Second Five-Year Review Report
Volney Landfill Superfund Site
Oswego County
Town of Volney, New York

Prepared by:

United States Environmental Protection Agency
Region 2
New York, New York

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Table of Contents

Acronyms Used in this Document		iv
Executive Summary		v
Five-Year Review Summary Form		vi
I.	Introduction	1
II.	Site Chronology	1
III.	Background	1
	Site Location	1
	Physical Characteristics	2
	Site Geology/Hydrogeology	2
	Land and Resource Use	3
	History of Contamination	4
	Initial Response	4
	Basis for Taking Action	4
IV.	Remedial Actions	5
	Remedy Selection	5
	Remedy Implementation	6
	Institutional Controls Implementation	7
	Systems Operations/Operation and Maintenance	8
V.	Progress Since Last Five-Year Review	9
VI.	Five-Year Review Process	10
	Administrative Components	10
	Community Involvement	10
	Document Review	10
	Data Review	10
	Site Inspection	11
	Interviews	11
	Institutional Controls Verification	11
	Other Comments on Operation, Maintenance, Monitoring, and Institutional Controls	12

VII. Technical Assessment 12

Question A: Is the remedy functioning as intended by the decision documents? 12
Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid? 13
Question C: Has any other information come to light that could call into question the protectiveness of the remedy? 14
Technical Assessment Summary 14

VIII. Recommendations and Follow-Up Actions 14

IX. Protectiveness Statement 14

X. Next Review 15

FIGURE

Figure 1 Volney Landfill Leachate and Groundwater Monitoring Location Map

TABLES

Table 1 Chronology of Site Events
Table 2 Annual Operation, Maintenance, and Monitoring Costs
Table 3 Progress Since the First Five-Year Review Report
Table 4 Documents, Data, and Information Reviewed in Completing the Five-Year Review
Table 5 Western Slope Seepage Analytical Results
Table 6 Other Comments on Operation, Maintenance, Monitoring, and Institutional Controls
Table 7 Recommendations and Follow-Up Actions

Acronyms Used in this Document	
ARARs	Applicable or Relevant and Appropriate Requirements
COC	Contaminant of Concern
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
GWQS	Groundwater Quality Standard
LLDPE	Low Density Polyethylene
MCLs	Maximum Contaminant Levels
µg/l	Micrograms per Liter
NYSDEC	New York State Department of Environmental Protection
PDD	Post-Decision Document
PRGs	Preliminary Remediation Goals
PRPs	Potentially Responsible Parties
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
VOCs	Volatile Organic Compounds
WQSGV	Water Quality Standards and Guidance Values

This is the second five-year review for the Volney Landfill Superfund site. The site is located in the Town of Volney, Oswego County, New York. Currently, the landfill remedy is functioning as intended by the decision documents and currently protects human health and the environment.

Five-Year Review Summary Form

Site Name *(from WasteLAN)*: Volney Landfill		
EPA ID *(from WasteLAN)*: NYD980509376		
Region: 2	**State:** NY	**City/County:** Town of Volney/Oswego County

SITE STATUS

NPL Status: ■ Final □ Deleted □ Other (specify)

Remediation Status (choose all that apply): □ Under Construction □ Operating ■ Complete

Multiple OUs ■ YES □ NO | **Construction completion date:** June 20, 2002

Are portions of the site in use or suitable for reuse? ■ YES □ NO □ N/A

REVIEW STATUS

Lead agency: ■ EPA □ State □ Tribe □ Other Federal Agency

Author name: Thomas Mongelli

Author title: Remedial Project Manager | **Author affiliation:** EPA

Review period: 8/2005 to 8/2010

Date(s) of site inspection: 7/15/2010

Type of review:
□ Post-SARA □ Pre-SARA □ NPL-Removal only
□ Non-NPL Remedial Action Site □ NPL State/Tribe-lead
□ Regional Discretion □ Policy ■ Statutory

Review number: □ 1 (first) ■ 2 (second) □ 3 (third) □ Other (specify)

Triggering action:
□ Actual RA Onsite Construction at OU #_ □ Actual RA Start at OU#
□ Construction Completion ■ Previous Five-Year Review Report
□ Other (specify)

Triggering action date *(from WasteLAN)*: 8/5/2005

Due date ***(five years after triggering action date)***: 8/5/2010

Does the report include recommendation(s) and follow-up action(s)? □ yes ■ no
Is human exposure under control? ■ yes □ no
Is migration of contaminated groundwater stabilized? ■ yes □ no □ not yet determined
Is the remedy protective of the environment? ■ yes □ no □ not yet determined
Acres in use or suitable for use: restricted: 85 acres **unrestricted:** 0 acres

Five-Year Review Summary Form (continued)

Issues, Recommendations, and Follow-Up Actions

Leachate was found to be sporadically seeping around part of the cap along the western side of the landfill, creating wet areas. This situation is currently being addressed by pumping from a gas vent in the area. If the current situation persists or worsens, a larger-scale solution would need to be designed and implemented.

Other Comments on Operation, Maintenance, Monitoring, and Institutional Controls

This site has ongoing operation, maintenance, and monitoring activities as part of the selected remedy. As was anticipated by the decision documents, these activities are subject to routine modification and adjustment. This report includes suggestions for improving, modifying and/or adjusting these activities.

Protectiveness Statement

The remedy currently protects human health and the environment in the short-term because the landfill has been capped, removing direct contact (*i.e.*, ingestion or dermal contact of soil) exposures to the public and ecological receptors and reducing percolation through the landfill. In addition, institutional controls are in place to further prevent potential exposures to the public. Area residents and businesses are on public water, thus, reducing potential direct contact exposures. In order for the remedy to be protective in the long-term, measures need to be taken to permanently address the leachate seep.

I. Introduction

This is the second five-year review for the Volney Landfill site, located in the Town of Volney, Oswego County, New York. This five-year review was conducted by United States Environmental Protection Agency (EPA) Remedial Project Manager (RPM) Thomas Mongelli. The review was conducted pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §9601 *et seq.* and 40 CFR 300.430(f)(4)(ii) and in accordance with the Comprehensive Five-Year Review Guidance, OSWER Directive 9355.7-03B-P (June 2001). The purpose of five-year reviews is to ensure that implemented remedies protect public health and the environment and that they function as intended by the site decision documents. This report will become part of the site file.

A five-year review is required at this site due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

In accordance with the Section 1.3.3 of the five-year review guidance, a five-year review is triggered by signature date of the previous five-year review report. The trigger for this five-year review is the signature date of the first five-year review report, which was August 5, 2005.

Based upon this five-year review, it has been determined that the implemented remedy is functioning as intended and continues to protect human health and the environment.

II. Site Chronology

Table 1 (attached) summarizes the site-related events from discovery to the present.

III. Background

Site Location

The Volney Municipal Landfill Superfund site is a closed landfill located in a rural area of the Town of Volney, Oswego County, New York. It is situated at the intersection of Silk Road and Howard Road. The site is bordered to the north by Potter Spring; to the east by Silk Road, Bell Creek and wetlands; to the south by a one-quarter midget racecar track and the Oswego County Airport, and to the west and northwest by open space, wooded areas, wetlands and tributaries of Black Creek. (See Figure 1.) The site is approximately 2 miles northeast of the City of Fulton, 10 miles south of Lake Ontario, and 25 miles northwest of the City of Syracuse.

Physical Characteristics

The site is approximately 85 acres in size and consists of a capped fill area of about 55 acres, which occupies a topological high. The capped area has evenly-distributed gas vents for the landfill gas control system. Two major rip-rap swales divert surface water off the cap, which is drained from the site through conduits under Silk and Howard Roads. The fill area is fenced and there is an entrance gate midway along Silk Road in the east and another in the southwest corner of the site along Howard Road. A utility building is located inside the entrance gate on Silk Road. There is an aboveground, open 350,000-gallon concrete leachate collection tank located in the northeastern corner of the site, along Silk Road.

Surface drainage in the area is generally by low-gradient streams—Bell Creek and tributaries of Black Creek, which both eventually drain into the Oswego River, a major regional river that empties into Lake Ontario at Oswego, New York. Several ponds, marshes, and wetlands are within a mile of the site. Potter Spring, which forms part of the headwaters to Bell Creek, is, as was noted above, located immediately north of the site.

Existing flood insurance maps (Federal Emergency Management Agency, 1983) indicate that no portions of the site are located in either the 100- or 500-year flood zone, although the adjacent areas to the north and east (*i.e.*, Potter Spring and Bell Creek, respectively) are in a flood zone.

Vegetation patterns at the site are a mixture of herbaceous field, weed, and grass species. Both open-field and forested habitats characterize the surrounding area. These habitats support a variety of avian and mammalian species. No New York State Department of Environmental Conservation (NYSDEC) Significant Habitat Areas are found on-site, and no endangered or threatened species were identified in this area.

Site Geology/Hydrogeology

The Volney Landfill is situated in the Lake Ontario section of the Interior Lowlands physiographic province. The topographic setting consists of gently rolling hills and intervening flatlands. The region is underlain by gently dipping bedrock of sedimentary nature (*e.g.*, sandstones, siltstones, and shales). Bedrock does not typically outcrop due to an overlying sequence of unconsolidated sediments, which primarily consists of glacial deposits. The glacial deposits include a nearly ubiquitous mantle of glacial till, which is locally formed into elongated ridges or drumlins. In the lower elevations, glacial till is covered with glacial meltwater deposits, glaciolacustrine, alluvium, and swamp deposits. Typically, drumlins form the hilltops in the region, although one underlies the lower part of the site in a northwest/southeast direction. The generalized sequence of unconsolidated stratigraphic units encountered beneath the site area in ascending order include: bedrock, lodgement till, glaciolacustrine fine sand and silt, sand and gravel, alluvium and swamp deposits, and artificial fill.

Data obtained from surface water level measurements at Potter Spring and in creeks and tributaries surrounding the landfill imply that the aforementioned surface-water features act as hydraulic boundaries to groundwater flow and that groundwater from the landfill discharges, in part, into nearby surface waters.

Groundwater in the vicinity of the site area occurs in the unconsolidated deposits and underlying bedrock aquifers. The sand and gravel unit is also recognized as the watertable aquifer and elevation data indicate that the watertable surface generally conforms to the topographic surface and is largely controlled by the slope and geology of the underlying lodgement till. The lodgement till is also believed to function as a low-permeability confining unit which separates the shallow aquifer from the underlying bedrock units.

Groundwater flow in the shallow aquifer is radial from the immediate boundary of the site and thereafter, the groundwater in the north and east flow eastward toward Bell Creek. Groundwater in the northwestern part of the site flows toward Potter Spring in the north and groundwater in the southwestern and southern part of the site flows radially to the southwest and southeast. Groundwater flow in the bedrock is generally to the northeast and occurs under confined or artesian conditions with the low permeability till functioning as the overlying confining unit.

Land and Resource Use

Woodlands and farmlands are a prominent feature in the general vicinity of the site. A trailer park is located approximately 1,000 feet north of the site on Silk Road and a few residences to the northeast are within 400-600 feet of the site boundary. A racecar track (one-quarter midget cars) and the end of the northeast/southwest runway of the Oswego County Airport are located on the south side of Howard Road and there are also some residences and some light industry immediately to the west along Howard Road.

Prior to 1969, the property that the landfill now occupies was mined for sand and gravel, with the excavated area being subsequently used (1969-1983) for the disposals of municipal and other refuse. From 1981 through 2002, Oswego County acquired the adjoining properties surrounding the landfill. Part of each of the County-owned parcels to the east and west of the landfill had been strip-mined over the years for cover material for the landfill operation, as well as recently for the construction of the remedy.

The County of Oswego has placed environmental easements on each of its six properties surrounding the landfill. Oswego County has no plans to develop these properties[1], which serve as a buffer around the landfill. Within 1,000 feet of the site, there are approximately 25 residences and some light industry which formerly relied on groundwater for drinking water and other uses. A municipal water district was developed to eliminate the need for the withdrawal of groundwater in the area around the site. A water tower was erected approximately 1,750 feet to

[1] Source: February 24, 2005 telephone conversation between Jack O'Dell and George Shanahan of EPA and the County Attorney, Richard C. Mitchell, of Oswego County.

the west of the landfill on Howard Road. All but two of the properties in proximity to the landfill have been connected to the public water system (a residence and a mobile home park located north of the site on Silk Road) The wells at the residence and mobile home park are routinely sampled and have shown no signs of being impacted by the site.

History of Contamination

Landfilling operations were conducted at the site in a 55-acre unlined disposal area from 1969 to 1983. Most of the waste materials disposed of in the landfill consisted of residential, commercial, institutional, and light industrial wastes; however, approximately 8,000 drums from Pollution Abatement Services, a hazardous waste incineration facility located in Oswego, New York, were approved for disposal at the landfill by NYSDEC. While the approval applied only to discarded drums containing known and limited chemical residues, it was later reported that approximately 50 to 200 of these drums contained liquid waste of unknown volume and composition. The physical condition and locations of these drums in the landfill are unknown. The landfill was owned by the Oswego Valley Solid Refuse Disposal District Board from 1969 to 1975, when it was sold to Oswego County. During the latter 1970s, leachate impacts to the groundwater resulted in groundwater quality standards being contravened in monitoring wells located near the site. Residential wells closest to the site (no longer in service) do not appear to have been impacted by leachate.

Initial Response

Following the contravention of groundwater standards, in 1979, NYSDEC entered into an Administrative Order on Consent with Oswego County that required capping of the landfill top with a liner, capping the side slopes with compacted soil, installation of a gas collection system, and installation of a leachate collection system. This work was performed between 1979 and 1985. Off-site leachate disposal and groundwater monitoring were also initiated by Oswego County during the early 1980s.

The Volney Landfill site was included on the Superfund National Priorities List in October 1984.

Basis for Taking Action

A remedial investigation/feasibility study (RI/FS), which was conducted from 1985 to 1987 by NYSDEC, identified significant surface water/sediment and groundwater contamination resulting from the unlined fill area at the site. It was also determined that 25 single-family residences dependent on private wells and downgradient of the site were potential receptors of contaminated groundwater from the site. Based upon the results of the RI/FS, it was determined that groundwater contamination was the primary human health risk at the site. The RI/FS identified the following contaminants of concern (COCs) were identified for the groundwater: vinyl chloride; 1,1-dichloroethane; 2-butanone; 1,1,1-trichloroethane; benzene; toluene; ethylbenzene; total xylenes; phenol; arsenic; beryllium; lead; manganese; mercury; nickel; selenium; thallium; and zinc. A Contamination Pathways RI/FS, completed in 2001, determined

that surface water did not pose a threat to public health or the environment and did not require remediation. Potential environmental impacts were found to be limited in both type and degree. Since the landfill top had been previously capped and the entire site is fenced, the possibility of direct contact with waste materials was found to be minimal. However, a direct contact threat associated with the soil capped side slopes, as well as side slope leachate breakout, was identified.

IV. Remedial Actions

Remedy Selection

A Record of Decision (ROD) was signed by EPA on July 31, 1987 calling for:

- Supplemental capping of the landfill side slopes with an impermeable membrane;
- Installation of a more extensive leachate collection system and a subsurface groundwater containment barrier (slurry wall);
- Treatment of the collected leachate either on- or off-site, to be determined by treatability studies;
- Operation and maintenance of the cap and leachate collection system, and long-term groundwater monitoring;
- An evaluation of the cost-effectiveness of the slurry wall (*i.e.*, in conjunction with a decision regarding on-site versus off-site leachate treatment and disposal); and
- A supplemental investigation to evaluate the potential for the migration of contaminants in the groundwater and to surface water and sediments of the creeks and wetlands surrounding the site.

After the signing of the ROD, it was learned that a quality assurance/quality control review of the analytical data associated with the RI data had not been performed. EPA re-sampled the site in 1988 and, based upon the sampling results, concluded that hazardous substances were present at the site at levels that posed a risk to public health and the environment. On September 29, 1989, EPA issued a Post-Decision Document (PDD), which reaffirmed the remedy selected in the ROD.

Studies at the site conducted from 1989 to 1990 provided information about off-site and on-site leachate treatment and disposal, as well as updated construction costs. The studies also concluded that before any cost-effectiveness decisions related to the slurry wall or leachate treatment could be made, additional testing was needed to resolve several critical issues concerning the hydrogeology at the site (*i.e.*, groundwater flow issues, possible artesian conditions, and the lack of any reduction in leachate collection volumes since the 1985 capping of the top of the landfill).

An Administrative Order on Consent was signed in 1993 for the performance of a pre-design study by a group of 33 potentially responsible parties (PRPs). Based upon the results of this pre-

design study, which was completed in 1997, EPA determined that there was no definable contaminant groundwater plume at the site, only intermittent changes in contaminant concentrations in the groundwater migrating from the landfill area, and that natural attenuation was occurring in a sizable buffer zone between the landfill and eight downgradient residential wells. This conclusion was based upon the fact that site-related contamination had not been found in the downgradient private wells, with the closest well being located approximately 450 feet from the landfill. In addition, it was determined that the installation of a slurry wall and a more extensive leachate collection drain system would not offer a significant protective benefit when considering its relatively high cost and the relatively low contaminant concentration of the leachate generated from the landfill. It was also determined that off-site treatment and disposal of the leachate would be more cost-effective than on-site treatment and disposal (*i.e.*, due to the low concentration of the leachate being generated and the significant cost to construct and operate an on-site treatment facility). Based upon these findings, an Explanation of Significant Differences (ESD) was issued by EPA on August 7, 1997, which concluded that a slurry wall would not be installed, the intermittent groundwater contamination would be extracted on an as-needed basis, and the extracted groundwater would be treated off-site.

A "Contaminations Pathways" investigation to evaluate the potential for the migration of contaminants in the groundwater to outlying areas and to the surface waters and sediments of Bell Creek, Black Creek, and the wetlands surrounding the site, as called for in the ROD and PDD, commenced in 1990 under an Administrative Order on Consent with 37 PRPs. The investigation, however, was postponed while the pre-design study, noted above, was completed. The Contaminations Pathways investigation was reactivated in 1998 (concurrent with the initiation of the design). This investigation, which was completed in 2001, found that the groundwater in the more outlying areas from the site did not contain site-related contaminants and also that the level of site-related contaminants present in the surface water and sediments in the immediate area (inner perimeter) of the site did not pose a public health or ecological threat. Based upon the results of this investigation, an ESD, which was issued on October 19, 2001, determined that intermittent groundwater extraction and treatment, in combination with natural attenuation, would adequately address the site-related groundwater contamination at the site (*i.e.*, in the immediate perimeter around the site); the surface water and sediments did not have to be remediated; and a supplemental groundwater remedy for the outlying areas at the site did not need to be implemented. In addition, to avoid any risk to human health, the ESD also called for implementing institutional controls (*i.e.*, deed restrictions) to prevent groundwater withdrawal in the areas adjacent to the site.

Remedy Implementation

Negotiations with the PRPs for the performance of the remedial design (RD)/remedial action related to the selected remedy, as modified by the PDD and ESDs, resulted in 40 PRPs signing a Consent Decree on October 9, 1998, with the County of Oswego (as the "Owner Settling Defendant") representing the PRP group. The County of Oswego retained Barton & Loguidice of Syracuse, New York to conduct the RD, solicit and obtain bids to construct the cap and

provide construction administration and resident engineering. The RD started on June 24, 1998 and was approved on September 30, 1999.

Construction of the supplemental cap on the sideslopes of the landfill, which commenced on August 9, 2000, was completed on September 12, 2001. The effort involved the installation of a 40-mil textured, low density polyethylene (LLDPE) liner, which was overlapped by the existing 40-mil polyvinyl chloride top liner by 5 feet. A gas venting system was also installed and the LLDPE liner was followed by (in ascending order) a 12-inch lateral drainage layer, Type I Geotextile, 12-inch protective soil cover layer, and 6 inches of top soil. Numerous other activities and improvements were also performed at the site, including abandoning monitoring wells that would be under the cap and would not be used in the long-term monitoring program, improvements to surface water drainage, upgrading the electric service to the site, and installation of new chain-link fencing. During the cap installation, a previously-unknown waste area was discovered in the northeast of the site, between the Silk Road entrance gate and the leachate collection tank. The area of waste was a little less than 1-acre and the cap was extended to include that area.

Because of the lack of a defined groundwater plume and the intermittent nature of the groundwater contamination, a groundwater extraction contingency plan was developed to determine when groundwater contaminant concentrations warranted groundwater collection. Monitoring well VBW-8D, located in the northeast of the site between the entrance gate and the leachate collection tank, was selected to trigger the extraction of the groundwater because it exhibited a large number of volatile organic compounds (VOCs) over time (although the types of VOCs and levels varied). The yield from VBW-8D declined significantly over time. When well redevelopment failed, a larger replacement well (VBW-8DR) was installed nearby. Since that time, with the exception of forced winter shutdowns because of the freezing of the pipelines leading to the leachate tank, the pumping of VBW-8DR has continued because of the unexpectedly high and sustained levels of VOCs experienced. It was concluded that VBW-8DR's proximity to the newly discovered waste area and the greater drawdown was responsible for the consistent extraction of VOCs. Since the objective of remediating the site includes the cleanup of the groundwater in the shortest amount of time, it was decided to continue pumping VBW-8DR, since the contaminated groundwater from this on-site area appears largely responsible for contaminant migration into the adjacent off-site area.

Institutional Controls Implementation

The 2001 ESD required the implementation of institutional controls to prevent the use of contaminated groundwater downgradient from the landfill. At the time of the ESD, Oswego County owned five parcels of land surrounding the landfill; a 45-acre parcel located to the east along Silk Road was acquired in October 2002. In June 2003, Oswego County subsequently granted three environmental easements regarding the landfill parcel and the six county-owned parcels surrounding the landfill portion of the property. These easements include prohibitions on the use of groundwater, any activity that would affect the integrity of the landfill cap, and any activities that would alter surface water drainage.

On March 23, 2005, the Town of Volney requested an easement from Oswego County to install a waterline through the County-owned parcel on the west side of the landfill, which was one of the parcels previously subject to the environmental easements placed on the parcels adjacent to the landfill in June 2003. EPA and NYSDEC's approval to proceed with the waterline easement was granted on May 17, 2005; however, a review of the easement led to the discovery of a number of discrepancies in the easements. One discrepancy was the failure to include a parcel of land in the easement that was owned by National Grid (in the southwest corner of the landfill). Subsequently, Oswego County reached an agreement with National Grid, whereby National Grid abandoned its (uncontaminated) well after it connected the Howard Road facility to the new Town of Volney water system, and National Grid then granted an easement prohibiting the further use of groundwater on the property. The easement was recorded with the Oswego County Clerk on January 9, 2009. The other discrepancies in the easements were related to how some of the parcels were mapped. These discrepancies were addressed by Oswego County by providing a revised parcel description for the parcel which contains the one-quarter midget racecar track and a revised master map for the three easements.

Although an institutional control protecting the integrity of the cap is in place, it is not required by the ROD, the PDD, or the 1997 or 2001 ESDs. To document this institutional control, it will be added to the existing remedies at the site via an ESD.

System Operations/Operation and Maintenance

The Operation, Maintenance, and Monitoring Manual for the Volney Landfill site contains the procedures for inspecting and evaluating the landfill cap, off-site disposal of the collected leachate and extracted groundwater, provision and certification of institutional controls, decommissioning of monitoring wells, monitoring of groundwater and air quality in the immediate perimeter of the landfill, and long-term monitoring of downgradient groundwater wells. Repairs are to be made to the cap, drainage, and leachate collection systems as necessary, to control the effects of settling, subsidence, erosion or other events that might interfere with the performance of the remedy.

The site is inspected on a quarterly basis as follows:

- The landfill cap is inspected for signs of erosion, excessive settlement, surface water ponding, seedling growth, impacts from terrestrial receptors (i.e., burrowing), and stressed vegetation;

- The surface water drainage system is inspected for signs of erosion and/or siltation, seedling growth, etc., in the swales, ditches, downchutes on the top and sides of the landfill, and the stone toe drain around the perimeter base;

- The landfill gas venting system is inspected for any damage to vents and extreme settlement around each vent and to determine if the vent is functioning (*i.e.*, odors) and the goosenecks are inspected for signs of blockages and any water is pumped out;

- Explosive gas readings are taken at the property boundary monitoring stations and at on-site structures;

- The site is inspected for any vectors and damage is reported;

- The groundwater monitoring wells are inspected for ease of locating, operation of locks, damage/vandalism, and the condition of the surface seals;

- The site access gates and fence are inspected for operational locks, vandalism, and damage;

- The manholes are inspected for signs of leakage, erosion, and if the pump station is operational;

- The leachate collection tank is inspected for cracking in the tank walls, signs of leakage or overflow, and volume (if the tank is more than 3/4 full, the leachate is removed);

- The utility building is inspected for vandalism, damage, and if secure;

- The access roads are inspected for ruts, puddles, and driveability; and

- The site is inspected for debris, litter and/or waste.

The inspections, maintenance, sampling, monitoring, data evaluation, and reporting costs are approximately $165,000 on an annual basis; these costs are broken down in Table 2 (attached).

During the five-year review site inspection, it was observed that there were wet areas on the western side of the landfill attributed to sporadic leachate seepage. This situation is currently being addressed by pumping approximately 350 gallons/day from a gas vent in the area. If the current situation persists or worsens, a larger scale solution would need to be designed and implemented.

V. Progress since Last Five-Year Review

The first five-year review report found the remedy to be protectve in the short-term, since institutional controls had not been put into place. Institutional controls on the site are now fully in place. The five-year review included suggestions for improving, modifying, and/or adjusting the ongoing operation, maintenance, and monitoring activities at the site. Table 3 summarizes the suggestions that were made and how they were addressed. Regularly scheduled sampling events, site maintenance, and site inspections have continued since the previous five-year review.

VI. Five-Year Review Process

Administrative Components

The five-year review team consisted of Thomas Mongelli (RPM), Michael Scorca (hydrogeologist), Lora Smith (human health risk assessor), and Mindy Pensak (ecological risk assessor).

Community Involvement

The EPA Community Involvement Coordinator for the Volney Landfill site, Michael Basile, published a notice in the *Palladium Times*, a local newspaper, on April 7, 2010, notifying the community of the initiation of the five-year review process. The notice indicated that EPA would be conducting a five-year review of the site to ensure that the site is protective of public health and the environment and that the implemented components of the remedy are functioning as designed. It was also indicated that once the five-year review is completed, the results will be made available in the local site repository. In addition, the notice included the RPM's address and telephone number for questions related to the five-year review process or the Volney Landfill site. A similar notice will be published when the review is completed.

Document Review

The documents, data, and information which were reviewed in completing the five-year review are summarized in Table 4 (attached).

Data Review

Groundwater monitoring data from this five-year review period exceeded NYSDEC Water Quality Standards and Guidance Values (T.O.G.S. 1.1.1)(WQSGV) or EPA Maximum Contaminant Levels (MCLs)[2] for a number of contaminants in a number of groundwater monitoring wells. The number of VOCs that were detected and their concentrations have, however, decreased since the initiation of the groundwater component of the remedy. Of the 18 monitoring wells which had VOC exceedances in 2000, currently, only four exhibit NYSDEC Part 705 exceedences. Benzene is found at concentrations of 2 micrograms per liter (µg/l), 4 µg/l and 16 µg/l in monitoring wells VBW-8S, GW-3C and SHW-3, respectively (see Figure 1 for well locations). This is above the NYSDEC limit of 0.7 µg/l. Additionally, monitoring well VBW-8D exhibits a toluene concentration of 90 µg/l and an acetone concentration of 1,800 µg/l. These levels are both higher than the respective NYSDEC limits of 5 µg/l and 50 µg/l.

On-site well VBW-8DR has been subject to pumping since the initiation of the groundwater component of the remedy in 2001, with the exception of various repairs and the winter

[2] WQSGVs and MCLs are the highest levels of a contaminant that are allowed in drinking water. They are promulgated standards that apply to public water systems and are intended to protect human health by limiting the levels of contaminants in drinking water.

shutdowns. Sampling in the groundwater shows a slight decline in VOC concentrations since 2001, although they are still present at high levels.

Specific conductivity levels, in most of the wells sampled, have generally decreased over the past five years. This is believed to result from a related overall reduction in contaminants in groundwater and shows the effectiveness of the cap in reducing leachate migration.

Several wells, including GW-3C and GW-8DR, exhibit high levels of ammonia/nitrogen, which is a result of landfill leachate effect on groundwater. Several monitoring wells, particularly perimeter wells SHW-1, 3, and 4, have shown a slight decrease in ammonia concentrations over the last five years. Downgradient well GW-3C has also shown declines in sodium, barium, and chloride. It is recommended that the monitoring program continue unchanged, in the anticipation that continued monitoring will show contaminant levels dropping below MCLs in all monitoring wells, as a result of reduced leachate generation due to capping.

The residential wells continue to exhibit concentrations of COCs that are below federal MCLs and NYSDEC GWQSs.

Site Inspection

On July 15, 2010, a five-year review site inspection was conducted by EPA RPM Thomas Mongelli and hydrogeologist Michael Scorca. Also in attendance were Andrew Barber and Scott Nostrand of Barton & Loguidice (Oswego County's consultant) and Evan Walsh of Oswego County. During the site inspection, a wet spot was observed near the interface between the cap and the ground along the western side of the landfill. Andy Barber indicated that recently, leachate was observed to be sporadically seeping from the cap at this location. This situation is currently being addressed by pumping from a gas vent in the area and will be expanded in order to curtail the seepage. Samples taken directly from the seep have shown no detections of VOCs, although several metals and conventional leachate parameters were detected, including barium, calcium, iron, magnesium, manganese, sodium, arsenic, chloride, nitrate, and ammonia. See Table 5.

Interviews

During the review period, several discussions were held between Andy Barber and Thomas Mongelli. The discussions addressed comments raised during the first five-year review and the steps that have been taken since that time to address those concerns. These discussions included the status of the easements and addressed delays in receiving annual certifications for institutional controls and OM&M on the site.

Institutional Controls Verification

New York State requires annual certifications that institutional controls that are required by RODs are in place and that remedy-based O&M is being performed. The County provided its

first annual certification in a letter dated August 30, 2004. Subsequently, discrepancies regarding the easements were discovered (see the "Institutional Controls Implementation" section, above) and the County obtained an easement on the National Grid parcel and reissued the parcel description for the one-quarter midget racecar track parcel. A second recertification document was received in January 2009. The County has indicated that certification will continue on an annual basis in the future. The next certification, covering 2010, is expected to be received in January 2011.

Other Comments on Operation, Maintenance, and Institutional Controls

Table 6 (attached) summarizes several observations made during the site inspection and identified during site interviews and maintenance activities and offers suggestions for their resolution.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

The ROD, as modified by the PDD and ESDs, called for, among other things, the installation of a supplemental cap on the sideslopes, surface water controls, contaminated groundwater extraction, as needed, collection and off-site treatment of leachate, and institutional controls. The purpose of the response action was to reduce the risk to human health and the environment due to contaminants leaching from the landfill mound. The purpose of capping of the landfill was to minimize the infiltration of rainfall and snowmelt into the landfill, thereby reducing the potential for contaminants leaching from the landfill into the groundwater and negatively impacting groundwater quality, as well as impacting surface waters and sediments of adjacent Bell Creek, Black Creek, and nearby wetland habitats. Capping was also intended to prevent direct contact exposure to hazardous contaminants. The purpose of extracting and treating the contaminated groundwater, as needed, was to control its migration and assure that groundwater beyond the site boundary meets MCLs in the shortest possible time.

While it appears that the remedy is functioning as intended by the decision documents, the remedy has not yet resulted in restoration of groundwater. Groundwater MCLs will be met when the contaminants in the waste materials are no longer leached into the groundwater; however, it takes time after capping (*i.e.*, years, in the case of large landfills) for the moisture in the waste materials to download from the waste. Currently, four monitoring wells (out of eighteen) continue to exhibit VOC levels above NYSDEC standards, although the number of VOCs in the monitoring wells before the construction of the cap has been reduced.

The utility of the groundwater extraction contingency plan has been demonstrated in that two on-site wells (VBW-8S and VBW-8D) near the extraction well (VBW-8DR) are now exhibiting concentrations of VOCs below MCLs. The operation of VBW-8DR should continue to reduce contaminant migration downgradient from this area.

In June 2003, Oswego County granted three easements to protect the remedy that included prohibiting the use of groundwater, excavation that would affect the integrity of the cap, and activities that would alter surface water drainage on the six county-owned parcels surrounding the landfill site, as well as the landfill parcel. Oswego County reached an agreement with National Grid, whereby National Grid abandoned its well after it connected the Howard Road facility to the new Town of Volney water system, and National Grid then granted an easement prohibiting the further use of groundwater on the property.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

There are no changes in the physical conditions of the site or site usage that would affect the protectiveness of the selected remedy, and there are no significant changes in site use expected over the next five years. The Volney Landfill has been capped and the cap is being maintained, removing direct contact (*i.e.*, ingestion or dermal contact with soil) exposures to the public as well as ecological receptors. A fence is in place to prevent further potential exposures to trespassers. Potential exposure to contaminated groundwater has also been eliminated. Additionally, the County has purchased surrounding properties, which provide a buffer around the landfill. Samples collected from the seven potable water wells (six residential and one business) located closest to the site continue to show no contamination from the site reaching these wells.

To understand the potential risks and hazards to chemicals remaining in the groundwater at the site, the highest detected concentrations for each constituent from two recent years of monitoring data (March 2008-December 2009) were compared to health-based screening levels developed by EPA, Region 9, called preliminary remediation goals (PRGs), as well as state and federal ARARs. The PRGs are values that are equivalent to a cancer value of one in one million (10^{-6}) or a noncancer hazard quotient of 0.1. Both National Primary Drinking Water Regulations and New York State Groundwater Quality Standards are legally enforceable standards designed to protect human health by establishing maximum allowable concentrations of contaminants in drinking water.

A comparison of maximum concentrations to risk-based screening numbers indicates that consumption of groundwater would present unacceptable cancer risks and noncancer hazards to humans. However, the remedy has effectively prevented residents from drinking groundwater affected by site-related contaminants.

While the remedial action objectives of reaching state and federal groundwater standards have not been achieved, it does not affect the protectiveness of the remedy. It is anticipated that groundwater standards will be reached in the future.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No other information has come to light that could call into question the protectiveness of the remedy.

Technical Assessment Summary

Based upon the results of the five-year review, it has been concluded that:

- The cap and vegetative cover are intact and in good condition;
- The landfill gas system is operating properly;
- The monitoring wells are securely locked and functional;
- The extraction well is functional;
- There is no evidence of trespassing or vandalism;
- The remedy has prevented residents from drinking contaminated groundwater;
- Institutional controls are in place and are effective; and
- No additional measures are needed to protect public health.

VIII. Recommendations and Follow-Up Actions

Table 7 (attached) summarizes a recommendation and follow-up action stemming from this 5-year review.

IX. Protectiveness Statement

The remedy currently protects human health and the environment in the short-term because the landfill has been capped, removing direct contact (*i.e.*, ingestion or dermal contact of soil) exposures to the public and ecological receptors and reducing percolation through the landfill. In addition, institutional controls are in place to further prevent potential exposures to the public. Area residents and businesses are on public water, thus, reducing potential direct contact exposures. In order for the remedy to be protective in the long-term, measures need to be taken to permanently address the leachate seep.

X. Next Review

Since hazardous substances, pollutants or contaminants remain at the Volney Landfill site which do not allow for unlimited use or unrestricted exposure, in accordance with 40 CFR 300.430 (f) (4) (ii), the remedial action for the site shall be reviewed no less often than every five years. EPA will conduct another five-year review on or before August 2015.

Approved:

Walter E. Mugdan, Director
Emergency and Remedial Response Division

8/2/2010
Date

Table 1: Chronology of Site Events	
Event	**Date(s)**
Operation of Landfill	1969-1983
NYSDEC/Oswego County Consent Order concerning the contravention of groundwater standards	1979
Site placed on National Priorities List	1986
Remedial Investigation/Feasibility Study	1985-1987
Record of Decision	1987
Post-Decision Document	1989
Consent Order to conduct the Contamination Pathways Investigation	1990
Consent Order to conduct the Supplemental Pre-Remedial Design Study	1993
Supplemental Pre-Remedial Design Study	1993-1997
Explanation of Significant Differences related to the performance of intermittent groundwater collection and off-site treatment, rather than expanding the leachate collection system	1997
Consent Decree for performance of the Remedial Design/Remedial Action	1998
Remedial Design	1998-1999
Remedial Action	2000-2001
Explanation of Significant Differences related to intermittent groundwater extraction and treatment and institutional controls	2001
Preliminary Site Close-Out Report	2002
First Five-Year Review Report	2005

Table 2: Annual Operation, Maintenance, and Monitoring Costs	
Activity	**Cost per Year**
Groundwater Remediation OM&M	$75,000
Groundwater Monitoring, Sampling and Analysis	$20,000
Data Management and Reporting	$30,000
Site Inspection/Maintenance	$40,000
Total Estimated Cost	*$165,000*

Table 3: Progress Since the First Five-Year Review Report

Recommendation	Status
External leakage (clean groundwater) into the south sump of the leachate collection system has been observed. The leakage needs to be prevented (e.g., by grouting the seams in the cement pipe).	Repairs were made. Subsequent monitoring indicated that there is no further leakage.
Leachate from the south sump and from the northern leachate drain flow into the north sump by gravity and then it is pumped to the leachate collection tank. The pipelines are inaccessible and there is no way to measure the amount of leachate being generated from either drain line. External leakage (possibly due to artesian conditions) into the northern leachate collection drain is suspected because the average annual quantity of leachate that is removed from the tank has not changed since before the top cap was installed and does not appear to be influenced by the annual quantity of precipitation. Since the leachate collection tank is open, it is unknown what influence evaporation and precipitation have on the quantity of leachate that is collected. As a result of these conditions, determining the effectiveness of the cap (*i.e.*, quantifying progress toward drying out the fill material and achieving complete containment of the waste) is uncertain. The County should pursue means of determining actual leachate generation. The County's recent proposal to automatically log water levels in the leachate collection tank, which would facilitate correlating precipitation and evaporation with the volume of leachate generated, would be a good first step.	The latest OM&M report indicated that the new data logger was still functioning and is collecting data. The logger has been installed in the north sump and monitors the volume of leachate pumped to the tank. The data logger was proposed as a way of addressing possible groundwater intrusion into the leachate collection system, but it was never evident how this would be accomplished. The only additional information the data logger can provide from being installed in the north sump would be a measure of the evaporation from the open leachate tank or a measure of the inaccuracy involved in trucking the leachate to the wastewater treatment plant. The PRPs' consultant indicated that continual maintenance problems with the data logger have made the effort unproductive and the approach will be abandoned. Reduction in contamination in the perimeter wells remains the only true measure of cap performance, unless leachate collection volumes decrease.

In the past, high concentrations of suspended solids in groundwater samples have interfered with determining whether contaminant concentrations were greater than state and federal groundwater quality standards. In light of the recent change to a different laboratory, the matter should be reviewed to determine if it will be a problem in the future, particularly since completing the site remediation requires the need to unequivocally achieve results below groundwater standards.

There are a number of variables that were operating that made it hard to find any consistent correlations to the way the wells are developed or samples are taken. The overriding problem was that landfills have a lot of things that degrade differently and produce different size particles, so some wells clear differently each time and some don't clear at all. While the low flow method helped a little with some wells, it is not a panacea and did not help them all and suspended solids remain a problem. In perspective, we have relatively few MCL exceedances in the long-term monitoring wells, so are relying on capping to ultimately address the problem. Over the last several years, suspended solids have become less of a problem and are not significantly impacting measurements.

Three residential wells show arsenic levels between 11 and 23 micrograms per liter (µg/l), which will be above the newly-adopted federal MCL of 10 µg/l due to go into effect on January 23, 2006. While it does not appear that the arsenic in these wells is from the landfill, only two of the three wells are planned to be connected to the new water system, which would eliminate exposure. If any of the three wells are not, or fail to be, connected to the public water system, the Oswego Department of Health should pursue mitigative measures.

National Grid connected its Howard Road facility to a public water supply. In addition, the water supply well was decommissioned in October 2007.

While the third well continues to be actively used, the arsenic levels dropped and remain below MCLs.

The site fence sustains damage every winter and it is not always repaired as soon as the snow melts. Means to strengthen the fence should be reviewed to resolve this chronic problem.

The fence was repaired and replaced (where needed) and measures to strengthen the fence were implemented. The fence has satisfactorily withstood the last several winters.

Wires to some of the gas flares have been chewed by field mice, preventing the igniter from sparking. Also, repairs are needed to several of the gas vents. Both problems, which affect the operation of the landfill gas venting system, need to be addressed.

Repairs were made and the problem is under control.

Institutional controls prohibiting the use of groundwater in the vicinity of the site are not fully in place and there are two minor discrepancies in the existing easements. The County needs to obtain an easement from Niagara Mohawk that prohibits its use of groundwater as soon as Niagara Mohawk is connected to the new water system. In addition, the County needs to correct the discrepancies in the existing easements.

Oswego County reached an agreement with National Grid, whereby National Grid abandoned its well after it connected the facility to the new Town of Volney water system, and National Grid then granted an easement prohibiting the further use of groundwater on the property. The discrepancies in the easements were addressed by Oswego County by providing a revised parcel description for the parcel which contains the one-quarter midget racecar track and a revised master map for the three easements.

Table 4: Documents, Data, and Information Reviewed in Completing the Five-Year Review	
Document Title, Author	**Submittal Date**
Migration of Pollutants in Groundwater from the Oswego County Landfill Volney, New York, Scrudato and Hinriches, SUNY (Oswego)	1982
Engineering Investigations and Evaluations at Inactive Hazardous Waste Sites, Engineering-Science, Inc.	1983
Hydrogeologic Investigation of the Oswego Valley Landfill Site, Geraghty & Miller	1985
Remedial Investigation/Feasibility Study, URS Co.	1987
Record of Decision, EPA	1987
Post-Decision Document, EPA	1989
Design Data Evaluation Report, McLaren/Hart Inc.	1997
Explanation of Significant Differences, EPA	1997
Final Design Report, Barton & Loguidice, P.C. (B&L)	1999
Contamination Pathways Remedial Investigation Report, B&L	2000
Remedial Action Report, B&L	2001
Explanation of Significant Differences, EPA	2001
Preliminary Close-Out Report, EPA	2002
Operation, Maintenance, and Monitoring Manual, B&L	2002
OM&M Inspection 1st Quarter 2006 Report, Oswego County/B&L	5/2006
OM&M Inspection 2nd Quarter 2006 Report, Oswego County/B&L	8/2006
OM&M Inspection 3rd and 4th Quarter 2006 Report, Oswego County/B&L	6/2007
OM&M Inspection 1st Quarter 2007 Report, Oswego County/B&L	6/2007
OM&M Inspection 3rd and 4th Quarter 2007 Report, Oswego County/B&L	2/2008
OM&M Inspection 1st, 2nd, and 3rd Quarter 2008 Report, Oswego County/B&L	1/2009
OM&M Inspection 4th Quarter 2008 Report, B&L	2/2009

Table 4: Documents, Data, and Information Reviewed in Completing the Five-Year Review	
OM&M Inspection 1st Quarter 2009 Report, B&L	6/2009
OM&M Inspection 2nd Quarter 2009 Report, B&L	8/2009
OM&M Inspection 3rd and 4th Quarter 2009 Report, Oswego County/B&L	3/2010
EPA guidance for conducting five-year reviews and other guidance and regulations to determine if any new Applicable or Relevant and Appropriate Requirements relating to the protectiveness of the remedy have been developed since EPA issued the ROD.	

Table 5. Western Slope Seepage Analytical Results

Upstate Laboratories, Inc.

Analytical Report Date: 07-Jul-10

CLIENT: Oswego Co. Health Dept. Client Sample ID: West Slope Seep
Lab Order: U1006460 Collection Date: 6/24/2010 2:00:00 PM
Project: West Slope Seep
Lab ID: U1006460-002 Matrix: WATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS, TOTALS BY NYSDEC ASP 2005			200.7WT	(E200.7)		Analyst: DEY
Barium	0.61	0.30		mg/L	1	7/1/2010 10:53:28 AM
Calcium	150	0.50		mg/L	1	7/1/2010 10:53:28 AM
Chromium	ND	0.050		mg/L	1	7/1/2010 10:53:28 AM
Iron	10	0.030		mg/L	1	7/1/2010 10:53:28 AM
Magnesium	82	0.50		mg/L	1	7/1/2010 10:53:28 AM
Manganese	2.7	0.020		mg/L	1	7/1/2010 10:53:28 AM
Sodium	400	0.50		mg/L	1	7/1/2010 10:53:28 AM
ICP-MS METALS, TOTALS BY NYSDEC ASP 2005			200.8	(E200.8)		Analyst: DEY
Arsenic	0.019	0.010		mg/L	1	7/1/2010 10:45:00 AM
TCL VOLATILE ORGANICS BY METHOD 8260			8260B_TCL_W			Analyst: LEF
1,1,1-Trichloroethane	ND	60		µg/L	20	6/25/2010 11:26:00 PM
1,1,2,2-Tetrachloroethane	ND	60		µg/L	20	6/25/2010 11:26:00 PM
1,1,2-Trichloroethane	ND	60		µg/L	20	6/25/2010 11:26:00 PM
1,1-Dichloroethane	ND	60		µg/L	20	6/25/2010 11:26:00 PM
1,1-Dichloroethene	ND	60		µg/L	20	6/25/2010 11:26:00 PM
1,2-Dichloroethane	ND	60		µg/L	20	6/25/2010 11:26:00 PM
1,2-Dichloropropane	ND	60		µg/L	20	6/25/2010 11:26:00 PM
2-Butanone	ND	200		µg/L	20	6/25/2010 11:26:00 PM
2-Hexanone	ND	200		µg/L	20	6/25/2010 11:26:00 PM
4-Methyl-2-pentanone	ND	200		µg/L	20	6/25/2010 11:26:00 PM
Acetone	ND	200		µg/L	20	6/25/2010 11:26:00 PM
Benzene	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Bromodichloromethane	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Bromoform	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Bromomethane	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Carbon disulfide	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Carbon tetrachloride	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Chlorobenzene	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Chloroethane	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Chloroform	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Chloromethane	ND	60		µg/L	20	6/25/2010 11:26:00 PM
cis-1,2-Dichloroethene	ND	60		µg/L	20	6/25/2010 11:26:00 PM
cis-1,3-Dichloropropene	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Dibromochloromethane	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Ethylbenzene	ND	60		µg/L	20	6/25/2010 11:26:00 PM
m,p-Xylene	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Methylene chloride	ND	60		µg/L	20	6/25/2010 11:26:00 PM
o-Xylene	ND	60		µg/L	20	6/25/2010 11:26:00 PM

Approved By: Date:

Qualifiers:
- # Accreditation not offered by NYS DOH for this parameter
- * Low Level
- ** Value exceeds Maximum Contaminant Value
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- Q Outlying QC recoveries were associated with this parameter
- S Spike Recovery outside accepted recovery limits

Table 5. Western Slope Seepage Analytical Results (contd.)

Upstate Laboratories, Inc.

Analytical Report

Date: *07-Jul-10*

CLIENT:	Oswego Co. Health Dept.	**Client Sample ID:**	West Slope Seep
Lab Order:	U1006460	**Collection Date:**	6/21/2010 2:00:00 PM
Project:	West Slope Seep		
Lab ID:	U1006460-002	**Matrix:**	WATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
TCL VOLATILE ORGANICS BY METHOD 8260			**8260B_TCL_W**			Analyst: **LEF**
Styrene	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Tetrachloroethene	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Toluene	ND	60		µg/L	20	6/25/2010 11:26:00 PM
trans-1,2-Dichloroethene	ND	60		µg/L	20	6/25/2010 11:26:00 PM
trans-1,3-Dichloropropene	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Trichloroethene	ND	60		µg/L	20	6/25/2010 11:26:00 PM
Vinyl chloride	ND	40		µg/L	20	6/25/2010 11:26:00 PM
NOTES:						
The reporting limits were raised due to matrix interference.						
Sample foamed during purging procedure.						
ALKALINITY BY EPA 310.2			**ALK_W_AUTO**			Analyst: **VAW**
Alkalinity, Total (As CaCO3)	1690	100		mg/L	10	6/28/2010
CHLORIDE WATERS BY LACHAT 10-117-07-1 A			**CL_W_AUTO**			Analyst: **KAB**
Chloride	402	10.0		mg/L	10	7/5/2010
NH3 BY LACHAT 10-107-06-1-B			**NH3_W_AUTO**			Analyst: **BY**
Nitrogen, Ammonia (As N)	261	50.0		mg/L	100	6/28/2010
NITROGEN, NITRATE (AS N) BY LACHAT 10-107-04-1C			**NO3_W**			Analyst: **KAB**
Nitrogen, Nitrate (as N)	0.226	0.050		mg/L	1	6/22/2010 5:42:00 AM

Approved By: **Date:**

Qualifiers:

#	Accreditation not offered by NYS DOH for this parameter	*	Low Level
**	Value exceeds Maximum Contaminant Value	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
Q	Outlying QC recoveries were associated with this parameter	S	% Spike Recovery outside accepted recovery limits

Table 6: Other Comments on Operation, Maintenance, Monitoring, and Institutional Controls	
Comment	**Suggestion**
Presentation of the data in Electronic Data Delivery (EDD) format would facilitate its utilization.	Groundwater sampling data should be presented in EDD format.
Historically, several gas flares have been inoperable.	An assessment of the historically inoperable gas flares should be made in order to determine if future use is warranted.

Table 7: Recommendations and Follow-Up Actions

Issue	Recommendations and Follow-Up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Leachate is sporadically seeping from the cap along the western side of the landfill, creating wet areas. Samples taken directly from the seep have shown no detections of volatile organic compounds, although several metals and conventional leachate parameters were detected. This situation is currently being addressed by pumping from a gas vent in the area and will be expanded in order to curtail the seepage.	This leachate should continue to be periodically sampled to determine if any danger is posed to wildlife or the public. If the current situation persists or worsens, a larger-scale solution should be designed and implemented.	PRP	EPA	8/11	N	Y
Although an institutional control protecting the integrity of the cap is in place, it is not required by the 1987 Record of Decision, the 1989 Post Decision Document, or the 1997 or 2001 Explanations of Significant Differences (ESDs).	The institutional control protecting the integrity of the cap that is currently in place needs to be incorporated into the remedy through an ESD.	EPA	EPA	12/10	N	N