Dutchess Sanitation (FICA) Landfill

275 VAN WAGNER ROAD
POUGHKEEPSIE, DUTCHESS COUNTY, NEW YORK

Site Management Plan

NYSDEC Site Number: 3-14-047

Prepared for:
New York State Department of Environmental Conservation
Division of Environmental Remediation
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Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date

JUNE 2011

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1.0 Introduction and Description of Remedial Program

1.1 Introduction

This document is required by New York State Department of Environmental Conservation (NYSDEC) as an element of the remedial program for the Dutchess Sanitation (FICA) Landfill (the "Site") under the Inactive Hazardous Waste Disposal Site Remedial Program.

1.1.1 General

The site is a Class 2 inactive hazardous waste site that was originally permitted as a municipal waste landfill. The site was active during the period from 1971 through 1983 and, was shut down after a fire in 1984. Leachate containing volatile organic compounds (VOCs) was generated during the firefighting efforts. Site inspections identified leachate seeps along the eastern slope of the landfill that were discharging toward an adjacent wetland area that encroaches upon the landfill. A Phase I investigation at the site indicated that Remedial Investigation/Feasibility Study (RI/FS) was necessary. A subsequent interim remedial measure (IRM) included stabilization of the southern slope of the landfill and a temporary cap. A Part 360 cap was constructed over the entire landfill in 1994. Additionally, landfill gas and leachate collection and treatment systems were also installed.

The Site Management Plan (SMP) presented herein was prepared to monitor and manage residual environmental impacts relating to the site. All historic documents and reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. This June, 2011 SMP was prepared by Aztech Technologies, Inc. on behalf of the NYSDEC under the guidelines established by NYSDEC. A site location map is provided in Figure 1.

1.1.2 Purpose

Groundwater, surface water, sediment, leachate and soil vapor/landfill gas monitoring have identified petroleum and/or chlorinated solvent based VOCs and metals at concentrations at or above drinking water standards. Engineering Controls have been incorporated into the SMP in order to control exposures during use of the site and, to ensure protection of public health and the environment. This SMP provides a detailed description of all procedures required to manage impacted and/or potentially impacted media remaining at the site. This includes annual media monitoring and performance of quarterly inspections.

1.1.3 Revisions

Revisions to this plan can be proposed in writing to the NYSDEC's project manager. The NYSDEC project manager will provide a notice of any approved changes to the SMP, and append these notices to the SMP.

1.2 Site Background

1.2.1 Site Location and Description

The site is located in the Town of Poughkeepsie, Dutchess County, New York and is identified as Block 03 and Lot 345435 (Parcel Grid Identification Number 134689-6262-03-345435-0000)

on the Town of Poughkeepsie, Dutchess County Tax Map. The site encompasses approximately 17-acres, and is bounded by undeveloped land to the north, east and west. NYSDEC registered wetlands (PK-13) are adjacent to the east of the Site. Van Wagner Road is adjacent to the south of the Site (see Figure 2). The Schatz Federal Bearings Landfill (inactive hazardous waste site # 314003) is located along the southwestern boundary of the site.

1.2.2 Site History

The Site was historically a privately owned and operated landfill, which was used for the disposal of municipal and commercial wastes from 1971 through 1983. Operations ceased in October of 1984 after a significant fire occurred at the site. In 1980, the Site was listed as a NYSDEC Inactive Hazardous Waste Site. In 1986, the Site was designated as a Class 2 site, which is defined by NYSDEC as a site that poses a significant threat to public health and the environment. In 1989, J&T Recycling (the site operator) signed an Order on Consent with the New York State Department of Law (NYSDOL) and agreed to conduct an RI/FS at the Site. The purpose of the RI/FS was to determine the nature and extent of the impacts related to the hazardous waste present at the site and, to identify the best alternative to mitigate the negative impacts associated with that source material.

The landfill reopened in July 1991 as part of an interim remedial measure (IRM) to stabilize the steep southern slope. This included acceptance of construction and demolition (C&D) debris and construction of two lined cells to bring the facility to proper grade. Also included in the IRM was the installation of landfill gas and leachate collection systems.

In 1993, a record of decision (ROD) required the treatment and removal of surface water and sediment from the northeast corner of the site and installation of a landfill cap in conformance with 6NYCRR Part 360 regulations. Additionally, landfill gas collected from the site was conveyed to a flare system that operated for a period of time immediately following completion of the IRM. However, continued operation of the flare system was terminated as a result of relatively high operation costs. Landfill gas is currently vented via passive vents.The IRM was completed in 1995.

Routine operation, maintenance, and monitoring activities were performed by O'Brien & Gere Engineers, Inc. (OBG) and Iyer Environmental Group, PLLC (IEG) from February 2002 through November 2007.

1.2.3 Geologic Conditions

The regional geology generally consists of metamorphic and sedimentary bedrock overlain by unconsolidated sediments resulting from glacial and alluvial deposition. According to Fisher, et al. (1970) the bedrock underlying the region consists of the Austin Glen, Normanskill, Stuyvesant Falls, and Mount Merino and Indian River Formations. The Austin Glen Formation is the most widespread bedrock formation in the area and underlies the site. This formation is middle to upper Ordivician aged formation. Rock types in this formation consist of greywacke and shale.

According to the RI/FS report prepared for the site in 1993 by Dunn Geoscience Engineering Co., P.C. (Dunn), bedrock was encountered at all eleven drilling location for the groundwater monitoring wells. Bedrock is located at or near the ground surface across most of the site. At

monitoring well DGC-11 the bedrock outcrops at the surface and is present less than five feet below ground surface (bgs) at groundwater monitoring wells DGC-4, DGC-5, DGC-9, and DGC-10. The deepest bedrock was encountered at groundwater monitoring wells DGC-3 and DGC-6 at 22 and 27 feet bgs, respectively. Bedrock depths varied from seven to eleven feet bgs at the remaining groundwater monitoring well locations.

According to the RI/FS report, unconsolidated deposits were encountered at all drilling locations with the exception of groundwater monitoring well DGC-11. The thickest section of overburden was encountered at groundwater monitoring wells DGC-3 and DGC-6. A layer of sand and gravel (not encountered at any of the other drilling locations) was present immediately above the weathered bedrock. A dense silt and clay deposit overlies the sand and gravel at these locations. This silt/clay layer is likely associated with deposition within the wetland along the eastern portion of the site.

Overburden at the remaining drilling locations consisted of fill found to immediately overlie the weathered bedrock. The fill consisted of reworked natural sediments containing varying amounts of clay, silt, sand, gravel, and weathered bedrock.

According to the groundwater information presented in the November, 2007 OM&M Report prepared by IEG and submitted by OBG, the shallow groundwater at the site flows to the east toward the wetland area. The groundwater elevation data collected from the bedrock wells indicates that the deep groundwater generally flows from the highest groundwater elevation, at groundwater monitoring well DGC-9, toward the east, southeast, and south.

1.3 Summary of Remedial Investigation Findings

A Remedial Investigation (RI) was performed to characterize the nature and extent of contamination at the site. The results of the RI are described in detail in the following reports:

- Remedial Investigation/Feasibility Study, prepared by Dunn Geoscience Engineering Co., P.C., dated January 23, 1993.
- Record of Decision, prepared by the New State Department of Environmental Conservation, dated March 1993
- Construction Certification Report, prepared by Spectra Environmental Group, Inc., dated January 1996
- OM&M Report, prepared by Iyer Environmental Group, PLLC, submitted by O'Brien & Gere Engineers, Inc., dated November 2007

Generally, the RI determined that the environmental risks posed by the site included the degradation of the quality of the adjacent wetland to the east of the site.
Below is a summary of site conditions when the RI was performed in 1992:

<u>Surface Water and Sediment</u>

Surface water and sediment samples were collected from the wetland area on the east side of the landfill. The results of the sampling events identified copper, lead, chromium, iron, and ammonia as the compounds/constituents of concern.

Groundwater

Groundwater samples were collected from groundwater monitoring wells installed around the perimeter of the landfill. The primary compounds/constituents of concern were xylenes, which were detected at concentrations up to ten (10) times greater than the drinking water standard of 5.0 parts per billion (ppb). Other compounds/constituents of concern included benzene, arsenic, barium and lead, which were detected at concentrations at or slightly above drinking or groundwater standards.

Soil Gas

A soil gas survey was conducted over the entire landfill using a 100-foot grid. The primary organic compounds detected in the soil gas were benzene, toluene, ethylbenzene, and xylenes, all of which are common constituents of petroleum-related products. Additional compoundss included methyl ethyl ketone, cis-1,1-dichloroethylene, tetrachloroethylene, and chlorobenzene.

Landfill Gas

In response to nuisance odor complaints from residents in the vicinity of the site, samples from the landfill gas vents were collected and analyzed. The primary landfill gas was identified as methane. Hydrogen sulfide was also identified as the gas that was causing the nuisance odor.

1.4 Summary of Remedial Actions

The site was remediated in accordance with the NYSDEC Approved Remedial Action Plan (ARAP) dated April 1994.

The following is a summary of the Remedial Actions performed at the site:

1. Leachate Management

   A. Groundwater Collection – A drain consisting of approximately 465 feet of four (4) inch diameter slotted corrugated pipe and a concrete tank to serve as a sump were installed at the toe of the eastern slope of the landfill adjacent to the wetland.

   B. Leachate Storage – The underground leachate storage tank was disconnected and closed in place (filled with sand). A secondary containment berm was constructed around the existing above ground leachate tank, which remained in service. An electric sump pump was installed to transfer leachate from the manhole to the tank.

   It should be noted that the leachate collection system is no longer operational.

2. Landfill Gas Management

   A. Collection – Previously installed vertical landfill gas vent pipes and associated gas collection manifold system in the C&D fill area of the landfill were raised to accommodate an additional 18 inches of cover soil and reinstalled as per the ARAP. Expansion joints were added to the manifold at approximately 100 foot intervals, and manifold pipe anchors were added approximately every 20 feet. The manifold was then connected to the landfill gas treatment system.

Four gas vents per acre were installed in the 1994 cover area in accordance with the ARAP.

B. Treatment – A flare system was installed to treat the landfill gas via combustion. However, according to the November, 2007 OM&M report, prepared by OBG, the flare system operated for some time following the 1994 completion of the remedial activities but was discontinued due to the relatively high cost of supplemental fuel consumption and has remained non-operational. The NYSDEC issued a letter to CH Energy Group in July 2004 requesting the electrical service for the flare system be discontinued.

3. Sediment Removal – Approximately 100 cubic yards of impacted sediments were removed from the wetland area in the northeastern corner of the site. The sediment was placed within the area of the landfill to be capped. The sediment removal was completed in accordance with the ARAP, in order to minimize the impact to the wetland.

4. Final Cover Placement

A. Approved Design – The approved design under the ARAP consisted of a 40 mil geomembrane barrier layer, a 24 inch barrier protection layer, and a six inch topsoil layer.

B. Grading materials – The ARAP allowed for beneficial use determination (BUD) materials to be used for grading and sub-base material below the geomembrane. These materials included the excavated sediments from the wetland area in the northeast portion of the site, sludge received from the Town of Poughkeepsie Water Treatment Plant, and coal fly ash from the Central Hudson Gas and Electric Corporation, Danskammer Generating Facility.

C. Sub-base Preparation – The sub-base was compacted and inspected by the geomembrane contractor prior to installation of the liner. Unacceptable debris and/or material, which could potentially damage the geomembrane liner, were removed by the contractor.

D. Barrier Layer – The geomembrane liner was installed by an approved contractor in accordance with the ARAP. The geomembrane was anchored in a shallow trench at the landfill perimeter.

E. Barrier Protection and Topsoil Layer – The barrier protection layer was installed at a thickness of 24 inches. The barrier protection layer consisted of bank run gravel and various BUD materials including sand and filter cake mixture, foundry sands and dredge materials. Topsoil was installed in a six inch layer and consisted of filter cake material and virgin topsoil. After the topsoil was placed, rocks, roots and other debris were removed and seed and mulch was applied.

Remedial activities were completed at the site in summer of 1995.

1.4.1 Removal of Contaminated Materials from the Site

No contaminated materials were removed from the site. Excavated sediment from the wetland in the northeast corner of the site was placed within the landfill.

1.4.2 Site-Related Treatment Systems

No long-term treatment systems were installed as part of the site remedy.

1.4.3 Remaining Contamination

Reportedly, no contamination was left outside the footprint of the landfill.

2.0 Contingency Plan

2.1 Contingency Plan

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

2.1.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance, the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to the NYSDEC and Aztech.

Table 1: Emergency Contact Numbers

Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 (3 day notice required for utility mark out)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

Table 2: Contact Numbers

NYSDEC Project Manager – Carl Hoffman	(518) 402-9813
Aztech Technologies, Inc. – Joe McCormick	(518) 885-5383
Aztech Technologies, Inc. – Matt Ryan	(518) 885-5383

* Note: Contact numbers subject to change and should be updated as necessary

2.1.2 Map and Directions to Nearest Health Facility

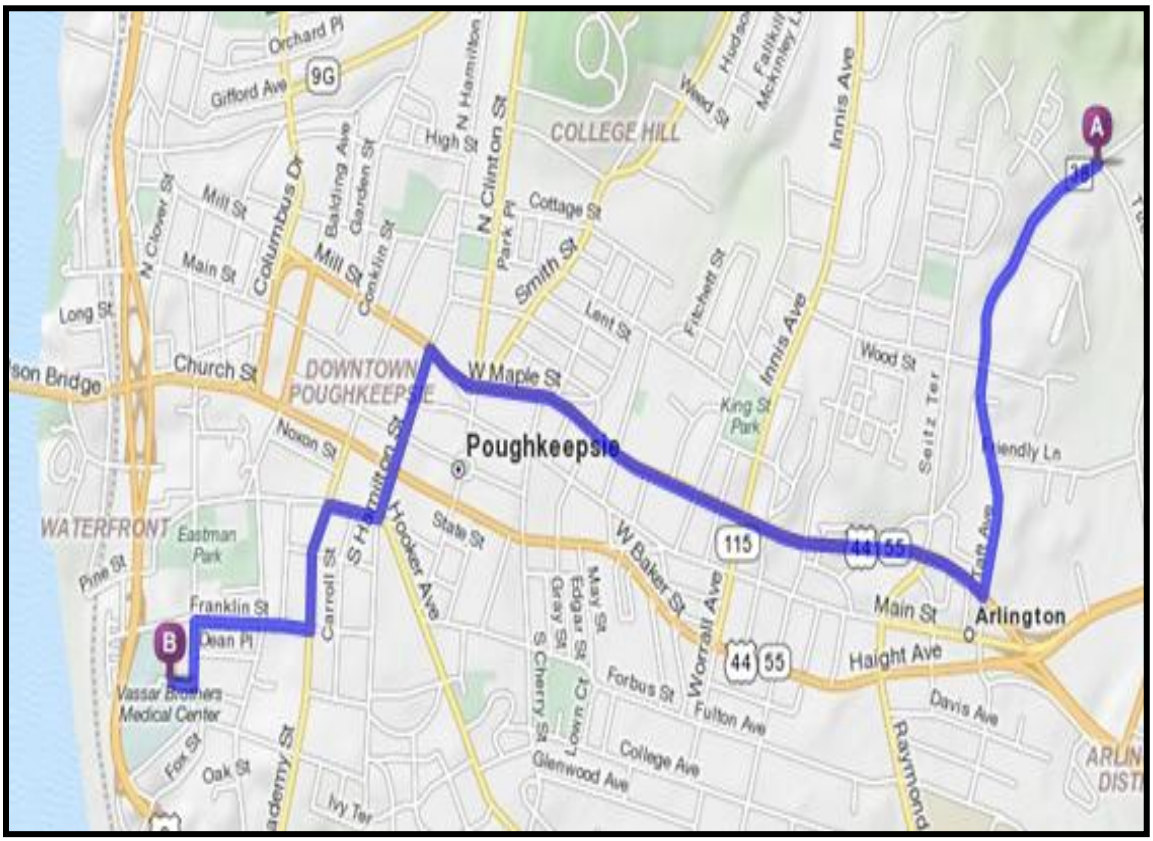
- Site Location: 275 Van Wagner Road, Poughkeepsie, NY
- Nearest Hospital Name: Vassar Brothers Medical Center
- Hospital Location: 45 Reade Place, Poughkeepsie, NY 12601
- Hospital Telephone: (845) 454-8500

Directions to the Hospital:

		Miles Per Section	Miles Driven
A	**Van Wagner Rd & Tucker Dr** Poughkeepsie, NY 12603 Add a Note		
●	1. Start out going SOUTH on VAN WAGNER RD / CR-38 toward MANOR HILL PARK. Continue to follow CR-38.	Go 0.9 Mi	0.9 mi
↱	2. Turn RIGHT onto MAPLE ST EXT / US-44 W / RT-55 W. Continue to follow US-44 W / RT-55 W. *US-44 W is just past ARLINGTON AVE*	Go 1.5 Mi	2.4 mi
↰	3. Turn LEFT onto N HAMILTON ST. *N HAMILTON ST is 0.1 miles past CLINTON SQ*	Go 0.3 Mi	2.7 mi
↱	4. Turn RIGHT onto MONTGOMERY ST. *MONTGOMERY ST is just past CHURCH ST*	Go 0.1 Mi	2.9 mi
↰	5. Take the 2nd LEFT onto ACADEMY ST. *If you reach GARFIELD PL you've gone a little too far*	Go 0.2 Mi	3.1 mi
↱	6. Take the 2nd RIGHT onto FRANKLIN ST. *If you reach HOLMES ST you've gone about 0.1 miles too far*	Go 0.3 Mi	3.4 mi
↰	7. Turn LEFT onto LINCOLN AVE.	Go 0.1 Mi	3.5 mi
↱	8. Take the 1st RIGHT onto READE PL. *If you reach LIVINGSTON ST you've gone a little too far*	Go 0.05 Mi	3.6 mi
■	9. 45 READE PL is on the RIGHT. *Your destination is just past YOUNG ST*		3.6 mi
B	**Vassar Brothers Medical Center** 45 Reade Pl, Poughkeepsie, NY 12601 (845) 454-8500 Add a Note	3.6 mi	3.6 mi

Total Travel Estimate: **3.58 miles - about 11 minutes**

Map Showing Route from the site to the Hospital:



2.1.3 Response Procedures

As appropriate, the fire department and other emergency response groups will be notified immediately by telephone in the event of an emergency. The list of emergency telephone numbers is found at the beginning of this Contingency Plan (Table 1). The list will also be made readily available to all field personnel at all times.

3.0 Site Monitoring Plan

3.1 Introduction

3.1.1 General

The Site Monitoring Plan (SMP) describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate impacts from the site, the soil cover system, and all affected site media identified below. This SMP may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This SMP describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, landfill gas, surface water and, sediment);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance;
- Assessing achievement of the remedial performance criteria;
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this SMP provides information on:

- Sampling locations, protocol, and frequency;
- All designed monitoring systems (e.g., well construction information);
- Analytical sampling program requirements;
- Reporting requirements;
- Inspection and maintenance requirements for monitoring wells;
- Quarterly inspection.

Annual monitoring of the performance of the remedy and overall reduction of site related compounds on-site will be conducted for the three years. The frequency thereafter will be determined by NYSDEC. Trends in the concentrations of site related compounds in soil vapor and groundwater at the site will be evaluated to determine if the remedy continues to be effective. Monitoring programs are summarized in Table 3 and outlined in detail in Sections 3.2 and 3.3 below.

Table 3: Monitoring/Inspection Schedule

Monitoring Program	Frequency*	Matrix	Analysis
Groundwater	Annual	Groundwater	• Target Compound List (TCL) Volatiles via EPA Method 624/SW846 8260 • TCL Semivolatiles via EPA Method 8270 • TCL PCBs via EPA Method 8082 • Total Analyte List Metals via EPA Method 200./SW846 • Chlorides via EPA Method 300.0 • Total Suspended Solids via EPA Method160.2 • Total Organic Carbon via EPA Method 415.1 • Groundwater Quality Parameters including pH, specific conductivity, and temperature.
Soil Vapor	Annual	Soil Vapor	• Landfill gas parameters including hydrogen sulfide (H_2S), oxygen (O_2), methane (CH_4), and carbon monoxide (CO)
Surface Water	Annual	Surface Water	• Target Compound List (TCL) Volatiles via EPA Method 624/SW846 8260 • TCL Semivolatiles via EPA Method 8270 • Total Analyte List Metals via EPA Method 200./SW846 • Chlorides via EPA Method 300.0 • Total Suspended Solids via EPA Method160.2 • Total Organic Carbon via EPA Method 415.1 • Groundwater Quality Parameters including pH, specific conductivity, and temperature.
Sediment	Annual	Sediment	• Target Compound List (TCL) Volatiles via EPA Method 624/SW846 8260 • TCL Semivolatiles via EPA Method 8270 • Total Analyte List Metals via EPA Method 200./SW846 • Chlorides via EPA Method 300.0
Site Wide Inspection	Quarterly	Landfill Infrastructure	• Landfill Cap Inspection (barrier layer, geomembrane, vegetation) • Vent Riser Inspection • Monitoring Well Inspection • Perimeter Fence Inspection • Soil Gas Sampling Point Inspection

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH

3.2 Engineering Controls

All engineering controls at the site are considered passive components and do not require an operation and maintenance plan. The engineering controls in place at the site include fencing, passive landfill gas vents, the barrier layer and the barrier protection layer. The engineering controls will be monitored with quarterly inspections.

3.3 Media Monitoring Program

3.3.1 Groundwater Monitoring

Groundwater monitoring will be performed on an annual basis to assess the performance of the remedy. The network of monitoring wells has been installed at the site in order to monitor

perimeter of the landfill. A figure showing the monitoring well array is provided in Figure 2 and monitoring well specifications are provided in Table 4 below.

Table 4: Monitoring Well Specifications

Well ID	Ground Elevation	Top of Casing Elevation	Bedrock Elevation	Total Depth	Screened Interval	Sand Pack	Bentonite Seal
DGC-1	158.3	159.69	147.3	71.1	61.1 – 71.1	58.2 – 71.1	54.8 – 58.2
DGC-2S	161.4	162.66	149.9	31.7	21.7 – 31.7	19.2 – 31.7	15.2 – 19.2
DGC-2D	161.5	162.66	150.5	86.5	66.5 – 86.5	63.0 – 96.5	60.0 – 63.0
DGC-3	163.4	164.21	141.4	27.1	16.9 – 26.9	16.0 – 27.1	13.0 – 16.0
DGC-4	159.4	160.5	155.2	51.1	41.1 – 51.1	39.5 – 51.1	36.0 – 39.5
DGC-5	159.7	160.63	157.7	19.7	9.7 – 19.7	8.0 – 19.7	4.5 – 8.0
DGC-6OB	155.5	157.7	NA	18.5	8.0 – 18.0	7.0 – 18.5	4.0 – 7.0
DGC-6D	155.5	156.23	128.5	96.5	76.5 – 96.5	74.4 – 96.5	70.4 – 74.4
DGC-7	223.46	224.87	215.96	56.9	46.9 – 56.9	44.7 – 56.9	41.3 – 44.7
DGC-8	222.5	224.38	212.2	56.2	46.2 – 56.2	43.4 – 56.2	39.8 – 43.4
DGC-9	227.6	228.92	222.4	97.5	77.5 – 97.5	75.7 – 97.5	72.3 – 75.7
DGC-10A	218.3	219.9	215.3	61.5	51.5 – 61.5	48.7 – 61.5	45.5 – 48.7
DGC-11S	170.4	171.89	170.4	21.8	11.8 – 21.8	9.7 – 21.8	6.7 – 9.7
DGC-11D	170.5	171.9	170.5	71.0	61.0 – 71.0	58.2 – 71.0	54.5 – 58.2

3.3.1.1 Sampling Protocol

All monitoring well sampling activities will be recorded in a field book and/or a sampling log. Other observations (e.g., well integrity, etc.) will also be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network.

Groundwater gauging is performed to track the groundwater table elevation and direction of groundwater flow at the site. The groundwater elevation for each monitoring well will be calculated based on the relative elevation of the top of the monitoring well casing (TOC) and the depth to groundwater. The TOC and calculated groundwater elevations are relative to the surveyed elevations provided in the RI and OM&M reports for the site. A water level indicator graduated to 0.01 feet will be used to measure the depth to groundwater in the monitoring wells.

Based on the gauging data and the known total depths of the monitoring wells, the volume of groundwater within each casing will be calculated. Each monitoring well will be purged of approximately three (3) volumes of groundwater, or until dryness, using a dedicated, disposable bailer. The monitoring wells will be allowed to recharge prior to sample collection. Groundwater samples will then be collected and decanted into pre-preserved, laboratory-supplied sampling vials.

The samples will be placed on ice and shipped, under chain of custody, to Adirondack Environmental Services, Inc. (AES) in Albany, New York. The samples will be analyzed within the applicable holding time for the respective laboratory analytical methods.

3.3.1.2 Monitoring Well Repairs, Replacement and Decommissioning

If biofouling or silt accumulation occurs in the monitoring wells, they will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced if an event renders the wells unusable. Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will be notified prior to any repair or decommissioning/replacement of monitoring wells. The repair or decommissioning/replacement The NYSDEC will be notified prior to any repair or decommissioning/replacement of monitoring wells. The repair or decommissioning/replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise directed by the NYSDEC.

3.3.2 Surface Water Monitoring

Surface Water monitoring will be performed on an annual basis to assess the performance of the remedy. Surface water sampling locations will remain consistent with previous monitoring events performed at the site. A figure showing the surface water monitoring locations is provided in Figure 2.

3.3.2.1 Sampling Protocol

All surface water sampling activities will be recorded in a field book and/or a sampling log. Surface water samples will be collected and decanted into pre-preserved, laboratory-supplied sampling vials.

The samples will be placed on ice and shipped, under chain of custody, to Adirondack Environmental Services, Inc. (AES) in Albany, New York. The samples will be analyzed within the applicable holding time for the respective laboratory analytical methods.

3.3.3 Sediment Monitoring

Sediment monitoring will be performed on an annual basis to assess the performance of the remedy. Sediment sampling locations will remain consistent with previous monitoring events performed at the site. A figure showing the surface water monitoring locations is provided in Figure 2.

3.3.3.1 Sampling Protocol

All sediment sampling activities will be recorded in a field book and/or a sampling log. Sediment samples will be collected by advancing Geoprobe® hand tooling into the sediment. The sample will be collected within a 1-½ inch inside diameter acetate sleeve 2.0 feet in length. The sample

will be transferred from the acetate sleeve and be placed into the appropriate laboratory-supplied sample containers.

The samples will be placed on ice and shipped, under chain of custody, to Adirondack Environmental Services, Inc. (AES) in Albany, New York. The samples will be analyzed within the applicable holding time for the respective laboratory analytical methods.

3.3.4 Landfill Gas Monitoring

Landfill gas monitoring will be performed on an annual basis to assess the performance of the remedy. A network of landfill gas monitoring points has been installed to monitor the perimeter of the site. A figure showing the landfill gas monitoring points (SG-1 through SG-6) is provided in Figure 2. In addition, landfill gas monitoring will be conducted at the passive landfill gas vents located across the landfill cap.

3.3.4.1 Sampling Protocol

All landfill gas monitoring activities will be recorded in a field book and/or a sampling log. Landfill gas monitoring will be performed using a Landtec GEM™ 2000 PLUS intrinsically safe landfill gas meter.

3.4 Site-wide Inspection

Site-wide inspections will be performed on a quarterly schedule. If necessary, and with the approval of the NYSDEC, site-wide inspections will also be performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. During these inspections, any deficiency with respect to the condition of the Engineering Controls and/or monitoring devices will be documented and forwarded to the NYSDEC.

3.4.1 Corrective Measures Plan

If any component of the remedy is found to have failed, a corrective measures plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

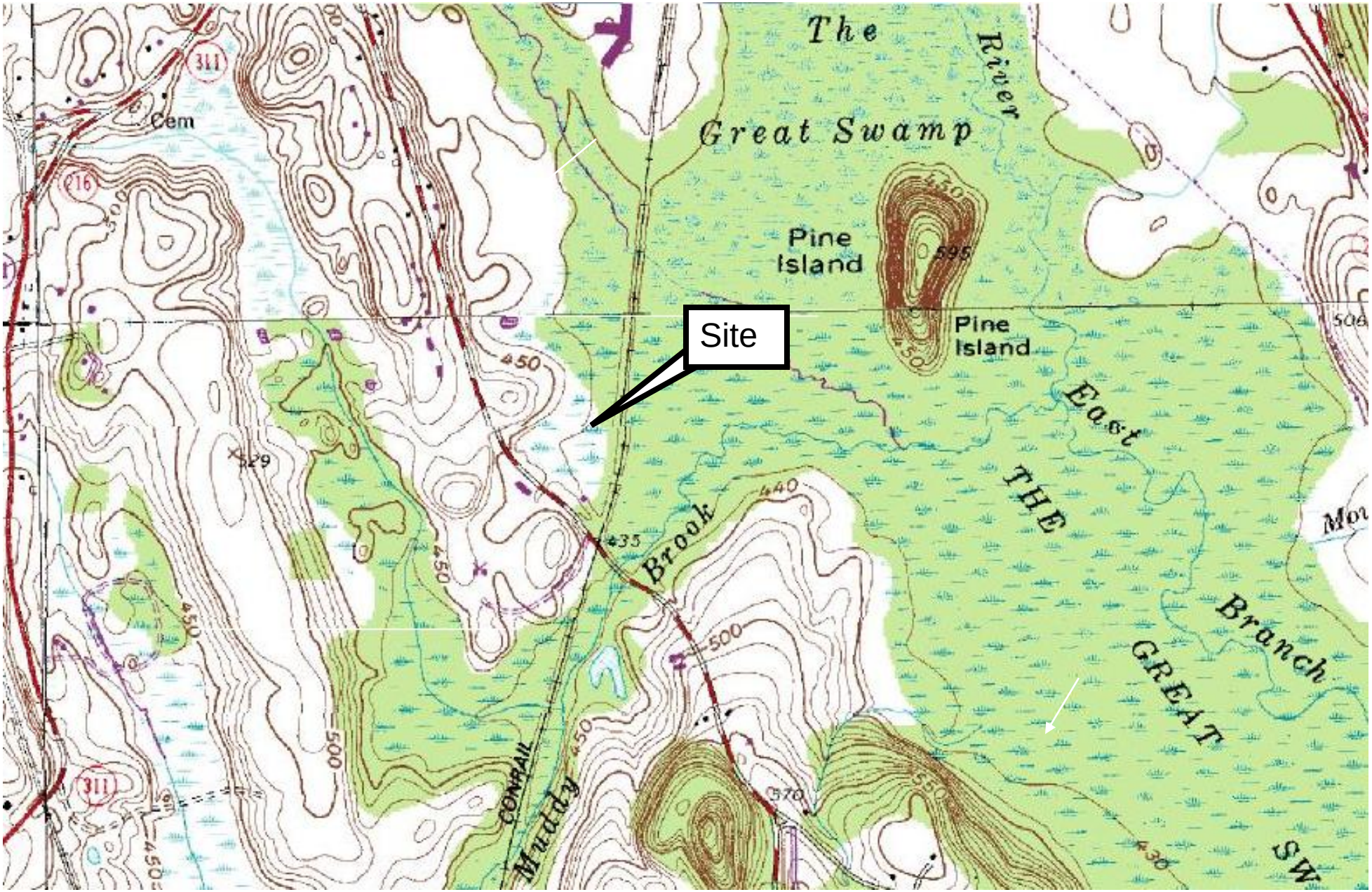
3.5 Monitoring Reporting Requirements

All monitoring results will be reported to NYSDEC in an annual Site Status Report. The report will include, at a minimum:

- Date of monitoring event;
- Personnel conducting monitoring;
- Description of the activities performed;
- Type of samples collected (e.g., groundwater, surface water, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A site map illustrating sample types and locations;

- Copies of all laboratory data sheets and the data deliverables required for all points sampled.
- Any observations, conclusions, or recommendations; and
- A determination as to whether conditions have changed since the last reporting event.
- Data will be reported in hard copy or digital format as determined by NYSDEC.

Figures



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EXPERTISE YOU CAN COUNT ON

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Figure 1 - Site Location Map
Cross County Sanitary-Kessman Landfill
Town of Patterson, Putnam County, NY
NYSDEC Site Number: 3-40-011

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- Monitoring Well
- Surface Water/Sediment Sample Location

Figure 2 - Site Map
Cross County Sanitation – Kessman Landfill
Town of Patterson, Putnam County, NY
NYSDEC Site Number: 3-40-011