</b>	
	DATE FINISHED <b>12/19/03</b>	
	DRILLER <b>Ron Brown</b>	
	PIRNIE STAFF <b>D. Zehrhuhs</b>	

DEPTH FT.	SAMPLE TYPE RECOVERY NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
2	0.8	4	0		Brown clay; firm, low plasticity, frozen.	2.0		
		4						
		5						
		6						
4	1	11	0		Same as above. Dry.	4.0		
		9						
		9						
		11						
6	1.25	11	0		Same as above. Trace gray clay.	6.0		
		4						
		3						
		4						
8	0.8	4	0		Same as above.	8.0		
		4						
		3						
		3						
10	0.9	2	0		Same as above. 0-0.2': Slough.	10.0		
		2						
		3						
		3						
12	1.25	2	0		Gray clay; firm, low plasticity, dry. 0-0.5': Brown clay; firm, low plasticity, dry.	12.0		
		1						
		1						
		1						
14	2	1	0		Same as above. Alternating bands of gray clay; firm, dry and gray clay; slightly soft, high plasticity, dry. 0-0.2': Slough.	14.0		
		1						
		1						
		1						
16	2	1	0		Alternating bands. Same as described in the 12-14' sample. 0-0.3': gray clay; firm, dry.	16.0		
		1						
		1						
		1						
18	2	2	0		Same as above. 0-0.4': Slough.	18.0		
		2						
		2						
		2						
		WTH						
		1	0		Same as above. 0-0.1': Slough.			

PROJECT **AVM**

LOCATION **Coxsackie, New York**

SHEET **2 OF 2**

CLIENT

PROJECT No. **0331025**

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
	2	WTH 1	0		Same as above. 0-0.3': Slough.	20.0		
22	2	WTH 1 2	0		Gray clay; slightly soft, high plasticity, slightly moist. 0-0.2': Slough.	22.0		
24	2	WTH	0		Same as above.	24.0		
26	2	WTH 2 2	0		Same as above.	26.0		26.0
28	2	WTH	0		Same as above. Soft. 0.6-1': Slightly soft.	28.0		28.0
30	2	WTH	0		Same as above.	30.0		
32	2	WTH	0		Same as above.	32.0		
34	2	WTH	0		Same as above. 1-2': Moist.	34.0		
36	2	WTH	0		Gray clay; soft, high plasticity, moist. 0-0.4': Slightly soft, slightly moist.	36.0		
38	2	WTH	0		Same as above.	38.0		
40						40.0		40.0
						41.0		41.0

PROJECT <b>AVM</b>	LOCATION <b>Coxsackie, New York</b>	SHEET <b>1 OF 1</b>
CLIENT <b>NYS Dept. of Environmental Conservation</b>		PROJECT No. <b>0331025</b>
DRILLING CONTRACTOR <b>ADT</b>		MEAS. PT. ELEV.
PURPOSE <b>Environmental Monitoring</b>		GROUND ELEV.
WELL MATERIAL <b>2" PVC</b>		DATUM
DRILLING METHOD(S) <b>6 1/4" HSA</b>	SAMPLE	CORE
DRILL RIG TYPE <b>TMR</b>	TYPE	
GROUND WATER DEPTH	DIA.	"
MEASURING POINT	WEIGHT	#
DATE OF MEASUREMENT	FALL	"
		DATE STARTED <b>11/8/02</b>
		DATE FINISHED <b>11/8/02</b>
		DRILLER <b>Roger</b>
		PIRNIE STAFF <b>K. Stahle</b>

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS	
2	0.2	8	0		Brown fine sand with trace fine-coarse subangular gravel; compact; dry.	2.0	0.5 2.0		
4	1.3	7	0		Same as above. 1-1.3': Brown fine sand with no gravel; compact; becomes moist.	4.0			
6	1	10	0		Same as above. 0.9-1': Becomes wet.	6.0			
8	1.5	8	0		Brown and gray silty clay; mottled; compact; dry. Some brown silt; dry.	8.0			
10	1	3	0		Brown and gray silt and clay; mottled; compact; dry. 0-0.4': Brown fine grained sand; compact; wet.	10.0			
12		14				12.0			
						13.0		13.0	









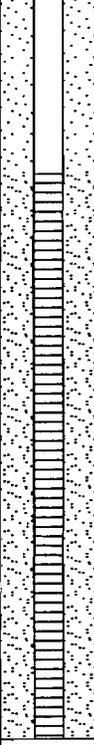
PROJECT **AVM**

LOCATION **Coxsackie, New York**

SHEET **2 OF 2**

CLIENT **NYS Dept. of Environmental Conservation**

PROJECT No. **0331025**

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS	
22	2	WTH 1 1 2	0		Same as above. Wet.	20.0			
24						22.0			
26	1.8	WTH 1 1 2	0			Same as above. Wet.		26.0	
28								28.0	
30	1.8	WTH WTH WTH WTH	0		Same as above. At 1': Becomes very wet.	30.0			
32	0.4	50/0"	0		Same as above. Very wet.	32.0			
						32.5		Spoon refusal at 32.3' bgs. Siltstone fragments in cuttings.	

**APPENDIX B**

Sampling Protocol

## APPENDIX B

### SAMPLING PROTOCOL

#### 1.0 GROUNDWATER SAMPLING AND WATER LEVEL MEASUREMENT

---

##### 1.1 Water Level Measurements

###### 1.1.1 Measurement Objectives

Water level measurements will be used in conjunction with horizontal and vertical ground survey data to evaluate horizontal and vertical components of groundwater flow. Water level measurements will also be used to determine the volume of standing water in wells for purging activities.

###### 1.1.2 Measurement Equipment

The following equipment will be used for the measurement of water levels:

- Electronic water level indicator
- Field log book and pen
- Photoionization Detector (PID)

###### 1.1.3 Measurement Procedure

At each monitoring well, the locking steel cap and internal riser cap will be removed. The headspace and breathing zone air quality will be monitored with a PID. This step may be omitted in subsequent rounds of water level measurements in those wells that yielded no detectable amounts of vapors or gases from prior sampling rounds.

The battery of the electric water level indicator will be checked by pushing the battery check button, and waiting for the audible signal to sound or the instrument light to come on. The water level indicator will be decontaminated before use in each well by using analconox wash and deionized water rinse. The instrument will then be turned on and the probe will be slowly lowered into the well, until the audible signal is heard or the instrument light goes on, indicating that the sensor in the probe has made contact with the water surface in the well.

The depth to water will be recorded to the nearest one-hundredth of a foot, from the top of the measuring mark on the well riser. The date, time, well number, and depth to water will be recorded in the field logbook in indelible ink.

## **1.2 Groundwater Sample Collection Procedures**

The sampling procedures described in this plan are designed to ensure collection of representative samples for analysis, and are based on the following sources:

- a. USEPA Region II Groundwater Sampling Procedure, Low Stress (Low Flow) Purging and Sampling, March, 1998.
- b. NYS Department of Environmental Conservation Analytical Services Protocol 9/89, Revisions 12/91, and any subsequent modifications.

## **Decontamination of Sampling Equipment**

Cross contamination of samples from any source is to be avoided. All sampling equipment must be clean and free from the residue of any previous samples. To accomplish this, the following procedures will be followed:

- All non-dedicated sampling equipment must be cleaned initially and prior to being reused. The following is the procedure for decontamination.
- Wash and scrub with low phosphate detergent.
- Rinse with tap water.
- Rinse with ten percent nitric acid if metals analysis is required.
- Rinse with tap water.
- Rinse with isopropanol (pesticide grade).
- Rinse thoroughly with analyte-free deionized water.
- Air dry.
- Wrap in aluminum foil for transport.
- To decontaminate non-dedicated sampling pumps, the following procedure will be followed before and after each well is sampled:
  - Pre-rinse: Operate pump in a deep basin containing 8 to 10 gallons of potable water for 5 minutes.
  - Wash: Operate pump in a deep basin containing 8 to 10 gallons of a non-phosphate detergent solution, such as Alconox, for 5 minutes. Use the detergent sparingly.

- Rinse: Operate pump in a deep basin of potable water for 5 minutes.
- Final Rinse: Operate pump in a deep basin of distilled/deionized water to pump out 1 to 2 gallons of this final rinse water.

Field measurement equipment, such as pH and conductivity meters will be rinsed prior to and after each use with analyte-free deionized water.

## **Sampling Equipment**

The following equipment will be needed to collect groundwater samples for laboratory analysis and to perform field analyses:

- Electric water level indicator
- Bladder pump, positive displacement pump, or submersible pump
- Air compressor
- Generator
- Polyethylene discharge tubing
- pH meter
- Specific Conductivity Meter
- Turbidity meter
- Photoionization Detector (PID)
- Field logbook and field logs
- Laboratory prepared sample containers
- Roll of polyethylene sheeting
- Decontamination equipment

## **Sampling Procedures**

Groundwater sampling will be conducted in accordance with the USEPA Low-Flow Sampling Protocol (USEPA 1998). A piece of polyethylene sheeting will be fitted over the monitoring well and laid on the ground. The sampling equipment will be placed on the polyethylene sheeting. The expansion cap will be removed and the headspace at the top of the monitoring well will be measured with a PID. This step may be omitted in those monitoring wells which have already demonstrated in the previous rounds of water

level measurement that they contain no or insignificant amounts of vapors or gases. The PID will be calibrated before the start of each sampling event.

The well will be purged at a rate suitable to minimize drawdown. Field parameters, consisting of pH, specific conductance, temperature, turbidity, and water level will be measured in each monitoring well prior to, during, and after purging (just before sampling). Both the pH and the specific conductivity meters will be calibrated for water temperature before each sampling event.

The volume of water removed from each monitoring well will be dependent upon the amount of time required for stabilization of the field parameters. In general, the well will be considered stabilized for sample collection when field parameters have stabilized for three consecutive readings as follows:

- pH: +/- 0.1 standard units
- Specific Conductance: +/- 3%
- Turbidity +/- 10%

When the field parameters have stabilized, the volume of water purged will be recorded, and groundwater in the monitoring well will be sampled through the pump at the same flow rate used to purge the well.

The sample bottles will be pre-preserved by the laboratory. The sample bottles will be immediately placed in a cooler held at 4°C.

The groundwater samples will be collected directly from the polyethylene tubing associated with the submersible pump and will be transferred to the appropriate sample containers. The two 40 milliliter (ml) vials for volatile organic analysis will be filled first, without leaving any head space. All other sample bottles will be filled such that some headspace remains in the bottle. The analytical parameters and order of sample collection for groundwater samples will be:

1. Field measurements;
2. VOCs; and
3. Total lead.

Disposable gloves will be worn by the sampling personnel and changed between sampling points. While performing any equipment decontamination, phthalate-free gloves (neoprene or natural rubber) will be worn in order to prevent phthalate

contamination of the sampling equipment by interaction between the gloves and the organic solvent(s).

Data to be recorded in the field logbook will include the information presented in Section 6.0 of this appendix. Additionally, purging and sampling methods, depth to water, volume of water removed during purging, pH, temperature and specific conductivity values, and PID readings will be recorded.

## **2.0 SURFACE WATER AND SEDIMENT SAMPLING**

---

### **2.1 Sampling Objectives**

A surface water and sediment sample will be collected at the selected location at the north end of the landfill to assess possible routes of migration from the site. If no surface water is present at the time of sampling, only a sediment sample will be collected. The surface water and sediment sampling location will be marked with a stake and labeled with the sample I.D.

#### **2.1.1 Sampling Equipment**

- pH, temperature, specific conductivity, and turbidity meters
- Field logbook and pen
- Glass beaker
- Stainless steel dipper
- Laboratory-provided sample containers
- Preservatives
- Surgical gloves (disposable latex or nitrile)
- Neoprene gloves
- Decontamination equipment

#### **2.1.2 Sampling Procedures - Surface Water Samples**

If the water is sufficiently deep, sample containers shall be submerged with their openings facing upstream, making sure to avoid any floating or submerged debris. Sampling personnel shall be downstream of the sample container. In the event of stagnant water, every effort will be made to minimize disturbance to the water body

during sampling. When sampling for volatile organics, after the container is full and while it is still submerged, it will be capped. If the surface water is not deep enough to allow for sample container submersion, a stainless steel dipper or glass beaker will be used to transfer water to the sample container.

Collection procedures for surface water samples with a dipper or beaker are:

1. Submerge a precleaned stainless steel dipper or glass beaker with minimal surface disturbance.
2. Allow the device to fill slowly and continuously.
3. Retrieve the dipper/beaker from the surface water with minimal disturbance.
4. Remove the cap from the sample bottle and slightly tilt the mouth of the bottle below the dipper/beaker edge.
5. Empty the dipper/beaker slowly, allowing the sample stream to flow gently down the side of the bottle with minimal entry turbulence.

The analytical parameters and order of sample collection for surface water samples will be:

1. In-situ measurements: temperature, pH, specific conductance and dissolved oxygen;
2. VOCs;
3. Semi-volatile organic compounds (SVOCs); and
4. Total lead.

Samples will be immediately placed in a cooler and held at 4°C.

All sampling equipment will be decontaminated. Disposable gloves will be worn by the sampling personnel and changed between sampling points. While performing any equipment decontamination, phthalate-free gloves (neoprene or natural rubber) will be worn in order to prevent phthalate contamination of the sampling equipment by interaction between the gloves and the organic solvent(s).

Data to be recorded in the field logbook includes the personnel, date and time of sampling, odor, pH, temperature, specific conductivity, and approximate water depth.

### **2.1.3 Sampling Procedures - Sediment Samples**

A sediment sample will be collected from the designated outfall area and will be analyzed for VOCs, SVOCs, and total lead. Several samples will be collected from the outfall area using a decontaminated stainless steel scoop. Each grab sample will be placed into a decontaminated stainless steel bowl and homogenized to form a single representative sediment sample. This composite sample will be analyzed for SVOCs and total lead, and will be transferred into the laboratory-provided sample container(s). One grab sample will be immediately placed in the laboratory-provided sample container with minimum headspace to be analyzed for VOCs. The samples will be placed in a cooler held at 4° C.

## **3.0 LANDFILL GAS MONITORING**

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Landfill gases will be monitored using a four gas meter at the perimeter of the disposal site. The gas meter will be a VRAE 4 gas meter or equivalent. The meter will be used in the breathing zone at locations around the perimeter of the disposal site. Sampling locations will be noted on the Post-Closure Inspection Form.

## **4.0 FIELD QUALITY CONTROL SAMPLES**

---

Quality control procedures will be employed to check that sampling, transportation and laboratory activities do not bias sample analytical quality. Trip blanks, field blanks, duplicate samples, matrix spike samples and matrix spike duplicates will provide a quantitative basis for validating the analytical data.

### **4.1 Trip Blanks**

The trip blanks will be prepared by the laboratory by filling 40 ml vials with a Teflon-lined septum with deionized, analyte-free water. The trip blank will accompany the day's sample containers at all times. One trip blank will be returned to the laboratory with each cooler containing aqueous samples for VOC analysis. The trip blank will be analyzed for VOCs.

## **4.2 Field Blanks**

A field blank consists of an empty set of laboratory-cleaned sample containers. At the field location, deionized, analyte-free water is passed through decontaminated sampling equipment and placed in the empty set of sample containers for analysis of the same parameters as the samples collected with the sampling equipment. One field blank will be collected per day.

## **4.3 Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample pairs are analyzed by the laboratory to provide a quantitative measure of the laboratory's precision and accuracy. When performing aqueous volatile organic or organic extractable analysis, the laboratory must be supplied with triple sample volume for each Sample Delivery Group (SDG) in order to perform matrix spike and matrix spike duplicate analyses. This does not include field or trip blanks. Blanks do not require separate matrix spike or duplicate analyses regardless of their matrix.

The limits on an SDG are:

- Each Case for field samples, or
- Each 20 field samples within a Case, or
- Each fourteen calendar day period during which field samples in a Case are received (said period beginning with receipt of the first sample in the SDG), whichever comes first.

Aqueous samples for organics require that three times the volume of the sample selected for each MS/MSD sample be collected and submitted to the laboratory for analysis. Extra volume is not required for aqueous samples for inorganic analysis.

## **4.4 Field Duplicates**

For each sample matrix, a field duplicate sample will be collected at a rate of one sample per 20 environmental samples. The duplicate sample is collected at the same location as the environmental sample. The field duplicate sample is identified using the sample designation system described in Section 5.0. The identity of the field duplicate is

not revealed to the laboratory. The analytical results of the environmental sample will be compared to the field duplicate sample, to evaluate field-sampling precision.

## 5.0 SAMPLE DESIGNATION

---

A sample numbering system will be used to identify each sample. This system will provide a tracking procedure to allow retrieval of information about a particular sample, and will assure that each sample is uniquely numbered. The sample identification will consist of at least three components as described below.

- **Project Identification:** The first component consists of a three letter designation that identifies the project site. For this project, the three letter designation will be AVM.
- **Sample type:** The second component, which identifies the sample type, will consist of a letter code as follows:

SW	- Surface Water
MW	- Monitoring Well
SED	- Sediment Sample

- **Sample Location:** The third component identifies the sample location using a two-digit number.
- **Quality Assurance/Quality Control Samples** will be labeled with the following suffixes:

FB	- Field Blank
MS	- Matrix Spike
MSD	- Matrix Spike Duplicate
TB	- Trip Blank

Duplicate samples will be numbered uniquely as if they were samples. A record of identification for duplicate samples will be maintained.

Examples of identification numbers are given below:

AVM-MW-TB: Trip blank for groundwater sample.

AVM-SW-010-MSD: Surface water sample, surface water sample location 1, matrix spike duplicate.

## **6.0 FIELD DOCUMENTATION**

---

All records and notes generated in the field shall be considered controlled evidentiary documents and may be subject to scrutiny in litigation. Consequently, it is essential that the site manager or his/her designee, either of whom may be called to testify, pay attention to detail, and document to the extent practicable every aspect of the inspection.

Personnel designated as being responsible for documenting field activities shall be aware that all notes may provide the basis for preparing responses for legal interrogatories. Field documentation shall provide sufficient information and data to enable reconstruction of field activities. Numerically serialized field logbooks provide the basic means for documenting field activities. The following information shall be provided on the inside front cover of each field log book:

- Project Name (Site Name)
- Site Location
- Site Manager
- Date of Issue

Control and maintenance of field logbooks is the responsibility of the Field Team Leader.

### **6.1 Documentation of Field Activities**

Field logbook entries shall be legibly written and provide an unbiased, concise, detailed picture of all field activities. Use of preformatted data reporting forms shall be identifiable and referenced to field notebook entries.

Step-by-step instructions and procedures for documenting field activities are provided below and in following sub-sections. Instruction and procedures relating to the format and technique in which field log book entries are made are as follows:

- Leave the first two pages blank. They will provide space for a table of contents to be added when the field log book is complete.
- The first written page for each day identifies the date, time, site name, location, personnel and their responsibilities, other non-personnel and

observed weather conditions. Additionally, during the course of site activities, deviations from the work plan must also be documented.

- It is recommended that entries be made on a new page at the start of each day's field activities.
- All photos taken must be traceable to field logbook entries. It is recommended to reference photo locations on the site sketch or map.
- All entries must be made in ink. Waterproof ink is recommended.
- All entries must be accompanied by the appropriate military time (such as 1530 instead of 3:30).
- Errors must be lined through and initiated. No erroneous notes are to be made illegible.
- The person documenting must sign and date each page as it is completed.
- Isolated logbook entries made by a team member other than the team member designated responsible for field documentation, must be signed and dated by the person making the entry.
- Additions, clarifications, or corrections made after completion of field activities must be dated and signed.

## **6.2 General Site Information**

General site characteristics shall be recorded. Information may include:

- Type of access into facility (locked gates, etc.)
- Anything that is unexpected on site (e.g., appearance of drums that have not been previously recorded)
- Information obtained from interview with access or responsible party personnel (if applicable), or other interested party contact on site.
- Names of any community contacts on site.
- A site map or sketch may be provided. It can be sketched into the logbook or attached to the book. If it is attached, make sure that the project name is on the map.

### **6.3 Sample Activities**

A chronological record of each sampling activity must be kept.

- Explanation of sampling at the location identified in the sampling plan.
- Exact sample location, using permanent recognizable landmarks and reproducible measurements.
- Sample matrix.
- Sample descriptions, i.e., color, texture, odor (e.g., soil type, murky water) and any other important distinguishing features.
- Decontamination procedures, if used.

As part of chain-of-custody procedures, recorded on-site sampling information shall include sample number, date, time, sampling personnel, sample type, designation of sample as a grab or composite, and any preservative used. Sample locations should be referenced by sample number on the site sketch or map. The offer and/or act of providing sample splits to a third party (e.g., the responsible party representative; state, county, or municipal, environmental and/or health agency, etc.) shall be documented.

### **6.4 Sample Dispatch Information**

When sampling is complete, all sample documentation such as chain-of-custody forms shall be copied and copies placed in the project files. A notation of numbers of coolers shipped, carrier and time delivered to pick-up point should be made in one field notebook, preferably that of the Field Team Leader.

**APPENDIX C**

Post-Closure Inspection Form

**APPENDIX C**

**FORMER AMERICAN VALVE MANUFACTURING FACILITY**

**POST-CLOSURE INSPECTION FORM**

**A. Disposal Site Cap**

The disposal site cap will be inspected by traversing the slope and examining for the following items. Please place a check mark on each line accordingly:

- |   | <u>No</u> | <u>Yes</u> |
|---|-----------|------------|
| 1. Is there bare, dead or damaged vegetated areas?        | ___       | ___        |
| 2. Is there evidence of cracks or subsidence?             | ___       | ___        |
| 3. Is there evidence of burrowing by animals?             | ___       | ___        |
| 4. Is there any deep-rooted vegetation present?           | ___       | ___        |
| 5. Is there any erosion damage to vegetative areas?       | ___       | ___        |
| 6. Is there any low spots or settlement in cap system?    | ___       | ___        |
| 7. Is there evidence of ponding?                          | ___       | ___        |
| 8. Was a settlement survey performed (is so, attach data) | ___       | ___        |

Comments: *(Please comment for each question answered "yes")*

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**B. Site Drainage System**

The drainage system will be inspected by traversing the full length of the drainage system and examining for the following:

- |   | <u>No</u> | <u>Yes</u> |
|---|-----------|------------|
| 1. Is there any erosion damage to swales?   | ___       | ___        |
| 2. Is there any debris in swales?           | ___       | ___        |
| 3. Sediment in swales, ditches or culverts? | ___       | ___        |
| 4. Evidence of ponding water?               | ___       | ___        |

Comments: *(Please comment for each question answered "yes")*

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**C. Monitoring Wells**

Monitoring wells will be inspected for the following:

	<u>No</u>	<u>Yes</u>
1. Is there any damage to the lock or locking cap?	___	___
2. Is there any evidence of erosion of soils in the immediate area around the well casing?	___	___
3. Is there any damage to the protective casing?	___	___
4. Is concrete collar (well seal) cracked or settled?	___	___

Comments: (Please comment for each question answered "yes")

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**D. Gas Vents**

Gas vents will be inspected for the following:

	<u>No</u>	<u>Yes</u>
1. Is there any damage to the risers?	___	___
2. Are any animal/insect screens broken or missing?	___	___

Comments: (Please comment for each question answered "yes")

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**E. Access Road**

Site access road will be inspected by examining the following items:

	<u>No</u>	<u>Yes</u>
1. Is there any surface breakup or potholes?	___	___
2. Is there evidence of low spots, settlement or ponding?	___	___

Comments: (Please comment for each question answered "yes")

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**F. Landfill Gas Migration**

Air quality at the perimeter of the disposal site will be checked using instruments capable of detecting combustible and toxic gases.

Description of Monitoring Results (attach additional pages as required)

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\_\_\_\_\_  
Inspector

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date