

Town of North East
DUTCHESS COUNTY, NEW YORK

Site Management Plan

NYSDEC Site Number: 314048

Prepared for:
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SITE MANAGEMENT PLAN

1.0 Introduction and Description of Remedial Program

1.1 INTRODUCTION

This document is required as an element of the remedial program at Town of North East, Dutchess County, New York (hereinafter referred to as the “Site”) under the New York State (NYS), Inactive Hazardous Waste Disposal Site Remedial Program, administered by New York State Department of Environmental Conservation (NYSDEC). The site was remediated in accordance with , Order on Consent Index # W3-0181-87-12 , Site # 314048, which was executed on August 13, 1991.

1.1.1 General

Town of North East entered into a Order on Consent, with the NYSDEC to remediate a 14.1 acre site located in Dutchess County New York. This area represents the capped portion of the site that is within the fenced area of the site. Both the capped portion and the fenced area are described on the attached survey in Appendix B. This Order on Consent, required the Remedial Party, Town of North East, to investigate and remediate contaminated media at the site. A figure showing the site location and boundaries of this 37.2-acre parcel is provided in Figure 1. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Deed Restriction.

After completion of the remedial work described in the Remedial Action Work Plan, some contamination was left in the subsurface at this site, which is hereafter referred to as ‘remaining contamination.’ This Site Management Plan (SMP) was prepared to manage remaining contamination at the site until the Environmental Easement is extinguished in

accordance with ECL Article 71, Title 36. All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by Morris Associates, PLLC on behalf of Town of North East, in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May, 2010, and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required by the Deed Restriction for the site.

1.1.2 Purpose

The site contains contamination left after completion of the remedial action. Engineering Controls have been incorporated into the site remedy to control exposure to remaining contamination during the use of the site to ensure protection of public health and the environment. A Deed Restriction granted to the NYSDEC, and recorded with the Dutchess County Clerk, will require compliance with this SMP and all ECs and ICs placed on the site. The ICs place restrictions on site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary ensure compliance with all ECs and ICs required by the Deed Restriction for contamination that remains at the site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Deed Restriction and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the Remedial Action, including: (1) implementation and management of all Engineering and Institutional Controls; (2) media monitoring; (3) operation and maintenance of all treatment, collection, containment, or recovery systems; (4) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports; and (5) defining criteria for termination of treatment system operations.

To address these needs, this SMP includes three plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual for complex systems).

This plan also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Deed Restriction. Failure to properly implement the SMP is a violation of the Deed Restriction, which is grounds for revocation of the Certificate of Completion (COC);
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the Order on Consent, Index #W3-0181-87-12; Site #314048 for the site, and thereby subject to applicable penalties.

1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. In accordance with the Environmental Easement for the site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 Site Background

1.2.1 Site Location and Description

The site is located in the Town of North East County of Dutchess County, New York and is identified as Section 7269 Block 00 and Lot 212501 on Tax Map. The site is an approximately 37.2 acre area bounded by Tributary to the Webatuck Creek water index No. CT-15-12-12 to the north, Reagan Road to the south, Taylor Road to the east, and Harlem Valley Rail Trail to the west see Figure 1. The boundaries of the site are more fully described in Appendix B – Metes and Bounds – Property Survey.

1.2.2 Site History

The Town of North East Landfill site is located on Reagan Road in the Town of North East, Dutchess County, New York. It has been assigned the site registry number 3-14-048 and is the subject of an Order on Consent, entered into between the New York State Department of Environmental Conservation (NYSDEC) and the Town of North East (Town), which requires the

remediation of the site. The Town and NYSDEC have entered into a contract under which State assistance is provided to the Town for meeting the remediation requirements.

URS completed a Remedial Investigation/Feasibility Study (RI/FS) for the site and a Record of Decision (ROD) was issued in September 1995 setting forth the plan to be used in site remediation.

The remediation goals selected for this site are:

- Reduce, control, or eliminate the contamination present within the soils/waste on site (generation of leachate within the fill mass)
- Eliminate the threat to surface waters by eliminating any future contaminated surface run-off from the contaminated soils on site.
- Eliminate the potential for direct human or animal contact with the contaminated soils and sediments on site.
- Mitigate the impacts of contaminated groundwater to the environment.
- Prevent, to the extent possible, migration of contaminants in the landfill to groundwater.
- Provide for attainment of Standards, Criteria and Guidance (SCG) values for groundwater quality at the limits of the area of concern (AOC).

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Uncertainties identified during the RI/FS will be resolved. The remedial design was completed by URS and is presented in the design Analysis Report (URS, 1996).
2. A remedial construction program consisting of the following:
 - Regrading the landfill with the placement of approximately 20,000 cubic yard of clean fill or AGM;
 - Installation of a cap over the landfill that meets NYSDEC Part 360 standard;

- Fencing, posting, and restrictions that prohibit the use of onsite groundwater and intrusive activities;
- Sediment remediation in the seep area northeast of the landfill;
- Long-term monitoring and maintenance.

Installation of a low permeability layer (geomembrane) will reduce infiltration of surface water into the landfill wastes, thereby reducing the potential for migration and contaminants into groundwater flowing under the site. Additionally, capping of the landfill with construction of surface drainage control features will eliminate erosion of contaminated soils and prevent stormwater from contacting the waste materials.

To provide information necessary to evaluate and monitor the effectiveness of the remediation, the Town will implement an environmental sampling and testing program as described in this document.

Subsurface Drilling Programs

Morris and Andros Consulting Engineers completed an engineering study for the Town of North East to assess the potential future development of the landfill (Morris and Andros, 1977). An addenda to that study (Morris and Andros, 1979) included five soil borings ranging from 16 feet to 36 feet in depth, installation of two PVC monitoring wells, in-situ soils permeability testing and groundwater sampling.

The RI subsurface drilling program conducted by URS included the installation of 11 new monitoring wells at 4 locations around the landfill perimeter and construction of 5 piezometers within the fill area. Well triplets consisting of shallow (S) and intermediate (I) overburden wells with a bedrock (B) well were installed at locations MW-1 and MW-3. A well couplet consisting of only a shallow overburden and bedrock well was installed at MW-3 due to the homogenous and fine-grain nature of the overburden deposits at that location. A well triplet consisting of a shallow (S), intermediate (I), and deep (D) overburden well was installed at the offsite background location MW-4. Five shallow piezometers (B-1 to B-5) were installed in the landfill to monitor groundwater elevations in the landfill. Four (4) additional soil borings (B-6 to B-9) were drilled during the second round sampling effort to better delineate the depth of fill in

the southern portion of the landfill. The RI drilling programs were conducted between October 26 and November 23, 1993 and on July 21-22, 1994.

Overburden monitoring well and piezometer boreholes were drilled with 4-1/4 inch ID hollow-stem augers. Bedrock well boreholes were advanced to the bedrock surface using 6-5/8 inch hollow-stem augers and drilled into bedrock using a diamond bit rock coring tool.

Overburden monitoring wells were constructed with 10-foot long, 2-inch ID stainless-steel screens with a 0.01-inch slot size. The well screens were attached to 2-inch ID stainless-steel risers and completed with a filter pack of poured quartz sand, a bentonite seal, and cement bentonite grout, as specified in the Field Sampling Plan. All wells and piezometers were finished with a stick-up type steel protective casing with a lockable cap.

Bedrock monitoring wells were completed by drilling a rock socket a minimum of 5 feet into bedrock and grouting permanent 4-inch ID stainless-steel casing into the socket. The boreholes were then advanced with a NX-size core barrel a minimum of 15 feet below the permanent casing. MW-1B and MW-3B were completed as open rock wells. A fifteen foot long 2-inch ID stainless steel screen attached to stainless steel riser was required at MW-2B to prevent a degraded rock zone (encountered below the permanent casing) from filling the well with rock fragments. The bedrock wells were also fitted with a steel protective casing with a lockable cap.

1.2.3 Geologic Conditions

Site Geology

The overburden deposits at, and around the landfill, and the upper portion of bedrock were investigated to depths that ranged up to 103 Feet. The stratigraphic sequence was interpreted from field and laboratory classification of the sediments encountered during the drilling program. A brief description of each strata encountered at the site is given below in inverse chronological order.

Fill:

The fill material at the North East Landfill Site consists of municipal and industrial waste in a matrix of sand and silt with a trace of gravel. Moisture conditions in the fill mound were generally dry to very moist but perched water was encountered in several instances. The water-table was encountered within the fill at B-2 located near the eastern perimeter of the landfill. Wastes encountered in the fill include paper, plastic, wood, cardboard, rags, tires, metal and brick.

Sand and Gravel:

This unit comprises gray and brown, loose to very dense, moist to wet, sand and gravel with variable silt content and little clay. The soil texture was generally variable with little evidence of stratification other than occasional interbeds. The sand content likely exceeded the gravel

content on a bulk basis and the quantity of fines varied irregularly from nearly absent to silty. The sand and gravel was the uppermost soil unit observed in the western portion of the site where its thickness ranged up to 64 feet. This unit appears to become finer to the east and grades laterally beneath the fill mound into adjacent clayey, sandy silt deposits.

The sand and gravel unit is relatively permeable, particularly in seams where the sediments are well sorted. The unit contains a vadose zone and the water-table aquifer in the western portion of the site.

Clayey, Sandy Silt:

This unit comprises gray, very loose to medium dense, very moist to wet silt with variable amounts of fine sand and clay. The soil is generally non-cohesive and is stratified. Bedding thicknesses of the sandier or clay-rich beds varied from less than ½ inch to greater than 1 foot. The clayey, sandy silt unit ranged from 55 feet thick east of the landfill to less than one foot thick southwest of the landfill at the background well locations. There appears to be a lateral gradational contact between this unit and the sand and gravel.

The clayey, sandy silt unit transmits water but is significantly less permeable than the sand and gravel. The clayey, sandy silt contains a vadose zone and the water

table aquifer in the eastern portion of the site, however, it is considered an aquitard relative to the sand and gravel unit. Its occurrence at MW-1 and other perimeter boring locations suggests that the unit is present beneath the entire landfill.

Silt and Gravel:

This unit comprises gray dense to very dense, moist silt and gravel with some sand and little clay. It was observed only at MW-4(southwest of the site) at a depth of 75.5 feet. The unit is interpreted as a till deposit and was approximately 16 feet thick. It was overlain by the sand and gravel unit and underlain by bedrock at MW-4.

The silt and gravel unit is relatively impermeable. It likely composes a local confining layer between the bedrock and overburden aquifers. It does not appear to be present beneath the landfill mound.

Bedrock:

Limestone bedrock of the Stockbridge Group was encountered at each of the bedrock monitoring well locations. The rock is composed primarily of gray, hard limestone which appears to have been re-crystallized to a significant degree. The limestone was very broken and fracture surfaces were typically stained to a rust color. Bedding was not apparent in the rock cores but chevron

folds in brown bands within the limestone were noted at several locations. Small solution cavities and calcite or quartz veins were also observed. The depth to the weathered bedrock surface ranged from 51 feet at MW-2 to 90.5 feet at MW-4.

The upper portion of bedrock that was investigated during the RI (to a maximum depth of 34 feet below the bedrock surface) was relatively permeable, due to the fractured nature of the limestone.

Subsurface information gathered at the site suggests that the Webatuck Creek valley is filled primarily by fine grained lacustrine sediments. These sediments were likely deposited in a proglacial lake. The sand and gravel sediments observed in the western portion of the site are more likely near shore ice-contact or kame deposits rather than the fluvial deposits interpreted in earlier Dutchess County groundwater studies (Simmons, 1961; Gerber, 1982).

The elevation of the weathered bedrock surface rose from 503 feet amsl at MW-4 to 525 feet amsl at MW-2. The site bedrock elevations suggest the bedrock surface rises to the northeast. Because the central axis of the Webatuck Creek valley, where the greatest amount of bedrock erosion would be expected, lies northeast of the site, it is possible that the northeast rising bedrock surface is a local feature specific to the site.

The landfill covers an area of approximately 613,120 square feet (14.1 acres) as delineated on Figure 1. The thickness of waste observed in the landfill borings was a minimum of 8 feet at B-6 and a maximum of 25 feet at B-4. The elevation of the bottom of waste ranged from 591 feet amsl at B-5 to 580 feet amsl at B-2. Boring B-2 on the eastern margin of the landfill was the only location where waste was observed below the water table.

Surface Water Hydrology

Surface water hydrology was examined to aid in the assessment of the effect of the landfill on the surrounding water bodies. There are no developed drainage ways off the landfill surface and precipitation pools in local depressions to infiltrate or evaporate. A swale adjacent to the railroad grade diverts any surface water runoff from the western slope of the landfill northward to low lying areas that are intermittently ponded north of the landfill. These ponds probably collect most of the runoff from the north landfill slope. Runoff from the east landfill slope enters the western margin of Wetland MT-26 which is only intermittently wet. A natural spring located approximately 200 feet northeast of the landfill at the location of SW/SED-1 flows eastward into the permanently wet portion of MT-26. A tributary of Webatuck Creek passes through a culvert under Regan Road just southeast of the landfill entrance.

Another tributary of Webatuck Creek meanders eastward across the northern portion of MT-26 and then bends southward to flow through a relatively narrow valley into Connecticut. Webatuck Creek returns into New York, and ends at its confluence into the Tenmile River at Wassaic, New York. The Tenmile River discharges to the Housatonic River in Connecticut.

The Webatuck Creek drainage area is approximately 66 square miles between Millerton and South Amenia. This includes approximately 112 acres of wetland MT-26 which is adjacent to the site. The average discharge of Webatuck Creek increases from 15.5 cubic feet per second (cfs) at Millerton to 67 cfs at South Amenia (/Ayer, 1968).

Groundwater Conditions

Groundwater Occurrence

Groundwater at the site is typically encountered at shallow depths under unconfined conditions. On the west side of the landfill the water table surface ranges from about 7 to 10 feet below the ground surface, whereas to the north and east, beyond the limits of the landfill, the water table is at, or very near, the ground surface. In many cases, the groundwater table is coincident with the water surface in the wetlands in these areas.

The site is underlain primarily by sands and silts to depths of 100 feet or more. These units, which range in permeability from about $10E-3$ to $10E-5$ cm/sec, are fully saturated and do not provide a confining layer for the underlying bedrock. The bedrock consists of highly fractured limestone and marble, with a typical permeability value of about $10E-4$ cm/sec.

For investigatory purposes, the saturated zone which includes the full overburden sequence and the upper portion of the bedrock, was sub-divided into the shallow, or near surface, zone; the intermediate, or deep overburden, zone; and, the bedrock zone.

Flow Directions

Groundwater elevations recorded during the RI investigation were used to evaluate groundwater flow directions at the site. Groundwater measurements obtained in the shallow water table aquifer during the winter and spring months indicate that some mounding associated with the landfill occurs, and is most pronounced along the eastern margin of the landfill. Some very localized radial flow appears to emanate from the vicinity of B-2. This radial flow pattern appears to be superimposed over a more regional northeastward flow trend which is evident in the west and northwest portions of the site. Shallow groundwater flowing beneath the landfill apparently discharges to Wetland MT-26 along the northeastern and eastern portions of the site.

The tendency for groundwater mounding to be more pronounced in the eastern portion of the landfill reflects the lower permeability of the underlying sediments. The transition to a regional flow pattern in the western portion of the site indicates the location where the sand and gravel unit is more prevalent in the subsurface.

The flow pattern interpreted in the deeper intermediate zone of the water-table aquifer is significantly less complex than the shallow zone based on the attenuation of mounding effects with depth. The apparent groundwater flow direction is east-northeast. A very similar groundwater flow pattern was observed during the spring.

In the bedrock, a northeast groundwater flow direction exists beneath the site.

A comparison of the vertical hydraulic gradients observed at the monitoring well locations indicates that conditions in the western and southwestern portions of the site (MW-1 and MW-4) differ from the eastern portion of the site (MW-2 and MW-3). Downward gradients were typically observed at MW-4 suggesting that the area southwest of the site is primarily a recharge zone for the water table aquifer. Vertical gradients within the water table aquifer between MW-1S and MW-1I were consistently upward while downward gradients of relatively low magnitude were observed between the intermediate and bedrock wells at that location. Comparison of shallow and bedrock water levels at MW-1 suggest that the water table and bedrock aquifers are nearly at equilibrium along the western edge of the landfill. The relatively large upward vertical gradients observed at MW-2 and MW-3 indicate a discharge condition for both the water table and bedrock aquifers to Wetland MT-26 and confirmed by the presence of a spring near the locations of samples SED-1 and SED-2.

Based on the observations of the groundwater conditions during both rounds of sampling, monitoring wells MW-4S, -41m -4D can be considered hydraulically upgradient of the site. Monitoring wells MW-1S, -1I, -1B could probably best be characterized as side-gradient to the site. Monitoring wells MW-2S, -21, -2B, MW-02, and MQ-3S, -3B are downgradient of the site.

A geologic section is shown in Figure 1.2-1 and 1.2-2].

A groundwater flow figure is shown in Figure 1.2-3 and 1.2-4

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 Record of Decision (ROD) dated September 1995. A Copy of the ROD is included as part of Appendix E:

Site-Related Soil Vapor Intrusion

1.4 Summary of Remedial Actions

The site was remediated in accordance with the NYSDEC-approved Record of Decision dated September, 1995 and the Final Closure Plan.

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

1.4.1 Description of Remedial Design

The remedial design for the North East Landfill includes the installation of a 6 NYCRR Part 360 final cover, removal of contaminated wetland sediments and placement under the landfill final cover system, wetland restoration, access restrictions, and continued environmental monitoring. This alternative satisfies state and federal criteria that require protection of human health and the environment, and is compliant with standards, criteria, and guidance values for potential future downgradient groundwater receptors, only when long-term inspection and maintenance of remedial components and environmental monitoring are performed. Remedial components are subject to long-term

inspection and maintenance that include access restrictions, a final cover, a gas venting system, and surface water controls.

1.4.2 Description of Design Components

The record construction drawings for the project are on file with the Department. Abbreviated descriptions of the design of the remedial components requiring inspection and maintenance are presented below.

1.4.3 Access Restriction

Access restrictions to the landfill include fencing, sign posting easements, and deed restrictions. Fencing and signs require inspection and maintenance. A 6-foot high chain-link fence has been constructed around portions of the landfill that are accessible from Reagan Road and the adjacent rail trail, to prevent unauthorized entry of people and grazing animals. Access to the landfill for inspection, monitoring, and maintenance activities will be through a double-hung gate near Reagan Road. “No trespassing” signs are posted around the perimeter of the landfill.

1.4.4 Final Cover

The final cover system for the landfill is a multi-layer cover system that will: 1) serve as an effective long-term barrier to infiltration; 2) properly vent gases generated within the landfill; 3) protect the community from physical contact with landfill waste; and 4) be stable under its own weight for the long-term. The final cover system was designed to meet the necessary requirements of the regulatory agencies.

The final cover system was constructed over the landfill after it has been properly prepared for use as the subgrade. Details on preparation of the subgrade are provided in the design documents. From the top of prepared subgrade and proceeding upwards, the cover will consist of:

- A passive gas venting system as described in section 1.4-5 below.
- A geotextile friction fabric on top of (and bonded to) the geonet on slopes exceeding 10 percent.
- A 40-mil linear low density polyethylene (LLDPE) geomembrane with a 40-mil LLDPE textured geomembrane used on slopes exceeding 10 percent to provide sufficient frictional resistance.
- A drainage layer consisting of a geosynthetic drainage system (GDS) on top of the geomembrane on slopes exceeding 10 percent. The GDS consist of

geotextile/geonet/geotextile bonded together. Slopes less than 10 percent do not require GDS but will require geotextile for cushioning on top of the geomembrane.

- A 12-inch thick layer of barrier protection layer material on top of the GDS and on the cushion geotextile to act as a physical protection layer for the underlying geosynthetic layer.
- Six inches of topsoil established with a vegetative cover to act as a long-term deterrent to erosion.

1.4.5 Gas Venting System

The purpose of the landfill gas venting system is to discharge landfill gases passively in an environmentally-safe manner, using cost-effective design, and without damaging the effectiveness of the landfill cover system. The passive gas venting system, consisting of a gas venting layer and gas venting risers, were designed to comply with all applicable New York State Department of Environmental Conservation (NYSDEC) regulations. The gas venting risers require routine inspection and maintenance.

- Gas Venting Layer – The gas venting layer is located above the grading fill over the subgrade surface. A geosynthetic venting net (Geonet) that provides the equivalent function, as a soil layer, as defined by 6 NYCRR Part 360-2.13 (p), is used. A geotextile filter fabric bonded to the Geonet is used beneath the Geonet.
- Gas Venting Risers – Gas venting risers are installed for the purpose of venting landfill gases to the atmosphere, and are spaced on an approximate 200-foot grid over the landfill cover (i.e., one gas vent per acre of landfill cover). The vents extend through the landfill cover at least 4 feet into the existing waste and project 3 feet above the top surface of the landfill cover. The risers are constructed of 6-inch diameter Polyethylene (PE) pipe. The lower 4-foot portion of the risers (beneath the gas venting Geonet) are slotted to allow migration of the gas into the gas risers. The geomembrane is attached to the gas venting riser using pre-fabricated boot seals to prevent channeling of surface water through the cap and gas emissions around the outside of the pipe.

- As an additional measure rotating “rotary” vent caps were added to the risers in 2009 in order to provide additional vacuum by wind action. Details of the vents are depicted on Figures 1.4-1 and 1.4-2.

1.4.6 Surface Water Controls

The surface water drainage system is designed to collect and convey stormwater run-off from the proposed cover, preventing erosion of the final cover system and surrounding area. In general, surface drainage is radiated outward, with the high point near the center of the landfill, and designed to accommodate a minimum peak discharge of a 24-hour, 25-year frequency storm. Surface drainage swales are constructed on top of the final cover to divert run-off to drainage structures which discharge into adjacent wetlands or Webatuck Creek.

Remedial activities were completed at the site in early 1999.

1.4.7 Removal of Contaminated Materials from the Site

As part of the remedial action, contaminated wetland sediments were excavated and placed under the cap. The appropriate location of sediment removal is shown on Figure1 in Appendix A.

2.0 Engineering and Institutional Control Plan

2.1 Introduction

2.1.1 *General*

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

2.1.2 *Purpose*

This plan provides:

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

2.2 Engineering Controls

2.2.1 Engineering Control Systems

2.2.1.1 Soil Cover

Exposure to remaining contamination in soil/fill at the site is prevented by a soil cover system placed over the site. This cover system is comprised of a minimum of 6 inches of gas venting soil, 40 mil LLDPE geomembrane 18 inches of barrier protection layer and 6 inches of soil suitable for vegetation. The Excavation Work Plan that appears in Appendix E outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this SMP.

Passive Venting System With Rotary Vents

Procedures for operating and maintaining the Passive Venting system are documented in the Operation and Maintenance Plan (Section 4 of this SMP). Procedures for monitoring the system are included in the Monitoring Plan (Section 3 of this SMP). The Monitoring Plan also

addresses severe condition inspections in the event that a severe condition, which may affect controls at the site, occurs.

2.2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.6 of NYSDEC DER-10.

Composite Cover System

The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

Gas Venting System

The purpose of the landfill gas venting system is to discharge landfill gases passively in an environmentally-safe manner, using cost-effective design, and without damaging the effectiveness of the landfill cover system. The passive gas venting system, consisting of a gas venting layer and gas venting risers, was designed to comply with all applicable New York State Department of Environmental Conservation (NYSDEC) regulations. The gas venting risers require routine inspection and maintenance.

- Gas Venting Layer – The gas venting layer is located above the grading fill over the subgrade surface. A geosynthetic venting net (Geonet) that provides the equivalent function, as a soil layer, as defined by 6 NYCRR Part 360-2.13 (p), is used. A geotextile filter fabric bonded to the Geonet is used beneath the Geonet.
- Gas Venting Risers – Gas venting risers are installed for the purpose of venting landfill gases to the atmosphere, and are spaced on an approximate 200-foot grid over the landfill cover (i.e., one gas vent per acre of landfill cover). The vents extend through the landfill cover at least 4 feet into the existing waste and project 3 feet above the top surface of the landfill cover. The risers are constructed of 6-inch diameter Polyethylene (PE) pipe. The lower 4-foot portion of the risers

(beneath the gas venting Geonet) are slotted to allow migration of the gas into the gas risers. The geomembrane is attached to the gas venting riser using pre-fabricated boot seals to prevent channeling of surface water through the cap and gas emissions around the outside of the pipe.

- Gas Monitoring - The Town of North East shall engage the services of a qualified environmental company to conduct explosive gas monitoring described below on a quarterly basis for 2 ½ years (minimum) following an approval of the Site Management Plan (SMP), and at potentially reduced intervals thereafter upon petition to NYSDEC.

The following tasks are required during each monitoring session:

- a. Subsurface monitoring for the presence of gases migrating through soils adjoining the landfill must be conducted along the waste mass perimeter, in the designated locations noted on the site map (see figure 1 in Appendix A) and within the margins of the cap. Gases requiring analysis include methane and hydrogen sulfide. All passive gas vents will also be monitored. Portable field instruments should be used for monitoring purposes and sampling should ideally occur when the atmospheric pressure and wind velocity are low and ideally when the ground surface has been wet or frozen for several days as long as the monitoring occurs below the wet or frozen zone.
- b. The landfill surface and perimeter toe of slope areas must be inspected for soil cracks or stressed vegetation potentially indicating escaping gas.

If necessary, the following will be implemented:

- a. Where the final cover has been damaged by the escape of gas, additional vents must be installed to control further damage. Damaged areas must be fully repaired and restored.
- b. Where subsurface gas migration is detected beyond the boundaries of the landfill cap and where this is estimated by NYSDEC to pose a potential hazard to health, safety or property, additional evaluation of an expanded

area of gas migration may be needed and mitigation measures may be required in accordance with Section 360-2.15(f) of the Solid Waste Management regulations.

Monitored Natural Attenuation

Groundwater monitoring activities to assess natural attenuation will continue, as determined by the NYSDEC, until residual groundwater concentrations are found to be consistently below NYSDEC standards or have become asymptotic at an acceptable level over an extended period. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated.

2.3 Institutional Controls

A series of Institutional Controls is required by the ROD, to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to non-residential uses only. Adherence to these Institutional Controls on the site is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Deed Restriction and this SMP by the Grantor and the Grantor's successors and assigns;
- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls on the Controlled Property must be inspected at a frequency and in a manner defined in the SMP.
- Groundwater, soil vapor and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in this SMP;

Institutional Controls identified in the Deed Restriction may not be discontinued without an amendment to or extinguishment of the Deed Restriction.

The site has a series of Institutional Controls in the form of site restrictions. Adherence to these Institutional Controls is required by the Deed Restriction. Site restrictions that apply to the Controlled Property are:

- The property may only be used for restricted commercial or industrial use provided that the long-term Engineering and Institutional Controls included in this SMP are employed.
- The property may not be used for a higher level of use, such as unrestricted or restricted residential, commercial, as appropriate use without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC;
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- The use of the groundwater underlying the property is prohibited without treatment rendering it safe for intended use;
- The potential for vapor intrusion must be evaluated for any buildings developed in the area noted on Figure 2.2-1 and any potential impacts that are identified must be monitored or mitigated;
- Vegetable gardens and farming on the property are prohibited;
- The site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

2.3.1 Excavation Work Plan

The site has been remediated for restricted commercial/industrial use. Any future intrusive work that will penetrate the soil cover or cap, or encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover system will be performed in compliance with the Excavation Work Plan (EWP) that is attached as Appendix E to this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the site. The HASP as referenced in Appendix D to this SMP will be prepared at a later date. The HASP will be prepared in compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations as current at that time. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided in Section A-1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this SMP.

2.3.2 Soil Vapor Intrusion Evaluation

Prior to the construction of any enclosed structures located over areas that contain remaining contamination and the potential for soil vapor intrusion (SVI) has been identified (see Figure 2.2-1) an SVI evaluation will be performed to determine whether any mitigation measures are necessary to eliminate potential exposure to vapors in the proposed structure. Alternatively, an SVI mitigation system may be installed as an element of the building foundation without first conducting an investigation. This mitigation system will include a vapor barrier and passive sub-slab depressurization system that is capable of being converted to an active system.

Prior to conducting an SVI investigation or installing a mitigation system, a work plan will be developed and submitted to the NYSDEC and NYSDOH for approval. This work plan will be developed in accordance with the most recent NYSDOH “Guidance for Evaluating Vapor Intrusion in the State of New York”. Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the SVI evaluation, the NYSDOH guidance, and construction details of the proposed structure.

Preliminary (unvalidated) SVI sampling data will be forwarded to the NYSDEC and NYSDOH for initial review and interpretation. Upon validation, the final data will be transmitted to the agencies, along with a recommendation for follow-up action, such as mitigation. Validated SVI data will be transmitted to the property owner within 30 days of validation. “If any indoor air test results exceed NYSDOH guidelines, relevant NYSDOH fact sheets will be provided to all tenants and occupants of the property within 15 days of receipt of validated data”.

SVI sampling results, evaluations, and follow-up actions will also be summarized in the next Periodic Review Report.

2.4 Inspections and Notifications

2.4.1 Inspections

Inspections of all remedial components installed at the site will be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive site-wide inspection will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If site records are complete and up to date; and

- Changes, or needed changes, to the remedial or monitoring system;

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (Section 5).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

2.4.2 Notifications

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

- 60-day advance notice of any proposed changes in site use that are required under the terms of the Order on Consent 6NYCRR Part 375, and/or Environmental Conservation Law.
- 7-day advance notice of any proposed ground-intrusive activities pursuant to the Excavation Work Plan.
- Notice within 48-hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other Engineering Controls and likewise any action to be taken to mitigate the damage or defect.
- Verbal notice by noon of the following day of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

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

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been

provided with a copy of the Order on Consent, and all approved work plans and reports, including this SMP

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

2.5 Contingency Plan

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

2.5.1 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 Morris Associates, PLLC. These emergency contact lists must be maintained in an easily accessible location at the site.

Table 2.5-1: Emergency Contact Numbers

Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 (3 day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362
Town of North East Supervisor: John Merwin	(518)789-3658

Table 2.5-2 Contact Numbers

Town of North East Highway Superintendent: Robert Stevens	(518) 789- 4850
Town Engineer Morris Associates, PLLC Raymond Jurkowski, PE	(845) 454-3411 ext. 46
Paul Ciminello Ecosystems Strategies	845-452-1658

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

2.5.2 Map and Directions to Nearest Health Facility

Site Location: Sharon Connecticut (See Map)

Nearest Hospital Name: Sharon Hospital

Hospital Location: 50 Hospital Hill Road, Sharon , CT 06069

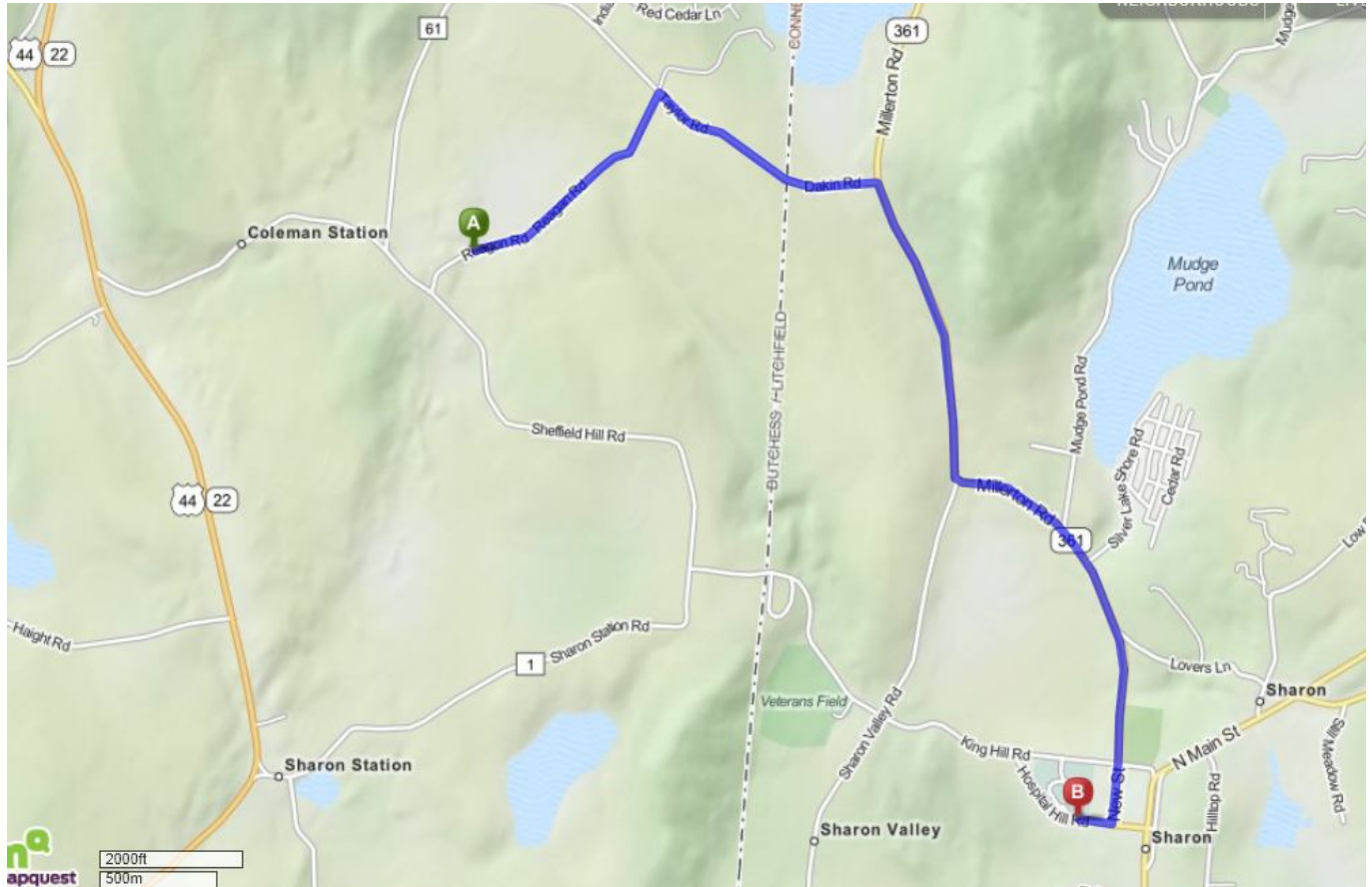
Hospital Telephone(860) 364-4000

Total Distance: 3.8 Mi.

Total Estimated Time: 10 minutes

Map Showing Route from the site to the Hospital:

Figure 2.5-1



Point A. 41 Reagan Rd.

1. Start out going northeast on Reagan Rd toward Taylor Rd. 0.8 Mi.
2. Take the 1st right onto Taylor Rd. (Crossing into Connecticut) 0.5 Mi
3. Taylor Rd. becomes Dakin Rd. 0.3 Mi
4. Turn right onto Millerton Rd/CT-361. Continue to follow CT-361. 2.2 Mi
5. Turn right onto Hospital Hill Rd. 0.10 Mi
6. 50 Hospital Hill Rd. is on the right.

Point B. 50 Hospital Hill Rd., Sharon, CT 06069-2096

2.5.3 Response Procedures

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (Table 2.5-1) The list will also be posted prominently at the site and made readily available to all personnel at all times.

3.0 Site Monitoring Plan

3.1 Introduction

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site, the soil cover system, and all affected site media identified below. Monitoring of other Engineering Controls is described in Chapter 4, Operation, Monitoring and Maintenance Plan. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, soils);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards and Part 375 SCOs for soil;
- 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 Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Monitoring of the performance of the remedy and overall reduction in contamination on-site was modified to a five-quarter rotation as has been conducted for the first several years. The frequency thereafter will be determined by NYSDEC. Trends in contaminant levels in air, soil, and/or groundwater in the affected areas, will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs are summarized in Table 3.1-1 and outlined in detail in Sections 3.2 and 3.3 below.

Table 3.1-1 Monitoring/Inspection Schedule

Monitoring Program	Frequency*	Matrix	Analysis
Cover System Monitoring	Quarterly	N/A	N/A
Groundwater Monitoring	Annually	Groundwater	6NYCRR Part 360-2.11 (d) (6) Routine Parameters TCL SVOCs, & TCL PCBs
Sediment Monitoring	Annually	Sediment	TAL Metals & Total Organic Carbon
Explosive Gas Monitoring	Quarterly	Air	Lower Explosive Limit (LEL)
Site Wide Inspection	Quarterly	N/A	N/A

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

3.2 SOIL COVER SYSTEM MONITORING

Note that soil cover monitoring is covered separately from the other engineering controls in this chapter of the template because it is a passive component of nearly all site remedies, along with media monitoring. Monitoring of active engineering controls, which are employed at fewer sites, is included with operation and maintenance of these systems in Chapter 4.

3.3 Media Monitoring Program

3.3.1 Groundwater Monitoring

Groundwater monitoring will be performed on a periodic basis to assess the performance of the remedy.

The network of monitoring wells has been installed to monitor both up-gradient and down-gradient groundwater conditions at the site. The network of on-site wells has been designed based on the following criteria:

Monitoring well construction logs are included in Appendix F.

The sampling frequency may be modified with the approval NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC.

Deliverables for the groundwater monitoring program are specified below.

3.3.1.1 Sampling Protocol

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

3.3.1.2 Monitoring Well Repairs, Replacement And Decommissioning

If biofouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced (as per the Monitoring Plan), 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 of monitoring wells for the purpose of replacement, and the repair or decommissioning and 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 approved by the NYSDEC.

3.3.2 Explosive Gas Monitoring Program

Explosive Gas Monitoring will be performed on a periodic basis. Explosive gas will be monitored quarterly using a portable handheld multi-gas meter. Percent methane and percent of lower explosive limit (LEL) will be measured at the landfill cap gas vent as shown on figure 1.4-1. The explosive gas monitoring will be recorded in a field book and the methane field data sheet presented in Appendix H.

3.4 SITE-WIDE INSPECTION

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections will also be performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. During these inspections, an inspection form will be completed (Appendix H). The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General site conditions at the time of the inspection;

- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Compliance with permits and schedules included in the Operation and Maintenance Plan; and
- Confirm that site records are up to date.

3.5 Monitoring Quality Assurance/Quality Control

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the site Appendix G. Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
 - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
 - Sample holding times will be in accordance with the NYSDEC ASP requirements.
 - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample Tracking and Custody;
- Calibration Procedures:
 - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
 - The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;
- Preparation of a Data Usability Summary Report (DUSR), which will present the results of data validation, including a summary assessment of laboratory data packages, sample

preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.

- Internal QC and Checks;
- QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules;
- Corrective Action Measures.

3.6 Monitoring Reporting Requirements

Forms and any other information generated during regular monitoring events and inspections will be kept on file on-site. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this SMP.

All monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report. The report will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, 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 figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and

- A determination as to whether groundwater conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC. A summary of the monitoring program deliverables are summarized in Table 3.6-1 below.

Table 3.6-1 Schedule of Monitoring/Inspection Reports

Task	Monitoring Frequency*	Reporting Frequency*
Groundwater Monitoring	Every 5 Quarters	Every 6 th Quarter
Sediment Monitoring	Every 5 Quarters	Every 6 th Quarter
Explosive Gas Monitoring	Quarterly	Annual***
Site Wide Inspection	Quarterly	Annual**

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

** The NYSDEC will be notified of any impacts to the Cover System or other issue discovered during the Cover System Monitoring/Site Wide Inspection that may limit the effectiveness of the engineering controls within seven days of discovery.

*** The NYSDEC will be notified of any exceedence of the Lower Explosive Limit observed during the Explosive Gas Monitoring at the site boundary within seven days of discovery.

4.0 OPERATION AND MAINTENANCE PLAN

4.1 Introduction

The site remedy does not rely on any mechanical systems, such as sub-slab depressurization systems or air sparge/ soil vapor extraction systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this SMP.

Information on non-mechanical Engineering Controls (i.e. soil cover system) is provided in Section 3 - Engineering and Institutional Control Plan. A copy of this Operation and Maintenance Plan, along with the complete SMP, will be kept at the site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP.

4.2 Engineering Control System Operation and Maintenance

At a minimum, the cover system will be mowed twice a year, during the month of June and again during September, to prevent trees, shrubs, scrub brush, etc. from establishing. The routine Site Wide Inspection described in *Section 3.4* of this report will monitor for the establishment of trees, shrubs, scrub brush, etc. Additional mowing or trimming events may be required if excessive growth of trees, shrubs, scrub brush, etc. are observed during the Site Wide Inspection.

4.3 Engineering Control System Performance Monitoring

4.3.1 Monitoring Schedule

Inspection frequency is subject to change with the approval of the NYSDEC. Unscheduled inspections and/or sampling may take place when a suspected failure of the cap system or monitoring well network has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the monitoring well network system are specified later in this Plan.

4.4 Maintenance and Performance Monitoring Reporting Requirements

A complete list of components to be checked is provided in the inspection Checklist, presented in Appendix H. Maintenance reports and any other information generated during regular operations at the site will be kept on-file on-site. All reports, forms, and other relevant information generated will be available upon request to the NYSDEC and submitted as part of the Periodic Review Report, as specified in the Section 5 of this SMP.

4.4.1 Routine Maintenance Reports

Checklists or forms (see Appendix H) will be completed during each routine maintenance event. Checklists/forms will include, but not be limited to the following information:

- Date;
- Name, company, and position of person(s) conducting maintenance activities;
- Maintenance activities conducted;
- Any modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

4.4.2 Non-Routine Maintenance Reports

During each non-routine maintenance event, a form will be completed which will include, but not be limited to, the following information:

- Date;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Presence of leaks;

- Date of leak repair;
- Other repairs or adjustments made to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and,
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

5. Inspections, reporting and certifications

5.1 site Inspections

5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 Monitoring Plan and Section 4 Operation and Maintenance Plan of this SMP. At a minimum, a site-wide inspection will be conducted annually. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition has taken place, such as an erosion or flooding event that may affect the ECs.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate forms for their respective system which are contained in Appendix H. Additionally, a general site-wide inspection form will be completed during the site-wide inspection (see Appendix H). These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format in the Periodic Review Report.

5.1.3 Evaluation of Records and Reporting

The results of the inspection and site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items,

- The site remedy continues to be protective of public health and the environment and is performing as designed in the RAWP and FER.

5.2 Certification of Engineering and Institutional Controls

After the last inspection of the reporting period, a qualified environmental professional or Professional Engineer licensed to practice in New York State (depending on the need to evaluate engineering systems) will prepare the following certification:

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

- The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;
- The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;
- Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;
- Use of the site is compliant with the deed restriction;
- The engineering control systems are performing as designed and are effective;
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices; and
- The information presented in this report is accurate and complete.
- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Raymond J. Jurkowski of Morris

Associates, PLLC, 9 Elks Lane, Poughkeepsie, NY 12601, am certifying as the Designated Site Representative of the Town of North East for the site.

The signed certification will be included in the Periodic Review Report described below.

The signed certification will be included in the Periodic Review Report described below.

5.3 Periodic Review Report

A Periodic Review Report will be submitted to the Department every ~~third~~, year, beginning eighteen months after the Deed Restriction is filed. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix B (Metes and Bounds). The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the site;
- Results of the required annual site inspections and severe condition inspections, if applicable;
- All applicable inspection forms and other records generated for the site during the reporting period in electronic format;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A site evaluation, which includes the following:

- o The compliance of the remedy with the requirements of the site-specific RAWP, ROD or Decision Document;
- o The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
- o Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
- o Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
- o The overall performance and effectiveness of the remedy.

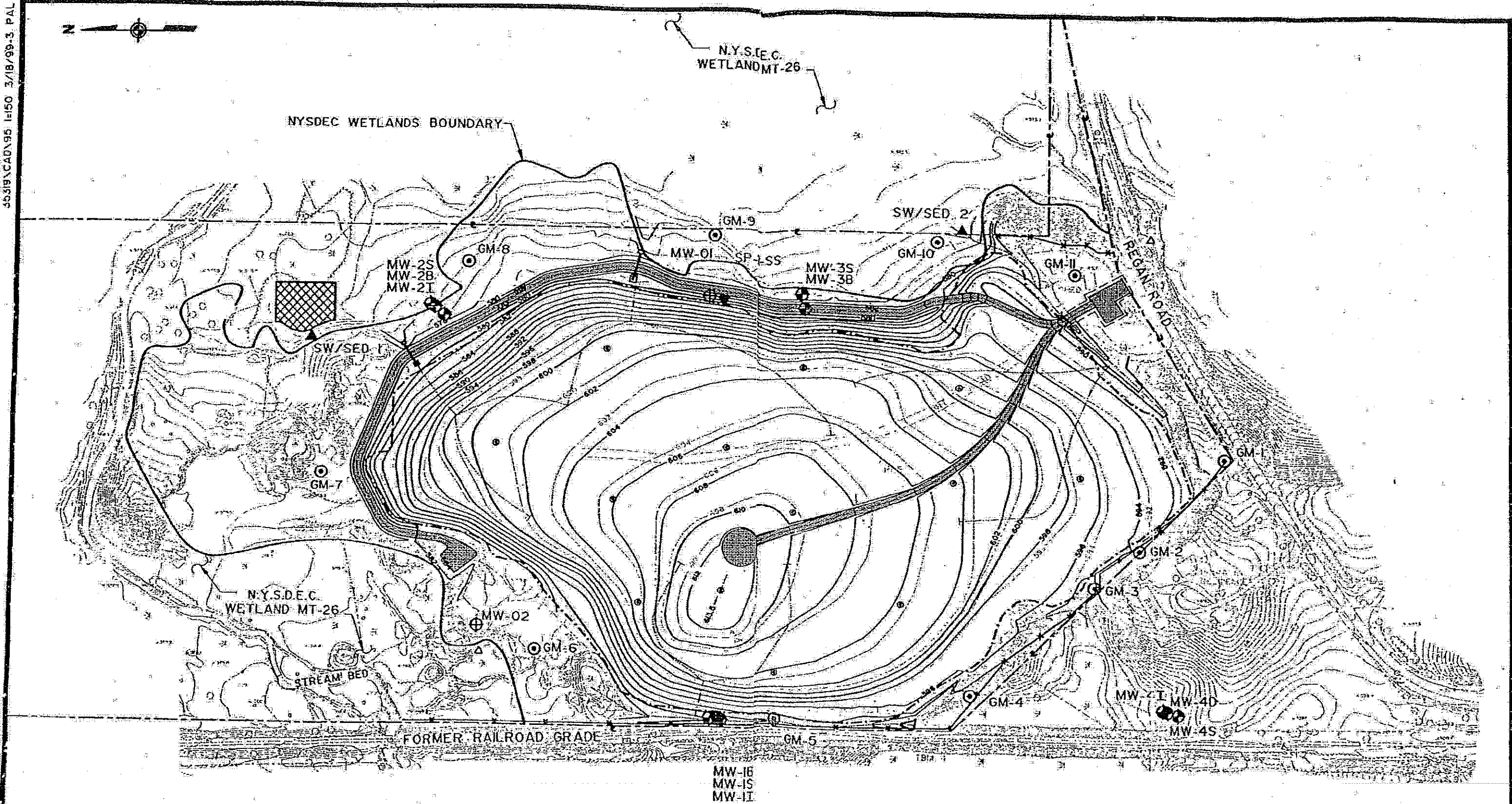
The Periodic Review Report will be submitted, in hard-copy format, to the NYSDEC Central Office and Regional Office in which the site is located, and in electronic format to NYSDEC Central Office, Regional Office and the NYSDOH Bureau of Environmental Exposure Investigation.

5.4 CORRECTIVE MEASURES PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, 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.

APPENDIX A

FIGURES



NOTES

1. BASE MAPPING WAS PREPARED BY AIR SURVEY CORP., RESTON, VA. USING AERIAL PHOTOGRAPHY TAKEN APRIL 14, 1993. GROUND CONTROL WAS BY URS.
2. PROJECT VERTICAL CONTROL IS BASED UPON NATIONAL GEODETIC VERTICAL DATUM OF 1929 AS ESTABLISHED ON USGS MONUMENT "ALBANY 573" ELEV. 575.540.

LEGEND

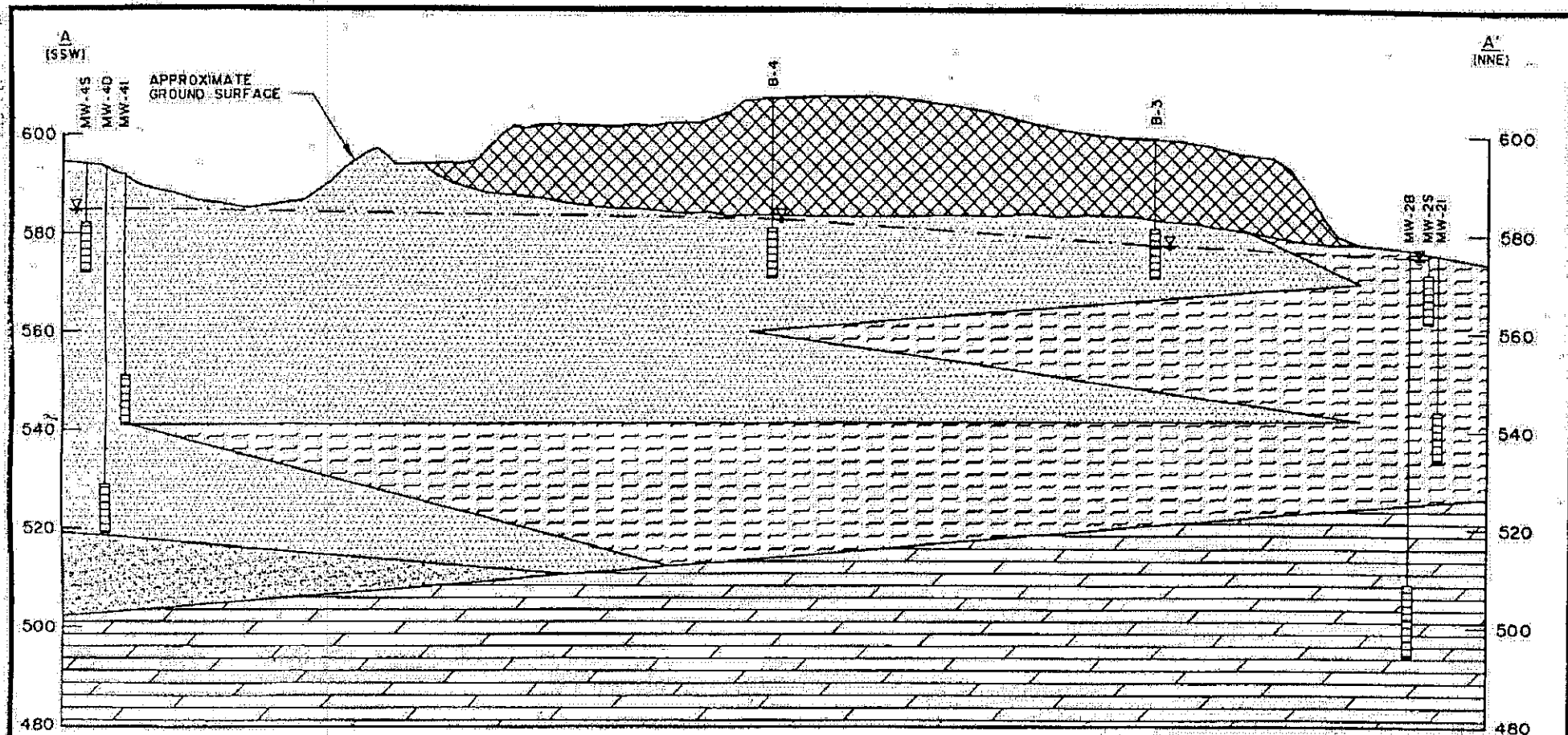
- ⊙ GAS MONITORING POINT
- ⊕ RI MONITORING WELL (1993)
- ⊕ NYSDEC PHASE II MONITORING WELL (1984)
- ▲ SURFACE WATER/SEDIMENT SAMPLE POINT



CONTOUR INTERVAL = 2 FEET

MONITORING POINT LOCATION PLAN

FIGURE 1



LEGEND

MW-45 MONITORING / PIEZOMETER NUMBER

POTENTIOMETRIC SURFACE (5/23/94) OF SHALLOW WATER TABLE AQUIFER

SCREENED INTERVAL

FILL

CLAYEY, SANDY SILT (ML/SM) - GRAY STRATIFIED SILT WITH CLAY OR SAND

SAND AND GRAVEL (SM/GM/SW/GW) GRAY AND BROWN, VARIABLE TEXTURE, GENERALLY NOT STRATIFIED.

SILT AND GRAVEL (SM) GRAY DENSE TILL

BEDROCK - STOCKBRIDGE GROUP LIMESTONE AND MARBLE HIGHLY FRACTURED.

20 0 20
VERT. SCALE IN FEET

100 0 100
HORIZ. SCALE IN FEET

NOTES:

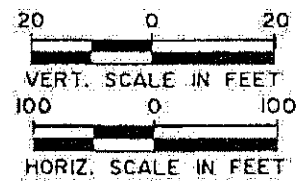
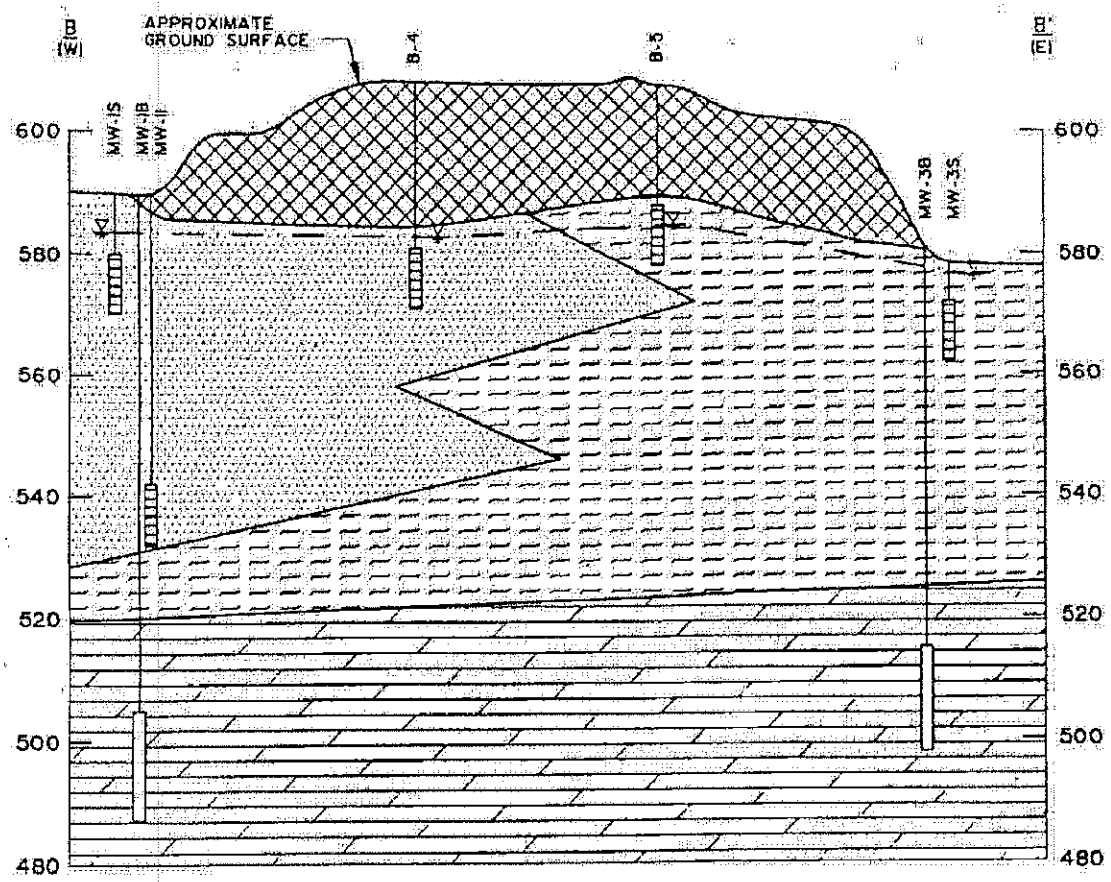
1. CROSS-SECTION LOCATIONS ARE SHOWN ON FIGURE 1-2.
2. VERTICAL DATUM BASED ON NGVD 1929
3. GEOLOGIC CONDITIONS SHOWN ARE REPRESENTATIVE OF CONDITIONS ENCOUNTERED AT EACH BORING LOCATION TO THE DEPTH DRILLED. EXTRAPOLATIONS BETWEEN BORINGS HAVE BEEN INTERPRETED USING STANDARD ACCEPTED GEOLOGIC PRACTICES AND PRINCIPLES. ACTUAL CONDITIONS MAY VARY BETWEEN BORINGS FROM THOSE SHOWN.

GEOLOGIC CROSS SECTION A-A'

URS
CONSULTANTS, INC.

FIGURE 1.2-1

NS334 500 2.1/95-5.1/95



LEGEND

- FILL
- CLAYEY, SANDY SILT (ML/SM) - GRAY STRATIFIED SILT WITH CLAY OR SAND
- SAND AND GRAVEL (SM/GM/SW/GW) - GRAY AND BROWN, VARIABLE TEXTURE - GENERALLY NOT STRATIFIED
- BEDROCK - STOCKBRIDGE GROUP LIMESTONE AND MARBLE - HIGHLY FRACTURED

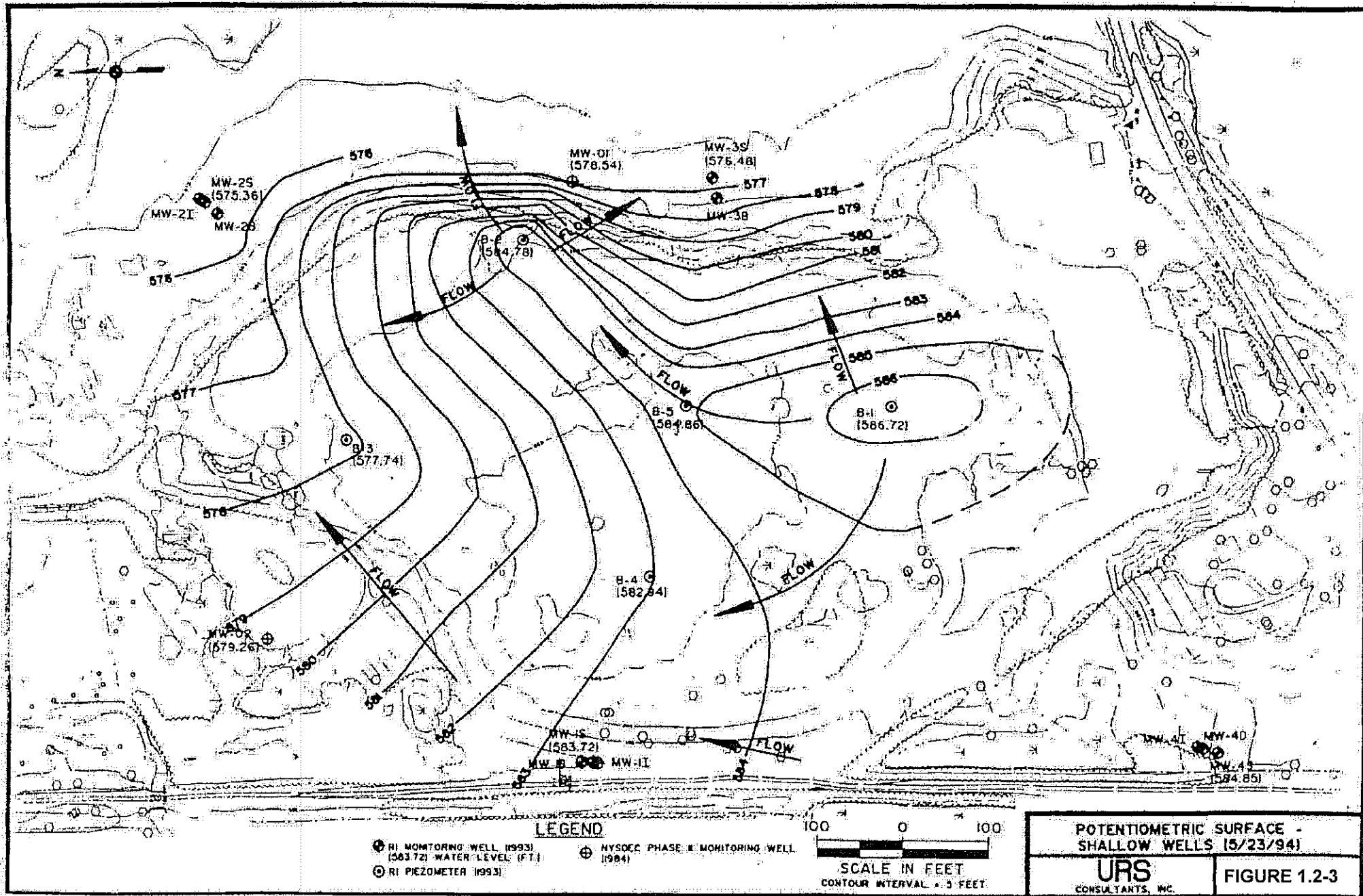
- MW-4S: MONITORING / PIEZOMETER NUMBER
- POTENTIOMETRIC SURFACE (5/23/94) OF SHALLOW WATER TABLE AQUIFER
- SCREENED INTERVAL (OVERBURDEN WELL)
- SCREENED INTERVAL (OVERBURDEN WELL)

NOTES:

1. CROSS-SECTION LOCATIONS ARE SHOWN ON FIGURE 1-2.
2. VERTICAL DATUM BASED ON MOVD 1929
3. GEOLOGIC CONDITIONS SHOWN ARE REPRESENTATIVE OF CONDITIONS ENCOUNTERED AT EACH BORING LOCATION TO THE DEPTH DRILLED. EXTRAPOLATIONS BETWEEN BORINGS HAVE BEEN INTERPRETED USING STANDARD ACCEPTED GEOLOGIC PRACTICES AND PRINCIPLES. ACTUAL CONDITIONS MAY VARY BETWEEN BORINGS FROM THOSE SHOWN.

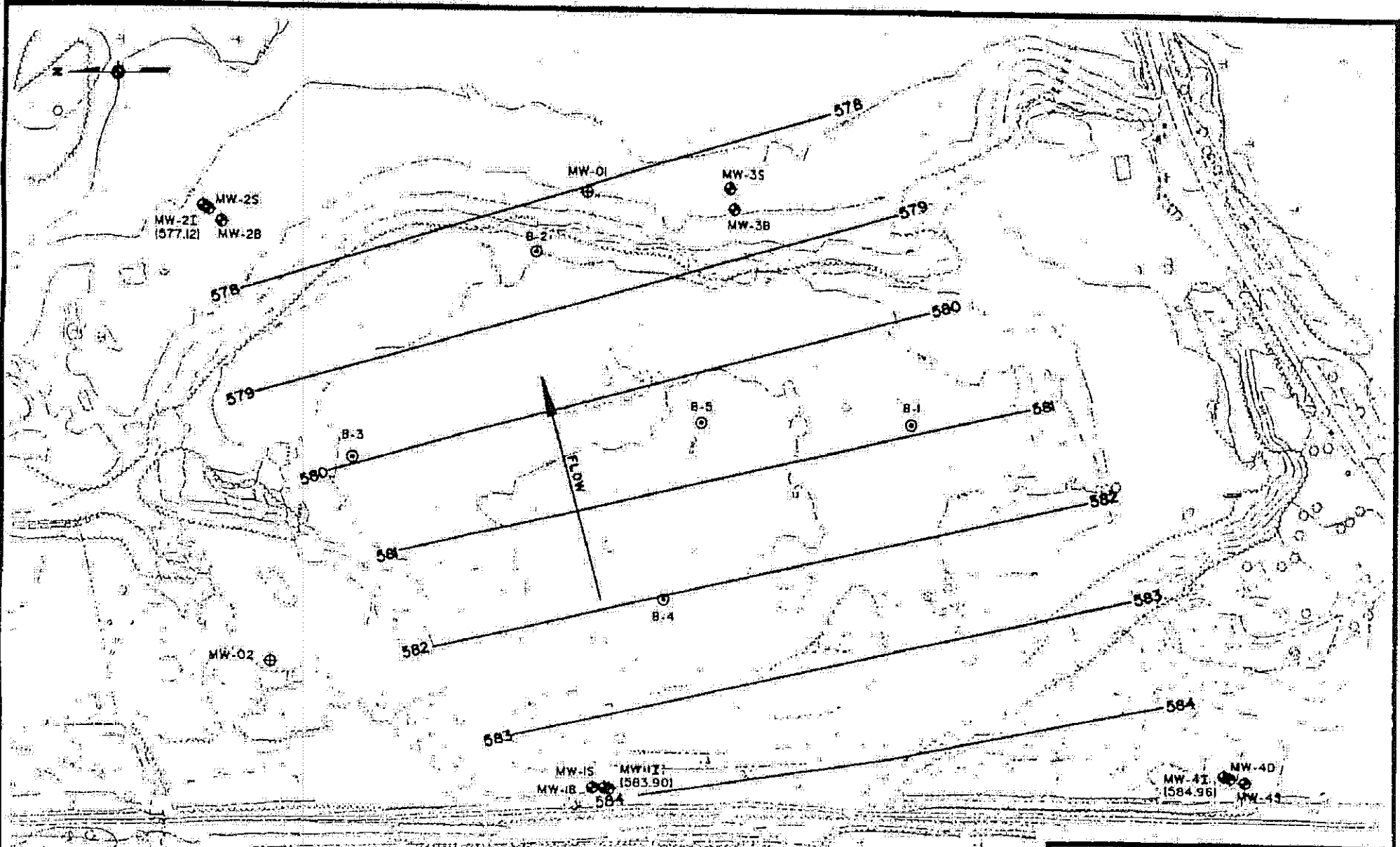
GEOLOGIC CROSS SECTION B-B'	
URS CONSULTANTS, INC.	FIGURE 1.2-2

CC-2770 P.5



053539, WDO 11/01/94, J. KAH

CC NOT FS



LEGEND

⊕ RI MONITORING WELL (1993)
(583.90) WATER LEVEL (FT.)

⊙ RI PIEZOMETER (1993)

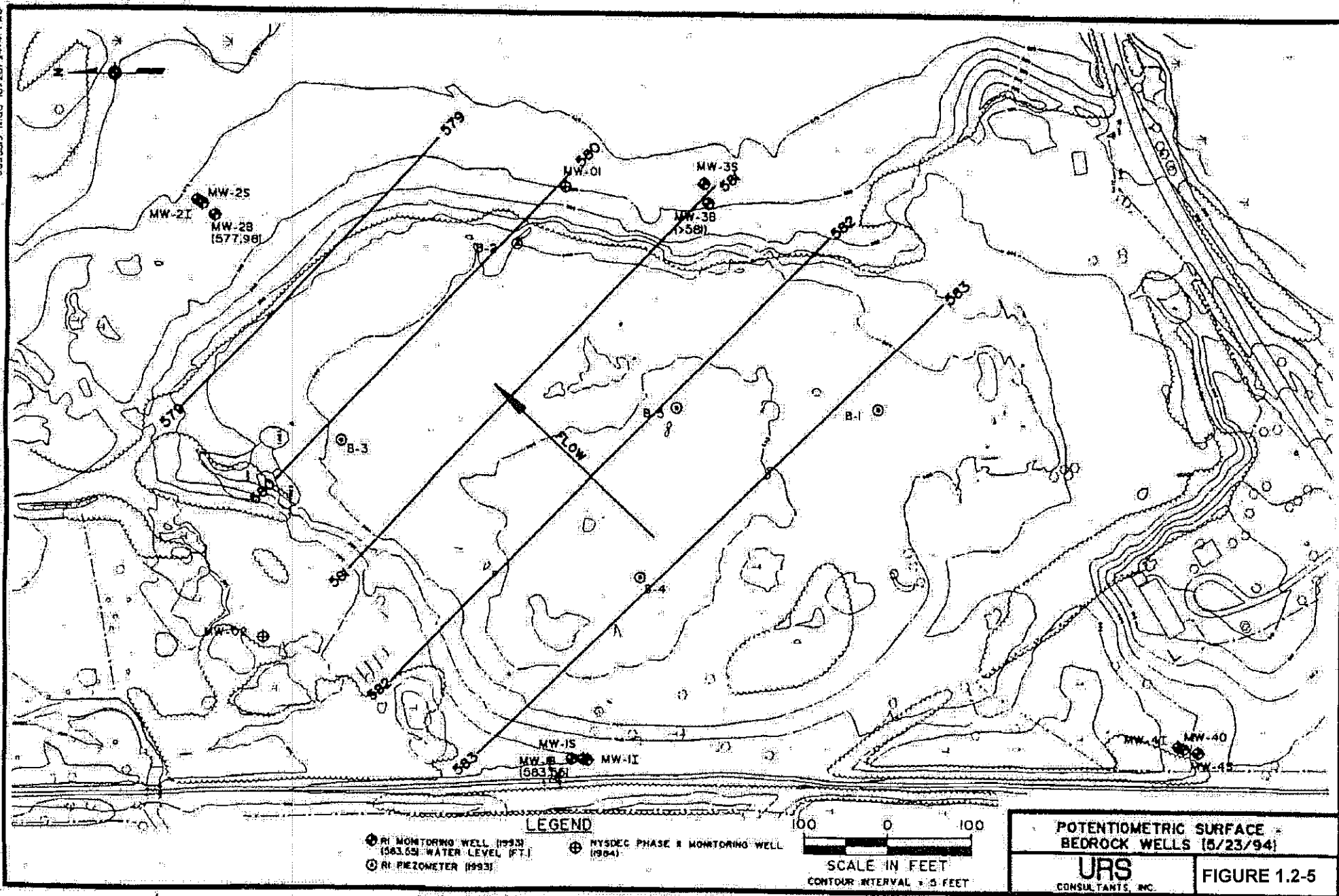
⊕ NYSDEC PHASE I MONITORING WELL (1984)

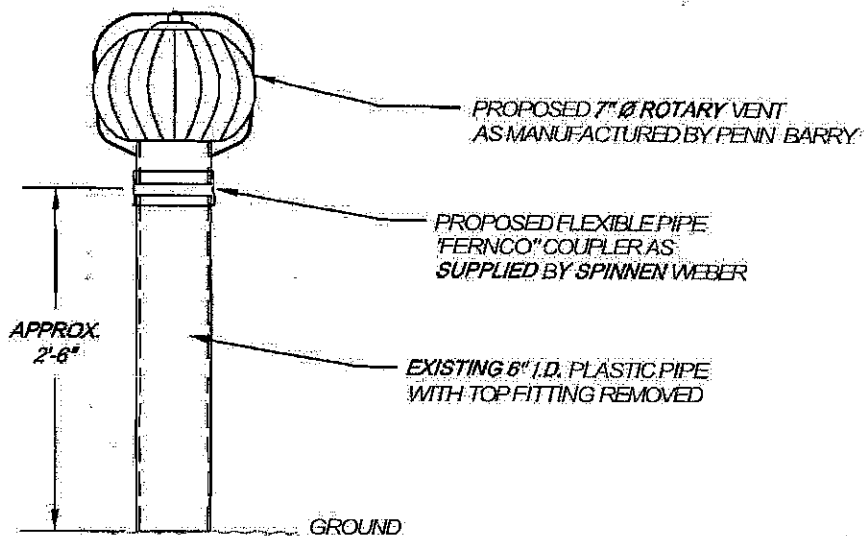
100 0 100

SCALE IN FEET

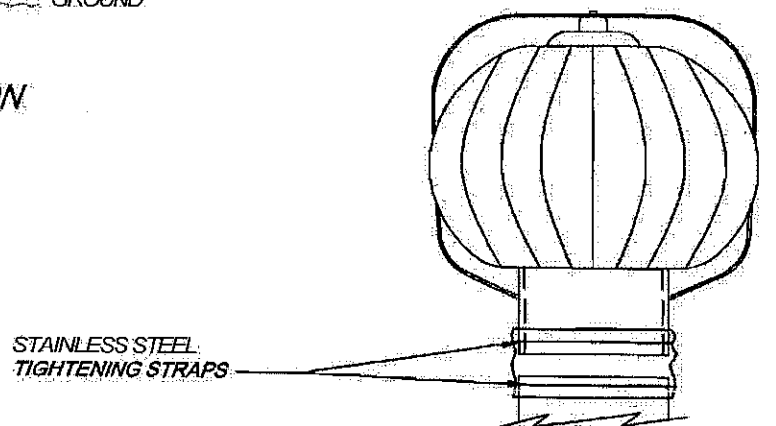
CONTOUR INTERVAL = 5 FEET

POTENTIOMETRIC SURFACE - INTERMEDIATE WELLS (5/23/94)	
URS CONSULTANTS, INC.	FIGURE 1.2-4





ELEVATION



CONNECTION DETAIL

INSTALLATION:

1. REMOVE TOP FITTING OF EXISTING VENT BY CUTTING AWAY USING PIPE SAW.
2. PLACE FLEXIBLE PIPE COUPLER ON END OF VERTICAL PIPE WHILE LEAVING AT LEAST ONE HALF OF BAND ABOVE END OF PIPE.
3. PLACE ROTARY VENT ON TOP OF PIPE AND SLEEVE COUPLER OVER NEW VENT.
4. TIGHTEN THE COUPLER ON BOTH SIDES USING STAINLESS STEEL STRAPS.



MORRIS ASSOCIATES, PLLC
ENGINEERING CONSULTANTS

9 Elk Lane,
Poughkeepsie, New York 12601
Phone No. (845) 454-3411
Fax No. (845) 473-4952

389 Fairview Ave.
Hudson, New York 12534
Phone No. (518) 828-2300
Fax No. (518) 828-3963

REV. No.	DESCRIPTION	DATE	BY

NORTH EAST LANDFILL

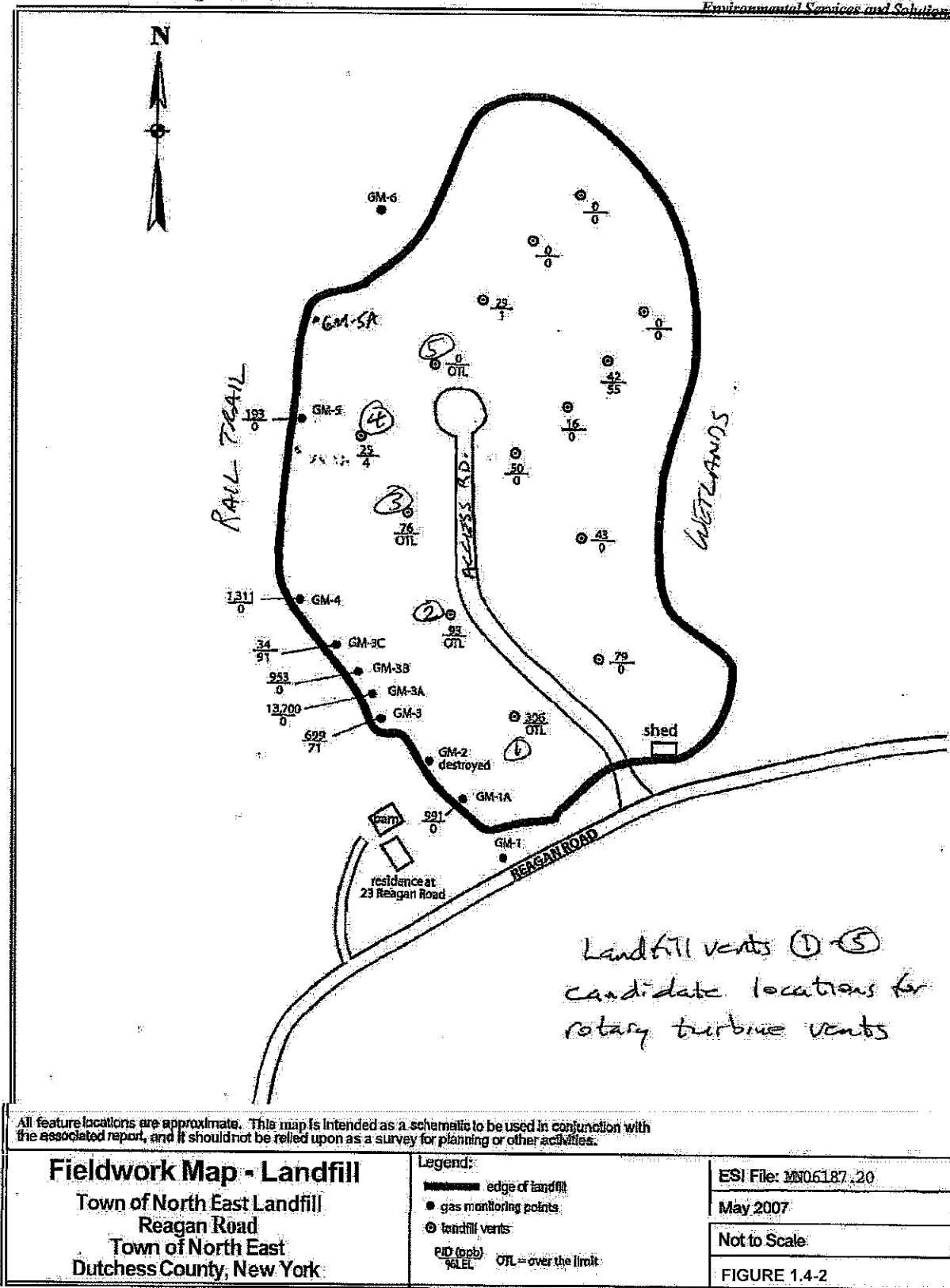
TOWN OF NORTH EAST

DUTCHESS COUNTY

ROTARY VENT DETAIL

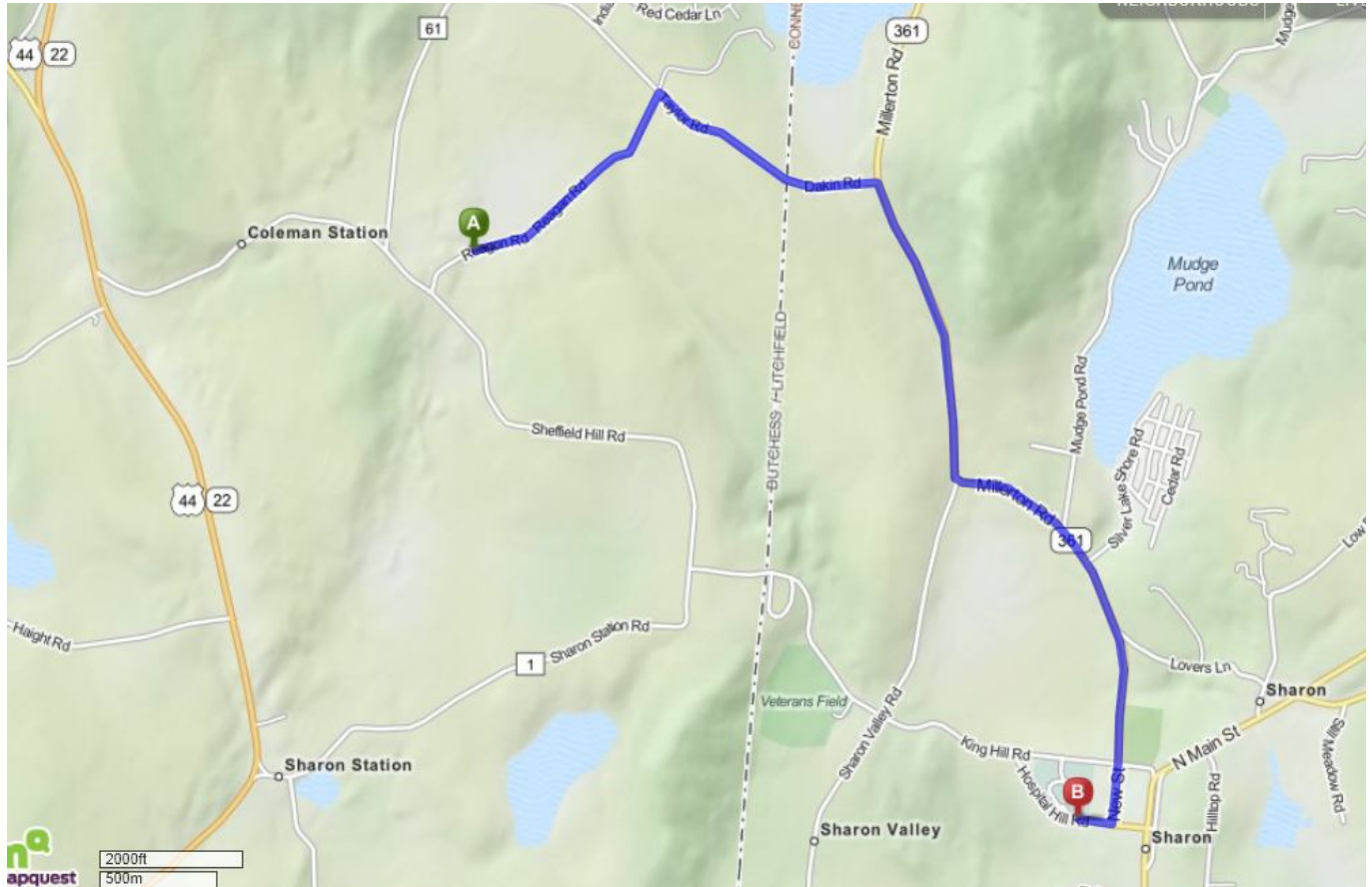
FIGURE 1.4-1

DATE 05/30/08	SCALE NONE	DESIGNED BY: JPD DRAWN BY: KES CHECKED BY: JPD	FILE No. 203827



Map Showing Route from the site to the Hospital:

Figure 2.5-1



Point A. 41 Reagan Rd.

1. Start out going northeast on Reagan Rd toward Taylor Rd. 0.8 Mi.
2. Take the 1st right onto Taylor Rd. (Crossing into Connecticut) 0.5 Mi
3. Taylor Rd. becomes Dakin Rd. 0.3 Mi
4. Turn right onto Millerton Rd/CT-361. Continue to follow CT-361. 2.2 Mi
5. Turn right onto Hospital Hill Rd. 0.10 Mi
6. 50 Hospital Hill Rd. is on the right.

Point B. 50 Hospital Hill Rd., Sharon, CT 06069-2096

APPENDIX B

METES AND BOUNDS

PROPERTY SURVEY

N^o
DUNCANDALE FARM INC
LIBER 1625 PAGE 245
133089-7269-00-263724

N^o
DUNCANDALE FARM INC
LIBER 1625 PAGE 245
133089-7269-00-263724

N^o
MILLERTON/ELECTRIC &
LIGHT COMPANY

150' RIGHT OF WAY
EASEMENT SCALED
FROM
LIBER 465 PAGE 173
FM #1430, PAGE 18

TRIBUTARY TO WEBATUCK CREEK
WATERS INDEX CT 15-12-12
(LOCATION TAKEN FROM AERIAL
IMAGES)

"HARLEM VALLEY RAIL TRAIL"

NYS
DOC #02 1999 10473
133089-7269-00-178554

N^o
TOWN of NORTH EAST
LIBER 2003 PAGE 221
133089-7269-00-267517

N^o
TOWN of NORTH EAST
LIBER 1079 PAGE 727
133089-7269-00-212501
FM#9092

N^o
TOWN of NORTH EAST
DOC #02 1997 9959

N^o
ELWELL
DOC #02 2000 828
133089-7269-00-190462

N^o
QUINLAN
DOC #02 2002 10412
133089-7269-00-464220
FM#903

LEGAL DESCRIPTION

ALL that certain parcel of land situate in the Town of North East, County of Dutchess and State of New York and is more particularly described as follows:

BEGINNING at a point on the northerly line of Reagan Road, said point being located North 60° 24' 41" West 0.43 feet from a rebar found; thence northwesterly and southwesterly along said road the following four (4) courses:

1. North 86° 07' 00" West 200.00 feet,
2. North 89° 28' 20" West 162.09 feet,
3. South 80° 54' 10" West 119.70 feet and
4. South 75° 31' 30" West 316.03 feet

to a point, said point also being located on the easterly line of the lands, now or formerly, of Elwell (Doc #02 2000 828); thence northwesterly and southwesterly along said Elwell the following three (3) courses:

1. North 20° 00' 20" West 302.60 feet,
2. South 69° 59' 40" West 40.00 feet and
3. North 20° 00' 20" West 287.05 feet

to a point, said point being located on the easterly line of the lands, now or formerly, of NYS (Doc #02 1999 10473); thence northeasterly along the easterly line of said NYS the following six (6) courses:

1. On a curve to the left having a radius of 1,722.76 feet an arc length of 283.20 feet, a chord bearing North 16° 42' 09" East with a chord length of 283.20 feet,
2. North 22° 53' 32" East 100.94 feet,
3. North 15° 43' 53" East 100.26 feet,
4. North 02° 30' 43" East 53.48 feet,
5. On a curve to the left having a radius of 1,722.76 feet and arc length of 117.64 feet, a chord bearing North 15° 11' 44" East and a chord length of 117.64 feet and
6. North 15° 00' 00" East 951.60 feet

to a point, said point being a rebar located at the southwesterly corner of the lands, now or formerly, of Duncandale Farm, Inc. (Deed Liber 1625 Page 245); thence along the lands of said Duncandale Farm, Inc. the following five (5) courses:

1. South 72° 38' 58" East 745.99 feet,
2. South 13° 49' 24" West 1007.40 feet,
3. North 78° 57' 00" East 284.43 feet,
4. South 17° 27' 00" West 850.36 feet and
5. South 73° 33' 10" East 99.55 feet

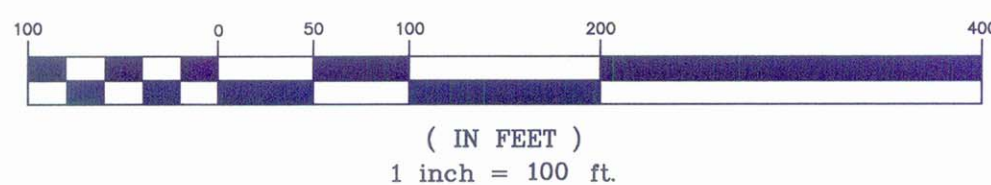
to the point or place of BEGINNING and containing 37.211 acres of land, more or less.

THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THIS EASEMENT ARE SET FORTH IN THE SITE MANAGEMENT PLAN (SMP). A COPY OF THE SMP MUST BE OBTAINED BY ANY PARTY WITH AN INTEREST IN THE PROPERTY. THE SMP CAN BE OBTAINED FROM NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION, DIVISION OF ENVIRONMENTAL REMEDIATION, SITE CONTROL SECTION, 625 BROADWAY, ALBANY, NY 12233 OR AT derweb@gw.dec.state.ny.us

LEGEND

—	PROPERTY BOUNDS
— OH —	OVERHEAD WIRES
—	GUIDE RAIL
—	CHAINLINK FENCE
—	WIRE FENCE
—	UTILITY POLE
□	CATCH BASIN
⊙	GUY
⊙	NO EVIDENCE FOUND
⊙	ROAD SIGN
⊙	HYDRANT

GRAPHIC SCALE



CERTIFIED TO:

- NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
-THE TOWN OF NORTH EAST



JOHN H. DECKER LS #050572

DEED RESTRICTION SURVEY

**TOWN OF NORTH EAST LANDFILL
41 REAGAN ROAD
NYSDEC SITE No. 314048**

TOWN OF NORTH EAST
FEBRUARY 27, 2013

DUTCHESS COUNTY, NEW YORK
1" = 100'

APPENDIX C

DEED RESTRICTION



Dutchess County Clerk Recording Page

Record & Return To :

CHICAGO TITLE INSURANCE
44 EXCHANGE BLVD
STE 100
Rochester, NY 14614-

Date Recorded : 12/02/2013
Time Recorded : 1:05:00
Document # : 02 2013 6445

Received From : CHICAGO TITLE INSURANCE

Grantor : NORTH EAST TOWN
Grantee : NORTH EAST TOWN

Tax District : North East

Recorded In : Deed
Instrument Type : DECLAR

Examined and Charged As Follows :

Recording Charge : \$65.00

Number of Pages : 5

*** Do Not Detach This Page
*** This Is Not A Bill

Transfer Tax Amount :
Transfer Tax Number :
Red Hook Transfer Tax :
E & A Form: N
TP-584 : N

County Clerk By : cth / _____
Receipt # : R66194
Batch Record : A143

Bradford Kendall
County Clerk



0220136445

110 5P
65-

DECLARATION OF COVENANTS and RESTRICTIONS

THIS COVENANT is made the 13 day of June, 2013, by the Town of North East (hereinafter know as "the Town") a Municipal Corporation, and having an office for the transaction of business at 19 Maple Avenue, Millerton, NY 12546. ✓

WHEREAS, site 314048 is the subject of a Deed Restriction executed by the Town as part of the New York State Department of Environmental Conservation's (the "Department's") Environmental Remediation Program, namely that parcel of real property located on 41 Reagan Road in the Town of North East, County of Dutchess, State of New York, ✓ which is part of lands conveyed by Eugene B. Kimball and Louise C. Kimball to Town of North East by deed dated May 28, 1962 and recorded in the Dutchess County Clerk's Office in Liber 1079 and Page 727, and being more particularly described in Appendix "A," attached to this declaration and made a part hereof, and hereinafter referred to as "the Property"; and

WHEREAS, the Department approved a remedy to eliminate or mitigate all significant threats to the environment presented by the contamination disposed at the Property and such remedy requires that the Property be subject to restrictive covenants.

NOW, THEREFORE, the Town, for itself and its successors and/or assigns, covenants that:

First, the Property subject to this Declaration of Covenants and Restrictions is as shown on a map attached to this declaration as Appendix "B" and made a part hereof.

Second, unless prior written approval by the Department or, if the Department shall no longer exist, any New York State agency or agencies subsequently created to protect the environment of the State and the health of the State's citizens, hereinafter referred to as "the Relevant Agency," is first obtained, where contamination remains at the Property subject to the provisions of the Site Management Plan ("SMP"), there shall be no construction, use or occupancy of the Property that results in the disturbance or excavation of the Property which threatens the integrity of the engineering controls or which results in unacceptable human exposure to contaminated soils.

Third, the owner of the Property shall not disturb, remove, or otherwise interfere with the installation, use, operation, and maintenance of engineering controls required for the Remedy, which are described in the SMP, unless in each instance the owner first obtains a written waiver of such prohibition from the Department of Relevant Agency.

Appendix A

LEGAL DESCRIPTION

ALL that certain parcel of land situate in the Town of North East, County of Dutchess and State of New York and is more particularly described as follows:

BEGINNING at a point on the northern line of Reagen Road, said point being located North 60° 24' 41" West 0.43 feet from a rebar found; thence northwesterly and southwesterly along said road the following four (4) courses:

- 1. North 85° 07' 00" West 200.00 feet,
- 2. North 89° 28' 20" West 162.09 feet,
- 3. South 80° 54' 10" West 119.70 feet and
- 4. South 75° 37' 30" West 316.03 feet

to a point, said point also being located on the easterly line of the lands, now or formerly, of Elwell (Doc #02 #02 2000 B339), thence northwesterly and southwesterly along said Elwell the following three (3) courses:

- 1. North 20° 00' 20" West 302.50 feet,
- 2. South 89° 59' 40" West 40.00 feet and
- 3. North 20° 00' 20" West 267.06 feet

to a point, said point being located on the easterly line of the lands, now or formerly, of NYS (Doc #02 1999 10473), thence northwesterly along the easterly line of said NYS the following six (6) courses:

- 1. On a curve to the left having a radius of 1,7221.76 feet an arc length of 283.20 feet, a chord bearing North 16° 42' 09" East with a chord length of 283.20 feet,
- 2. North 22° 53' 32" East 100.94 feet,
- 3. North 15° 43' 53" East 100.26 feet,
- 4. North 02° 30' 43" East 53.48 feet,
- 5. On a curve to the left having a radius of 1,7221.76 feet and arc length of 117.64 feet, a chord bearing North 15° 11' 44" East and a chord length of 117.64 feet and
- 6. North 15° 00' 00" East 957.60 feet

to a point, said point being a rebar located at the southwesterly corner of the lands, now or formerly, of Duncandale Farm, Inc. (Deed Liber 1625 Page 245), thence along the lands of said Duncandale Farm, Inc. the following five (5) courses:

- 1. South 72° 38' 58" East 745.99 feet,
- 2. South 13° 49' 24" West 1007.40 feet,
- 3. North 78° 57' 00" East 284.43 feet,
- 4. South 17° 27' 00" West 850.36 feet and
- 5. South 73° 33' 10" East 99.55 feet

to the point or place of BEGINNING and containing 37.211 acres of land, more or less.

Fourth, the owner of the Property shall prohibit the Property from ever being used for purposes other than for Commercial or Industrial use without the express written waiver of such prohibition by the Department or Relevant Agency.

Fifth, the owner of the Property shall prohibit the use of the groundwater underlying the Property without treatment rendering it safe for drinking water or industrial purposes, as appropriate, unless the user first obtains permission to do so from the Department or Relevant Agency.

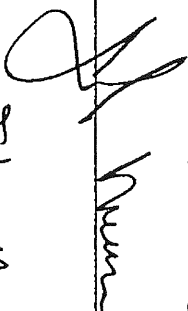
Sixth, the owner of the Property shall provide a periodic certification, prepared and submitted by a professional engineer or environmental professional acceptable to the Department or Relevant Agency, which will certify that the institutional and engineering controls put in place are unchanged from the previous certification, comply with the SMP, and have not been impaired.

Seventh, the owner of the Property shall continue in full force and effect any institutional and engineering controls required for the Remedy and maintain such controls, unless the owner first obtains permission to discontinue such controls from the Department or Relevant Agency, in compliance with the approved SMP, which is incorporated and made enforceable hereto, subject to modifications as approved by the Department or Relevant Agency.

Eighth, this Declaration is and shall be deemed a covenant that shall run with the land and shall be binding upon all future owners of the Property, and shall provide that the owner and its successors and assigns consent to enforcement by the Department or Relevant Agency of the prohibitions and restrictions that the Deed Restriction requires to be recorded, and hereby covenant not to contest the authority of the Department or Relevant Agency to seek enforcement.

Ninth, any deed or conveyance of the Property, or any portion thereof, shall recite, unless the Department or Relevant Agency has consented to the termination of such covenants and restrictions, that said conveyance is subject to this Declaration of Covenants and Restrictions.

IN WITNESS WHEREOF, the undersigned has executed this instrument the day written below.

By: 

Print Name: John Melvin

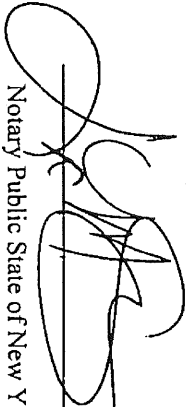
Title: Supervisor Date: 4/13/13

STATE OF NEW YORK)

) s.s.: M. Miller

COUNTY OF Dutchess)

On the 1st day of June, in the year 2012, before me, the undersigned, personally appeared John Merino, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity (ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.


Notary Public State of New York

Lorna M. Sherman
Notary Public, State of New York
Reg. No. 01SH493546
Qualified In Dutchess County
Commission Expires July 5, 2014

R1B
CHICAGO TITLE INSURANCE
44 EXCHANGE BLVD
SUITE 100
ROCHESTER, NY 14614
ATTN: SUSAN HILCOMARSH

DECLARATION of COVENANTS and RESTRICTIONS

THIS COVENANT is made the ____ day of _____ 20____, by the Town of North East (hereinafter know as “the Town”) a Municipal Corporation, and having an office for the transaction of business at 19 Maple Avenue, Millerton, NY 12546.

WHEREAS, site 314048 is the subject of a Deed Restriction executed by the Town as part of the New York State Department of Environmental Conservation’s (the “Department’s”) Environmental Remediation Program, namely that parcel of real property located on 41 Reagen Road in the Town of North East, County of Dutchess, State of New York, which is part of lands conveyed by Eugene B. Kimball and Louise C. Kimball to Town of North East by deed dated May 28, 1962 and recorded in the Dutchess County Clerk’s Office in Liber 1079 and Page 727, and being more particularly described in Appendix “A,” attached to this declaration and made a part hereof, and hereinafter referred to as “the Property”; and

WHEREAS, the Department approved a remedy to eliminate or mitigate all significant threats to the environment presented by the contamination disposed at the Property and such remedy requires that the Property be subject to restrictive covenants.

NOW, THEREFORE, the Town, for itself and its successors and/or assigns, covenants that:

First, the Property subject to this Declaration of Covenants and Restrictions is as shown on a map attached to this declaration as Appendix “B” and made a part hereof.

Second, unless prior written approval by the Department or, if the Department shall no longer exist, any New York State agency or agencies subsequently created to protect the environment of the State and the health of the State’s citizens, hereinafter referred to as “the Relevant Agency,” is first obtained, where contamination remains at the Property subject to the provisions of the Site Management Plan (“SMP”), there shall be no construction, use or occupancy of the Property that results in the disturbance or excavation of the Property which threatens the integrity of the engineering controls or which results in unacceptable human exposure to contaminated soils.

Third, the owner of the Property shall not disturb, remove, or otherwise interfere with the installation, use, operation, and maintenance of engineering controls required for the Remedy, which are described in the SMP, unless in each instance the owner first obtains a written waiver of such prohibition from the Department of Relevant Agency.

Fourth, the owner of the Property shall prohibit the Property from ever being used for purposes other than for Commercial or Industrial use without the express written waiver of such prohibition by the Department or Relevant Agency.

Fifth, the owner of the Property shall prohibit the use of the groundwater underlying the Property without treatment rendering it safe for drinking water or industrial purposes, as appropriate, unless the user first obtains permission to do so from the Department or Relevant Agency.

Sixth, the owner of the Property shall provide a periodic certification, prepared and submitted by a professional engineer or environmental professional acceptable to the Department or Relevant Agency, which will certify that the institutional and engineering controls put in place are unchanged from the previous certification, comply with the SMP, and have not been impaired.

Seventh, the owner of the Property shall continue in full force and effect any institutional and engineering controls required for the Remedy and maintain such controls, unless the owner first obtains permission to discontinue such controls from the Department or Relevant Agency, in compliance with the approved SMP, which is incorporated and made enforceable hereto, subject to modifications as approved by the Department or Relevant Agency.

Eighth, this Declaration is and shall be deemed a covenant that shall run with the land and shall be binding upon all future owners of the Property, and shall provide that the owner and its successors and assigns consent to enforcement by the Department or Relevant Agency of the prohibitions and restrictions that the Deed Restriction requires to be recorded, and hereby covenant not to contest the authority of the Department or Relevant Agency to seek enforcement.

Ninth, any deed or conveyance of the Property, or any portion thereof, shall recite, unless the Department or Relevant Agency has consented to the termination of such covenants and restrictions, that said conveyance is subject to this Declaration of Covenants and Restrictions.

IN WITNESS WHEREOF, the undersigned has executed this instrument the day written below.

By:_____

Print Name:_____

Title:_____ Date:_____

STATE OF NEW YORK)

) s.s.:

COUNTY OF)

On the _____ day of _____, in the year 201____, before me, the undersigned, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity (ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Notary Public State of New York

LEGAL DESCRIPTION OF DEED RESTRICTION
THE TOWN OF NORTH EAST LANDFILL
NYSDEC SITE NO. 314048
T/O OF NORTH EAST
Tax Parcel No. 134689-6261-02-604993

MA# 203827

2/27/13

ALL that certain parcel of land situate in the Town of North East, County of Dutchess and State of New York and is more particularly described as follows:

BEGINNING at a point on the northerly line of Reagan Road, said point being located North $60^{\circ} 24' 41''$ West 0.43 feet from a rebar found; thence northwesterly and southwesterly along said road the following four (4) courses:

1. North $86^{\circ} 07' 00''$ West 200.00 feet,
2. North $89^{\circ} 28' 20''$ West 162.09 feet,
3. South $80^{\circ} 54' 10''$ West 119.70 feet and
4. South $75^{\circ} 31' 30''$ West 316.03 feet

to a point, said point also being located on the easterly line of the lands, now or formerly, of Elwell (Doc #02 2000 828); thence northwesterly and southwesterly along said Elwell the following three (3) courses:

1. North $20^{\circ} 00' 20''$ West 302.60 feet,
2. South $69^{\circ} 59' 40''$ West 40.00 feet and
3. North $20^{\circ} 00' 20''$ West 267.05 feet

to a point, said point being located on the easterly line of the lands, now or formerly, of NYS (Doc #02 1999 10473); thence northeasterly along the easterly line of said NYS the following six (6) courses:

1. On a curve to the left having a radius of 1,7221.76 feet an arc length of 283.20 feet, a chord bearing North $16^{\circ} 42' 09''$ East with a chord length of 283.20 feet,
2. North $22^{\circ} 53' 32''$ East 100.94 feet,
3. North $15^{\circ} 43' 53''$ East 100.26 feet,
4. North $02^{\circ} 30' 43''$ East 53.48 feet,
5. On a curve to the left having a radius of 1,7221.76 feet and arc length of 117.64 feet, a chord bearing North $15^{\circ} 11' 44''$ East and a chord length of 117.64 feet and
6. North $15^{\circ} 00' 00''$ East 951.60 feet

to a point, said point being a rebar located at the southwesterly corner of the lands, now or formerly, of Duncandale Farm, Inc. (Deed Liber 1625 Page 245); thence along the lands of said Duncandale Farm, Inc. the following five (5) courses:

1. South $72^{\circ} 38' 58''$ East 745.99 feet,
2. South $13^{\circ} 49' 24''$ West 1007.40 feet,
3. North $78^{\circ} 57' 00''$ East 284.43 feet,
4. South $17^{\circ} 27' 00''$ West 850.36 feet and
5. South $73^{\circ} 33' 10''$ East 99.55 feet

to the point or place of BEGINNING and containing 37.211 acres of land, more or less.

APPENDIX D

HEALTH AND SAFETY PLAN AND

COMMUNITY AIR MONITORING PLAN

[Note these reports are not included herewith but are to be provided at a future date if ever there is a reason to perform any intrusive work or similar disturbance to the Engineering Controls for the project]

APPENDIX E

EXCAVATION WORK PLAN

EXCAVATION WORK PLAN

E-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the site owner or their representative will notify the Department. Currently, this notification will be made to:

R.Scott Deyette-Chief Inspection Unit

Office Phone (518) 402-9662, Cell Phone (518)461-3721

Regional Hazardous Waste Remediation Engineer

21 South Putt Corners Road, New Paltz, NY 12561

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control,
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work,
- A summary of the applicable components of this EWP,
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120,
- A copy of the contractor's health and safety plan, in electronic format, if it differs from the HASP provided in Appendix D of this document,
- Identification of disposal facilities for potential waste streams,

- Identification of sources of any anticipated backfill, along with all required chemical testing results.

E-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based soil screening will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

E-3 STOCKPILE METHODS

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

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event (over ½" in 24 hours). Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC.

E-4 MATERIALS EXCAVATION AND LOAD OUT

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

The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

A truck wash will be operated on-site. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the activities performed under this section are complete.

Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

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

E-5 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All trucks will be washed prior to leaving the site. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Truck transport routes are as follows: All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d)

limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport; [(g) community input [where necessary]]

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

E-6 MATERIALS DISPOSAL OFF-SITE

All soil/fill/solid waste excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

E-7 MATERIALS REUSE ON-SITE

Chemical criteria for on-site reuse of material have been approved by NYSDEC and are listed in Table [x]. The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for re-use on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

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

E-8 FLUIDS MANAGEMENT

All liquids to be removed from the site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the site, but will be managed off-site.

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

E-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the Record of Decision. The demarcation layer, consisting of orange snow fencing material or equivalent material will be replaced to provide a visual reference to the top of the 'Remaining Contamination Zone', the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this Site Management Plan. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), (this will constitute a modification of the cover element of the remedy and the upper surface of the 'Remaining Contamination. A figure

showing the modified surface will be included in the subsequent Periodic Review Report and in any updates to the Site Management Plan.

E-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the site.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table [x]. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

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

E-11 STORMWATER POLLUTION PREVENTION

Barriers and hay bale checks will be installed and inspected once a week and after every storm event of ½" or greater in 24 hours. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

E-12 CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for full a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the periodic reports prepared pursuant to Section 5 of the SMP.

E-13 COMMUNITY AIR MONITORING PLAN

A figure showing the location of air sampling stations based on generally prevailing wind conditions is shown in Figure [x]. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind

monitoring stations. Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

E-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used on a routine basis will include passive landfill gas venting. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

E-15 DUST CONTROL PLAN

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.

- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

E-16 OTHER NUISANCES

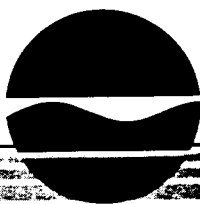
A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

APPENDIX F

RECORD OF DECISION

DEC DATABASE SEARCH



Department of Environmental Conservation

Division of Hazardous Waste Remediation

Town of Northeast Landfill

Site Number 314048
Dutchess County, New York

Record of Decision

September 1995

Funded Under Title 3
of the
1986 Environmental Quality Bond Act



New York State Department of Environmental Conservation
GEORGE E. PATAKI, Governor MICHAEL D. ZAGATA, Commissioner

DECLARATION STATEMENT - RECORD OF DECISION

Town of Northeast Landfill Inactive Hazardous Waste Site Town of Northeast, Dutchess County, New York Site No. 314048

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the Town of Northeast Landfill inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Town of Northeast Landfill Inactive Hazardous Waste Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential threat to public health and the environment.

Description of Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Town of Northeast Landfill and the criteria identified for evaluation of alternatives the NYSDEC has selected regrading, a landfill cap that will meet 6NYCRR Part 360 Regulations, posting and fencing the property, deed restrictions, long-term monitoring with periodic reviews, and the remediation of sediments and wetland restoration in the seep area northeast of the landfill. The components of the remedy are as follows:

- *A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program.*

- *Regrading the landfill with the placement of approximately 70,000 cubic yards of clean fill or Alternate Grading Materials consisting of processed construction and demolition debris;*
- *Installation of a cap over the landfill that meets NYSDEC Part 360 standards;*
- *Fencing, posting, and deed restrictions that prohibit the use of onsite groundwater and intrusive activities;*
- *Sediment remediation with wetland restoration in the seep area northeast of the landfill;*
- *Long-term monitoring and maintenance with periodic reviews.*

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

Since the remedy results in hazardous waste remaining within the landfill, a long-term monitoring program will be instituted. This long-term monitoring program will allow the effectiveness of the remedy to be monitored by sampling and testing of the groundwater and surface water.

 9/25/97
Date


Michael J. O'Toole, Jr., Director
Division of Hazardous Waste Remediation

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RECORD OF DECISION

Town of Northeast Landfill Town of Northeast, Dutchess County, New York Site No. 314048 September 1995

SECTION 1: SITE DESCRIPTION

The Town of Northeast Landfill, NYSDEC Site No. 314048, is an approximately 15-acre landfill located on Regan Road in the Town of Northeast, in northeastern Dutchess County. The site is bordered by Regan Road on the south, an abandoned railroad grade on the west, and NYSDEC regulated Wetland MT-26 on the north and east. The site is located within the Coleman Station National Historic Register District.

The landfill is situated at the southern end of a relatively long and wide valley. Unnamed tributaries to the Webatuck Creek flow to the northeast both south and north of the site. The unnamed tributaries join with the southeast flowing Webatuck Creek approximately 2,000 feet northeast of the site (Figure 1).

SECTION 2: SITE HISTORY

2.1: Operational/Disposal History

May 1962	"Kimball Gravel Bank" Property acquired by the Town of Northeast
June 1963	Town began using the site for the disposal of municipal waste.
Jan. 1969 to Dec. 1971	Records indicate the site received waste solvents from K&E Plant in Millerton.
Dec. 1989	Landfill gates closed

2.2: Remedial History

1983	Landfill site added to NYSDEC Inactive Hazardous Waste Registry Phase I Investigation Completed

1984 Phase II Investigation completed - Site reclassified from a Class 2a to a Class 2.

Aug. Order on Consent requiring remedial program executed by Town, K&E, and State.
1991

SECTION 3: CURRENT STATUS

3.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site.

The majority of the RI field work was conducted between October and December of 1993, with supplemental sampling work performed in the spring and summer of 1994. A report entitled "Remedial Investigation at the Northeast Landfill", October 1994, has been prepared describing the field activities and findings of the RI in detail.

The RI activities consisted of the following:

- Historic Record Search
- Community Well Survey
- Perimeter Explosive Gas Survey
- Soil Gas Survey
- Test Trenching
- Subsurface Drilling Program
- Monitoring Well and Piezometer Installation
- Hydrogeologic Testing and Monitoring
- Groundwater, Surface Water, & Sediment Sampling and Analysis
- Ambient Air Sampling
- Subsurface Soil, Waste, Leachate & Landfill Gas Sampling
- Fish & Wildlife Impact Analysis.

To determine which media (soil, groundwater, etc.) contain contamination at levels of concern, the analytical data obtained from the RI was compared to environmental Standards, Criteria, and Guidance (SCGs). Groundwater, drinking water and surface water SCGs identified for the Northeast Landfill were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. For the evaluation and interpretation of soil and sediment analytical results, NYSDEC soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used to develop remediation goals for soil.

Based upon the results of the remedial investigation in comparison to the SCGs and potential public health and environmental exposure routes, certain areas and media of the site require remediation. These are summarized below. More complete information can be found in the RI Report.

Chemical concentrations are reported in parts per billion (ppb) or parts per million (ppm). For comparison purposes, SCGs are given for each medium.

Based on historical information and the results of the soil gas survey, four areas were identified at the site where industrial waste was most concentrated. These areas coincide with the locations of piezometers B-1 through B-4 and are identified on Figure 2 as the former sludge burial area, a potential industrial waste disposal area, the former burn pit area, and the possible former lagoon area, respectively. Soil gas results indicated the highest levels of volatile organic compounds (VOCs) in the former burn pit area and the former sludge burial area. Red iron staining on the ground surface is visible in several locations around the landfill.

VOCs were detected in 5 of the 8 subsurface soil samples collected for analysis at monitoring well and piezometer locations, ranging from 3 ppb at MW-2 to 9,736 ppb at B-5. Semivolatile organic compounds were detected at each location, with highest concentrations detected at B-5.

Samples of surface water and sediments were obtained at various locations around the site (Figure 2). Other than a hit of 11 ppb of MEK (2-Butanone) in SW-2 and 2 ppb of bis-phthalate in SW-7, no volatile or semivolatile compounds were detected in surface water. Iron was detected in surface water above background concentrations in SW-1 and SW-2 on the east side of the landfill. Trace levels of mercury were detected in SW-2 and SW-7, 0.86 ppb and 0.28 ppb respectively, slightly exceeding the surface water standard of 0.2 ppb.

Analytical results of sediment samples SED-1, and SED-7 through SED-10, taken in the seep area northeast of the landfill, indicated concentrations of arsenic, cadmium, chromium, iron, lead, manganese, and mercury that exceed fish and wildlife sediment criteria.

The unconsolidated deposits and the upper portion of the bedrock were investigated to depths up to 103 feet. Generally, the following six stratigraphic units were identified:

Fill - municipal and industrial waste in a matrix of sand and silt with a trace of gravel, from 0 to 25 feet thick.

Sand - Sand and Gravel with variable silt content and little
& stratification ranging up to 64 feet thick and becoming finer
Gravel to the east.

Clayey - Stratified clayey, sandy silt, ranging from 55 feet thick east of the landfill to less than 1 foot
Sandy southwest of the landfill. Observed southwest of the site and a depth of 75 feet; 16 feet thick
Silt gravel glacial till deposit.

Bedrock - gray Stockbridge limestone - weathered surface ranged from 51 feet to 90.5 feet below
grade level

Groundwater flow in the site vicinity is generally to the northeast in the shallow unconfined aquifer, deeper intermediate zone of the unconfined aquifer and in the bedrock aquifer. Measurements from shallow groundwater wells indicate some radial flow from groundwater mounding, especially along the eastern margin of the landfill. The tendency for groundwater mounding to be more pronounced in the eastern portion of the landfill may reflect the lower permeability of the underlying sediments. A comparison of shallow and bedrock water levels indicates that the unconfined and bedrock aquifers are nearly at equilibrium along the west side of the landfill, but there is a large upward vertical gradient on the east side of the landfill. This indicates that these aquifers discharge to Wetland MT-26 and the Webatuck Creek further east.

Analytical groundwater sampling indicated only traces of volatile organic contaminants in the shallow groundwater around the landfill, except for the second round spring sample in well MW-01, located on the east side of the landfill, which showed 1,583 ppb of total volatile organic compounds - mostly MEK and acetone (Figure 3). Analytical results from samples taken from well MW-01 when it was installed in July 1984 indicated 56,000 ppb of MEK and 42,000 ppb of acetone, as well as several other volatile organic compounds.

Low levels of pesticides were also detected at various locations in and around the landfill. The highest concentration of pesticides in groundwater was 0.46 ppb at upgradient location MW-4s. This low level of pesticide in the shallow groundwater is probably not attributable to the landfill, but may be due to previous agricultural activities in the area. It is difficult to determine the impact of inorganic compounds (metals) on groundwater quality since the deep and shallow groundwater has relatively high concentrations of naturally occurring metals, although concentrations of iron and manganese appear to be elevated above background in the shallow groundwater east of the landfill (Figure 4). The strong upward vertical gradient in deeper strata east of the landfill should minimize the downward movement of contaminants. Although groundwater quality indicator results show elevated levels of total dissolved solids in the shallow, intermediate and deep wells at the MW-2 location, analytical results indicate that the deep bedrock aquifer has not been impacted by the landfill. Analysis of air samples and landfill gas emissions indicate that airborne contaminants are not significant at this site as all compounds detected in landfill gas fall within acceptable limits by an order of magnitude or more.

A synthesis of all data collected during the RI indicates two primary environmental concerns - volatile organic compounds present in the shallow groundwater downgradient of the landfill and elevated metals concentrations in landfill soils and sediments in the seep area northeast of the landfill.

It should be noted, however, that the data collected during the RI represents a "snap shot" of landfills conditions. It is known from K&E reports, landfill records and statements from former landfill workers that the K&E plant in Millerton generated approximately 1,000 gallons per week of waste solvents. MEK and acetone are compounds which were included in the mixture of solvents generated by K&E and disposed of at the landfill from 1969 to 1971. Given the size of the landfill, the analytical results obtained may not reflect the highest concentrations of contamination that may exist at the landfill, nor can the RI determine what future releases there may be if the landfill were left unremediated.

3.2 Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the health risks can be found in Section 6 of the RI Report.

An exposure pathway is the process by which an individual comes into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental medium and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Possible complete human exposure pathways associated with the Northeast Landfill include:

- 1.) Current and future ingestion and household use of groundwater by nearby residents;
- 2.) Skin contact or inadvertent ingestion of surface water or sediments;
- 3.) Inhalation of volatile air contaminants.

The risk evaluation summarized in Section 6 of the RI Report demonstrated that under current land use scenario, noncarcinogenic and carcinogenic chemicals pose no unacceptable threat to the population (i.e. residents and trespassers). The total sitewide hazard indices are less than 1 and the sitewide carcinogenic risks lie within or below the range of acceptability established by the National Contingency Plan (NCP).

There is very little potential for human consumption of groundwater impacted by the landfill since groundwater flows to the northeast toward designated wetlands which will not be developed in the future. Many contaminants in groundwater are naturally attenuated, dispersed, and broken down in wetland environments.

Nearby residents or others trespassing onsite for recreational purposes (i.e. hunting, hiking, or ATV riding) could be exposed to surface soil, surface water or sediment, but carcinogenic and noncarcinogenic health effects from exposure to contaminants in these media through these activities is negligible.

Summary of Environmental Exposure Pathways:

This section summarizes the types of environmental exposures which may be presented by the site. The Habitat Based Assessment included in the RI presents a more detailed discussion of the potential impacts from the site to fish and wildlife resources. Freshwater Wetland MT-26, the Webatuck Creek riverine habitat, and surrounding upland areas are ecosystems that could potentially be impacted by the landfill. The 112 acre Freshwater Wetland MT-26 qualifies as a Class I designated wetland since the endangered bog turtle has been sighted within the wetland. The Webatuck Creek is a class C(T) stream which flows from north to south 1,000 feet northeast of the landfill through MT-26.

The impact to MT-26 from the landfill appears to be limited to the seep area northeast of the landfill, and to a much lesser extent the seep area on the southeast side of the site.

Analytical results of sediment samples in the seep area northeast of the landfill indicate elevated concentrations of arsenic, cadmium, chromium, iron, lead, manganese, and mercury that exceed levels that are known to be protective of fish and wildlife. This impacted area has been delineated by DEC and is shown on Figure 4.

Hazard Quotients calculated for wildlife exposure to each of the site contaminants of potential concern indicate potential chronic toxic effects for the meadow jumping mouse from arsenic and manganese in the localized area of the seep northeast of the landfill.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers. Two PRPs have been identified - the Town of Northeast who owns and operated the landfill, and Keuffel & Esser Company (K&E), who operated an industrial facility in the Village of Millerton and generated hazardous waste which was disposed of at the landfill.

The NYSDEC, K&E, and the Town of Northeast entered into a Consent Order on August 13, 1991. The Order obligates the Town to implement a full remedial program, requires K&E to pay 50% of the RI/FS costs, and allows reimbursement to the Town of up to 75 percent of the eligible cost of their share of the remedial program. There will be additional negotiations with K&E to determine their share of the remedy's design and construction costs. The Town and K&E have also entered into a separate agreement entitled "The Northeast Landfill Fund Agreement", which establishes a Northeast Landfill Remedial Fund to pay for covered costs and establishes procedures for payment of RI/FS costs.

The following is the enforcement history of this site.

Order on Consent

<u>Date</u>	<u>Index</u>	<u>Subject</u>
8/13/91	W3-0181-87-12	Remedial Program

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6NYCRR Part 375-1.10. These goals are established under the overall goal of meeting all standard, criteria, and guidance (SCGs) and protecting human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- *Reduce, control, or eliminate the contamination present within the soils/waste on site (generation of leachate within the fill mass).*
- *Eliminate the threat to surface waters by eliminating any future contaminated surface run-off from the contaminated soils on site.*
- *Eliminate the potential for direct human or animal contact with the contaminated soils and sediments on site.*
- *Mitigate the impacts of contaminated groundwater to the environment.*
- *Prevent, to the extent possible, migration of contaminants in the landfill to groundwater.*
- *Provide for attainment of SCGs for groundwater quality at the limits of the area of concern (AOC).*

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

Potential remedial alternatives for the Northeast Landfill site were identified, screened and evaluated in a Feasibility Study. This evaluation is presented in the report entitled Final Feasibility Study at the Northeast Landfill, June 1995. A summary of the detailed analysis follows.

6.1: Description of Alternatives

The potential remedies are intended to address the contaminated soils, sediments, surface water and groundwater at the site.

Alternative 1- No Action

The no action alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state.

Under this alternative the site would remain in its present condition and human health and the environment would not be provided any additional protection.

Alternative 2- Institutional Action

Present Worth:	\$ 1,346,724
Capital Cost:	\$ 75,300
Annual O&M:	\$ 92,400
Time to Implement	6 months

This alternative includes posting and fencing the property, deed restrictions, and long-term monitoring with periodic reviews.

Alternative 3- Part 360 Cap, Sediment Remediation

Present Worth:	\$ 4,595,300
Capital Cost:	\$ 4,062,800
Annual O&M:	\$ 38,700
Time to Implement	6 months - 1 year

This alternative includes posting and fencing the property, deed restrictions, and long-term monitoring with periodic reviews, a landfill cap that would meet 6NYCRR Part 360 Regulations, and the remediation of sediments and wetland restoration in the seep area northeast of the landfill.

Alternative 4- Part 360 Cap, Sediment Remediation, Soil Vapor Extraction with Air Sparging

Present Worth:	\$ 6,096,900
Capital Cost:	\$ 5,101,800
Annual O&M:	\$ 38,700
Time to Implement	6 months - 1 year

This alternative includes posting and fencing the property, deed restrictions, and long-term monitoring with five-year reviews, a landfill cap that would meet 6NYCRR Part 360 Regulations, the remediation of sediments and wetland restoration in the seep area northeast of the landfill, and soil vapor extraction with air sparging. The vapor extraction/air sparging system would consist of air injection wells and vapor extraction wells connected by pipes to a vacuum and treatment system. VOC's are withdrawn from the subsurface and treated before release to the atmosphere. As is noted on Table 1, this alternative would have an additional O&M cost for the first three years of operation of \$154,200.

Alternative 5- Part 360 Cap, Sediment Remediation, Localized Groundwater Collection with Onsite Treatment

Present Worth:	\$ 7,726,000
Capital Cost:	\$ 5,320,800
Annual O&M:	\$ 174,780
Time to Implement	6 months - 1 year

This alternative includes posting and fencing the property, deed restrictions, and long-term monitoring with periodic reviews, a landfill cap that would meet 6NYCRR Part 360 Regulations, the remediation of sediments and wetland restoration in the seep area northeast of the landfill, and collection of groundwater via a 500 foot long trench on the eastern side of the landfill with onsite treatment and discharge. Wells within the trench would draw the water down to capture contaminants from the shallow portion of the water table.

Alternative 6 - Part 360 Cap, Sediment Remediation, Downgradient Perimeter Groundwater Collection with Onsite Treatment

Present Worth:	\$ 12,170,621
Capital Cost:	\$ 7,222,800
Annual O&M:	\$ 359,580
Time to Implement	6 months - 1 year

This alternative includes posting and fencing the property, deed restrictions, and long-term monitoring with periodic reviews, a landfill cap that would meet 6NYCRR Part 360 Regulations, the remediation of sediments and wetland restoration in the seep area northeast of the landfill, and collection of groundwater via a 1200 foot long trench on the eastern and northern side of the landfill with onsite treatment and discharge. Wells within the trench would draw the water down to capture contaminants from the shallow portion of the water table.

6.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6NYCRR Part 375). For each of the criteria, a brief description is provided followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is contained in the Feasibility Study.

The first two evaluation criteria are termed threshold criteria and must be satisfied in order for an alternative to be considered for selection.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

Alternatives 1 and 2 do not meet SCGs. Alternative 3 does not comply with all groundwater SCGs, but it is projected that groundwater SCGs would be met at the nearest potential future groundwater receptor. With Alternatives 4, 5 and 6 SCGs with respect to the landfill would be met. It should be noted, however, that the natural background groundwater contains certain metals, such as iron, in concentrations that may be higher than the New York State SCG.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective.

Alternative 1 does not satisfy the remedial action objectives and is not protective of human health and the environment. The landfill would continue to contaminate groundwater and human access to contaminants would not be reduced. Alternative 2 includes measures to restrict human access to contaminants and therefore reduces the potential for human health risk, but does not include measures to address potential environmental risk. Alternative 2 does not satisfy the remedial action objectives and is not completely protective.

Alternatives 3 through 6 are protective as the human health risk and ecological risk would be eliminated, and they satisfy remedial action objectives for soil and sediments. Remedial action objectives for air would not apply since landfill emissions are not impacting the surrounding community and meet applicable air guidelines. Remedial action objectives for groundwater would be met upon completion of implementation for Alternative 4, and over the long-term for Alternatives 3, 5 and 6. There is no current or future human health risk posed by groundwater migrating to existing or potential downgradient receptors with the implementation of alternatives 3 through 6. Remedial action objectives at the nearest potential downgradient receptor would be met following capping for Alternatives 3 through 6.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared with the other alternatives.

Alternative 1 has no impact on the community, onsite workers, or the environment. Alternative 2 has little impact on onsite workers. During the construction period for Alternatives 3 through 6, short-term impacts to the community, onsite workers, and the environment would exist from various pathways. These impacts would have to be mitigated through controls including appropriate health and safety measures. Alternative 3, which includes the least construction, would have the least short-term impacts, followed by Alternative 5, Alternative 4 and finally Alternative 6 which includes construction of the longer collection trench.

Remedial action objectives for soil and sediments would be met upon completion of construction for Alternatives 3, 5, and 6. The groundwater objective to meet SCGs immediately downgradient of the landfill would be met as the water table is lowered, anticipated to take two to five years, and following that, through natural processes which would dilute and degrade the contaminants over the long-term for Alternatives 5 and 6. Groundwater SCGs would be met at the nearest potential future downgradient receptor for Alternative 3 following capping. Alternative 4 would meet objectives at the site boundary for all media in four years if the treatment proposed was fully effective. Alternatives 5 and 6 would meet the groundwater objective over the long-term when monitoring results indicate that collection is no longer needed to meet SCGs.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of alternatives after implementation of the response actions. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

Alternative 1 does not reduce risk at the site and is not an effective or permanent remedy. Alternative 2 relies on access restrictions to reduce potential human health risk. Alternatives 3 through 6 equally reduce the potential for risks to human health and the environment for soil, sediments, and air. The potential risks from contaminants migrating through the shallow portion of the water table aquifer would be reduced following construction of the landfill cap and lowering of the water table in the eastern portion of the site. Long-term monitoring would be used in the review(s) to determine if remedial measures are protecting human health and the environment. Alternative 3 relies on natural processes (degradation, dispersion, biodegradation) and the influence of the cap to reduce contaminant migration through the groundwater. Implementation of a Part 360 cap would lower the non-springtime water table to below the waste, and to within 0.5 feet of the bottom of the waste in the area of boring B-2 during seasonally-high spring-time conditions. Alternative 4 includes VOC collection from subsurface soils and treatment to enhance groundwater remediation. Alternatives 5 and 6 include groundwater collection and treatment to reduce or eliminate, respectively, offsite contaminant migration through the shallow portion of the water table aquifer.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternatives 1 and 2 do not reduce toxicity, mobility or volume. Alternatives 3 through 6 would reduce the mobility of contaminants in soil, sediments, and groundwater following construction of a landfill cap and lowering of the water table. The toxicity of VOCs would be either reduced or destroyed with the soil vapor extraction and air sparging system (Alternative 4). The mobility and toxicity of contaminants in groundwater would be further reduced in Alternatives 5 and 6 (Alternative 6 more so than Alternative 5).

6. Implementability. The technical and administrative feasibility of implementing each alternative is evaluated. Technically, this includes the difficulties associated with the construction, the reliability of the technology, and the ability to monitor the effectiveness of the remedy. Administratively, the availability of the necessary personal and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc..

Alternatives 1 and 2 are technically implementable. With the exception of the in-situ treatment technologies included in Alternative 4, the technologies proposed for Alternatives 3 through 6 are proven technologies that have been implemented at landfill sites. The availability of necessary materials and services should not pose a problem. Treatability studies would be required to determine the effectiveness of treatment proposed in Alternatives 4, 5, and 6. As the nature of fill is not completely known, difficulties could arise during excavation for the collection trenches (in Alternatives 5 and 6) and the landfill cap. Due to the presence of adjacent wetlands, the endangered bog turtle, and nearby significant habitat, mitigative measures for sediment

remediation are included. Air sparging and soil vapor extraction, included in Alternative 4, are technologies which would require pilot studies in order to determine their effectiveness on the contaminants present at the site prior to implementation.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are presented in Table 1.

Alternatives 1 and 2 are relatively low in cost, but would not be effective in protecting human health and the environment over the long-term. Alternatives 3 through 6, which all include a Part 360 cap and sediment remediation, are effective in providing long-term protection to human health and the environment.

8. Community Acceptance - This final criterion is considered a modifying criterion and is taken into account after evaluating those above. It is focused upon after public comments on the Proposed Remedial Action Plan have been received. Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. A "Responsiveness Summary" was prepared that describes public comments received and how the Department will address the concerns raised (Appendix A).

SECTION 7: SUMMARY OF THE PREFERRED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC has selected Alternative 3 as the remedy for this site.

Alternative 3 was the selected remedy for the North East Landfill because it is protective of human health and the environment. Groundwater SCGs are met at current and potential future downgradient groundwater receptors. Deed restrictions will preclude exposure to onsite groundwater and fencing would protect the integrity of the cap. Other factors which favor the selection of Alternative 3 include that it is easier to implement, poses less short-term impacts, and is more cost-effective than other alternatives that meet SCGs.

From the bottom to the top the Part 360 cap would consist of 6 inches of grading fill, a gas collection layer with a geotextile on steeper perimeter slopes, a clay or geomembrane barrier layer, a soil barrier protection layer, 6 inches of topsoil, and a vegetative cover. There will be one methane gas vent backfilled with stone per acre. Some regrading will be necessary to meet a maximum slope on the landfill of 33% and a minimum slope of 4%, in accordance with Part 360 regulations. Approximately 70,000 cubic yards of clean fill would be required in preparing the subgrade. Alternative Grading Material (AGM) may be used in preparing the subgrade if determined to be available during the remedial design phase. AGM is processed construction and demolition debris. The use of Alternative Grading Material (AGM) to achieve proper grade is an acceptable approach which has been used successfully at other sites. The use of AGM would require the preparation and Department acceptance of an AGM Program Operations Plan in order to ensure that the AGM would be of a select and uncontaminated nature, the AGM would be properly placed and compacted, and the AGM would meet all State and local

requirements. In order to solicit public comments and concerns, a public availability session would be held prior to the Department's determination of the acceptability of the AGM Program Operations Plan.

Installation of a Part 360 cap will eliminate approximately 85 percent of the infiltration which is currently contributing to leaching of VOCs into shallow groundwater. Further, the cap will lower the water table below the waste over all but a small area where groundwater mounding is evident during springtime conditions. Reduced infiltration and a lowered water table will substantially reduce contaminant migration from the landfill such that groundwater SCGs will be met at the nearest potential future groundwater receptor.

Sediment remediation will eliminate the potential ecological risk which is present at the site. Due to the limited area of sediments to be remediated (approximately 0.2 acres), and the objective to minimize impacts on the wetlands, large equipment excavation methods would not be appropriate at this site. Contaminated sediments (up to about 300 cubic yards), will be transported, deposited, graded, and spread on the landfill for drying prior to landfill cap construction. A berm may have to be constructed to control runoff. Appropriate hydrophilic soils will then be placed in the wetland and plant species will be introduced by seed or live transplants to promote growth of species already adapted to the area. The actual sediment removal and restoration methods will be determined during remedial design.

The estimated present worth cost to implement the remedy is \$4,595,300. The cost to construct the remedy is estimated to be \$4,062,800 and the estimated average annual operation and maintenance cost for 30 years is \$38,700.

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Uncertainties identified during the RI/FS will be resolved.
2. A remedial construction program consisting of the following:
 - Regrading the landfill with the placement of approximately 70,000 cubic yards of clean fill or AGM;
 - Installation of a cap over the landfill that meets NYSDEC Part 360 standards;
 - Fencing, posting, and deed restrictions that prohibit the use of onsite groundwater and intrusive activities;
 - Sediment remediation with wetland restoration in the seep area northeast of the landfill;
 - Long-term monitoring and maintenance with periodic reviews.

SECTION 8: Highlights of Community Participation

The first public meeting on the Remedial Program was held on May 18, 1993 at the Grange Hall in Millerton, New York. The proposed Remedial Investigation/Feasibility Study (RI/FS) was presented to the public, and public comments received at the meeting and during a 30-day public comment period were addressed in a document entitled "Responsiveness Summary for the Public Comments on the Proposed Remedial Investigation/Feasibility Study at the Northeast Landfill," prepared by URS Consultants, Inc., dated September 1993. The ongoing RI/FS was periodically discussed and occasional updates were provided at Town Board Meetings.

The public comment period on the Proposed Remedial Action Plan (PRAP) was held from August 7, 1995 to September 6, 1995. The PRAP public meeting was held on August 24, 1995 at the Northeast Town Hall. A public notice was issued, and mailed out to members of the press and interested parties announcing the public comment period and second public meeting.

All final reports were placed in the document repositories and made available to the public for review. The public meeting on the PRAP and the comments received during the public comment period are summarized in the Responsiveness Summary Section of this document, Appendix A. The remedy presented in this Record of Decision is the same remedy as was proposed in the PRAP, except that it allows for the option of clay or a flexible membrane liner (FML) as the barrier layer in the cap based on public comments received.

FIGURES



FIGURE 1



LEGEND

- LEGEND**
- | | | | |
|---|---|---|---|
| ● | R1 MONITORING WELL (1993) | ⊕ | NYSDC PHASE II MONITORING WELL (1994) |
| ○ | R1 PNEZOMETER (1993) | ▲ | SURFACE/WATER SEGMENT SAMPLE (1993, 1994) |
| ■ | R1 SOIL BORING (1994) | ▼ | SURFACE SOIL SAMPLE POINTS |
| ● | AMBIENT AIR SAMPLE LOCATION | | |
| ○ | CO ₂ EMISSIONS SAMPLE POINTS | | |

1. BASE MAPPING WAS PREPARED BY AIR SURVEY CORP., RESTON, VA USING AERIAL PHOTOGRAPHY TAKEN APRIL 14, 1993. GROUND CONTROL WAS BY URS.

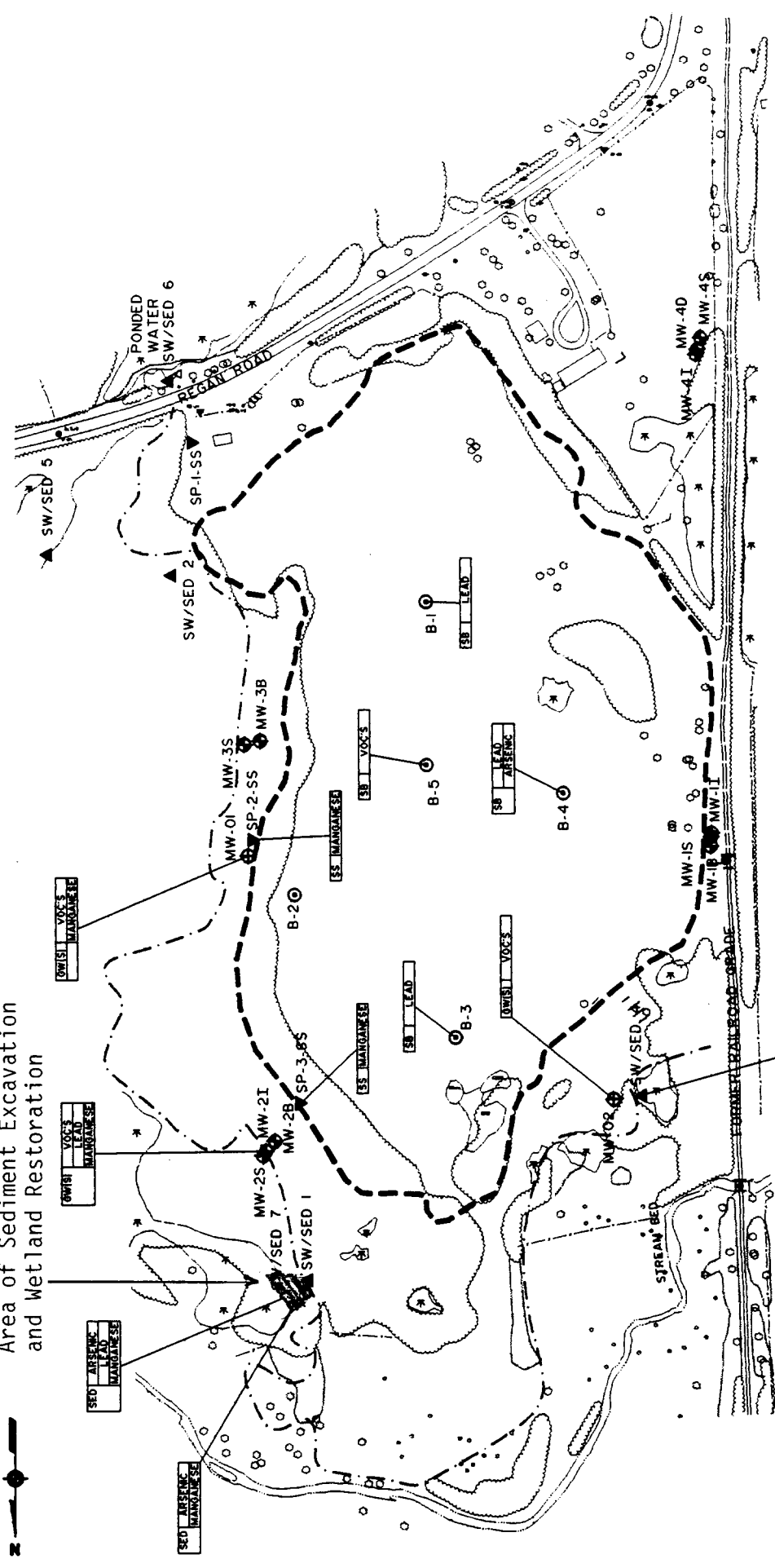
2 PROJECT VERTICAL CONTROL IS BASED UPON
NATIONAL GEODETIC VERTICAL DATUM OF 1929 AS
ESTABLISHED ON USGS MONUMENT ALBANY, 573"
ELEV 575.240

150
0
150
SCALE IN FEET
CONTOUR INTERVAL = 5 FEET

NORTH EAST LANDFILL
SITE PLAN AND SAMPLE LOCATION

URS
CONSULTANTS

Area of Sediment Excavation and Wetland Restoration



NOTES

1. LANDFILL IMPACT PARAMETERS DETERMINED FROM SCG EXCEEDANCES AND POTENTIAL HEALTH RISKS TO HUMANS OR WILDLIFE.
2. ONLY PARAMETERS WHICH ARE ATTRIBUTABLE TO THE LANDFILL ARE INCLUDED.
3. SB = SURFACE SOIL, SS = SURFACE SOIL, GW = GROUNDWATER, ISI = SHALLOW WATER TABLE AQUIFER, SED = SEDIMENT, VOC'S = VOLATILE ORGANIC COMPOUNDS.

LEGEND

- RI MONITORING WELL (1993)
- RI PIEZOMETER (1993)
- LIMITS OF FILL AREA
- WETLAND BOUNDARY
- NYSDC PHASE II MONITORING WELL (1984)
- SURFACE/WATER SEDIMENT SAMPLE (1993, 1994)
- SURFACE SOIL SAMPLE POINTS



TABLES

TABLE 1
COST SUMMARY

ALTERNATIVE NUMBER	1	2	3	4	5	6
CAPITAL COST						
Posting and Fencing		\$73,300	\$73,300	\$73,300	\$73,300	\$73,300
Deed Restrictions		\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
Part 360 Cap			\$3,959,400	\$3,959,400	\$3,959,400	\$3,959,400
Soil Vapor Extraction and Air Sparging				\$1,039,000		
Groundwater Collection Trench					\$845,000	\$1,977,000
Groundwater Treatment System					\$413,000	\$1,183,000
Sediment Remediation			\$28,100	\$28,100	\$28,100	\$28,100
TOTAL CAPITAL COST	\$0	\$75,300	\$4,062,800	\$5,101,800	\$5,320,800	\$7,222,800
ANNUAL O&M COSTS						
Fence Inspection & maintenance		\$2,800	\$2,800	\$2,800	\$2,800	\$2,800
Monitoring		\$89,600	\$30,700	\$30,700	\$30,700	\$30,700
Cap			\$5,200	\$5,200	\$5,200	\$5,200
Collection Trench					\$1,680	\$1,680
Groundwater Treatment					\$134,400	\$319,200
Soil Vapor Extraction and Air Sparging (each of 3 yrs.)				\$154,200		
TOTAL ANNUAL O&M	\$0	\$92,400	\$38,700	\$38,700	\$174,780	\$359,580
Present Worth of O&M	\$0	\$1,271,424	\$532,512	\$995,112	\$2,404,973	\$4,947,821
Total Present Worth						
(Capital and O&M)	\$0	\$1,346,724	\$4,595,300	\$6,096,900	\$7,726,000	\$12,170,621

APPENDIX A

APPENDIX A

Responsiveness Summary

The Proposed Remedial Action Plan (PRAP) for the Town of Northeast Landfill was issued by the New York State Department of Environmental Conservation (NYSDEC) in August 1995. A public comment period on the RI/FS Report, PRAP, and preferred alternative was held from August 7, 1995 to September 6, 1995. A public meeting was held during the public comment period on August 24, 1995 at 7:30pm at the Northeast Town Hall, Millerton, New York. A Notice of Public Meeting fact sheet was mailed to the media and all individuals listed on the Contact list in the Citizen Participation Plan announcing the Public Comment Period and Public Meeting.

There were about 15 people in attendance, including members of the Town Board and members of the press. Ms. Erin O'Dell-Keller, NYSDEC Citizen Participation Specialist opened the meeting by introducing State Representatives, the Town Engineer, and the Project Manager for the Town's engineering consultant on the landfill, Mr. David Rubin of URS Consultants, Inc. Mr. Timothy Vickerson of the New York State Department of Health briefly explained his role in the project, and stated that the Department of Health has concurred with the remedy proposed.

Mr. Rubin of URS Consultants then provided an approximately 25 minute presentation on the RI/FS findings. Mr. Brian Davidson of the NYSDEC then briefly stated the remedy proposed by the State in the PRAP, and opened the meeting to questions.

All questions asked at the public meeting were answered by the Town's engineering consultant and State representatives present. The following is a summary of the the concerns raised at the public meeting and the reponses provided.

Question

How long will it take for the remedy to work and why are there variations in the timeframes for different alternatives?

Response

It would take about 1 year to build the infrastructure necessary to implement Alternatives 3, 4, 5, or 6. Alternative 3 would result in the watertable being lowered below the waste over all but a small area on the east side of the site where groundwater mounding is evident during springtime conditions. Reduced infiltration and a lowered water table would substantially reduce contaminant migration from the landfill such that groundwater SCGs would be met at the nearest potential future groundwater receptor. It would take about 2 to 5 years for this lowering of the watertable to fully occur. Alternative 4 would meet objectives at the site boundary for all media in four years if the treatment proposed was fully effective. Alternatives 5 and 6 would meet the groundwater objective over the long-term when monitoring results indicate that collection is no longer needed to meet SCGs.

Question

What is the extent of the waste and how far does the contamination extend? Does it extent all the way to Webatuck Creek?

Response

The landfill waste covers approximately 15 acres (see Figure 2 in the PRAP). All residential wells in the vicinity of the landfill have been sampled over the years by the NYSDOH and DCDH and no contamination related to the landfill has ever been found in residential wells. Groundwater contamination was detected in the shallow groundwater on the northeast side of the landfill, but the data collected during the RI indicates that the contamination does not extend all the way Webatuck Creek.

Question

The pasture east of the landfill has not been used due to cattle aborting and getting cancer. When can this pasture be used again? Isn't the contaminated groundwater in the aquifer pushing back up to the surface?

Response

Drinking water standards will be met at the nearest potential receptor with the implementation of Alternative 3. Ultimately, the shallow groundwater discharges to the wetlands and Webatuck Creek. Samples of surface water and sediments were obtained at various locations around the site (PRAP Figure 2). Other than a detection of 11ppb of 2-Butanone in SW-2 and 2ppb of bis-phthalate in SW-7, no volatile or semivolatile compounds were detected in surface water, and the compounds detected do not exceed standards at these concentrations. Iron was detected in surface water above background concentrations in SW-1 and SW-2 on the east side of the landfill. Trace levels of mercury were detected in SW-2 and SW-7, 0.86 ppb and 0.28 ppb respectively, slightly exceeding the surface water standard of 0.2 ppb. SW-5, taken in the stream next to the pasture was clean. Based on the data collected during the RI, there should no impact on cattle in the pasture from landfill contaminants. More information on acceptable water quality for dairy cattle can be obtained from the NYS Department of Agriculture and Markets, Division of Animal Industry in Albany (518) 457-3502.

Question

Will monitoring wells and residential wells be monitored during and after the remedy?

Response

Yes. Residential wells will be sampled periodically by the NYSDOH and DCHD. The remedy includes 30 years of monitoring of select monitoring wells

Question

How many monitoring wells were installed, and how did we determine groundwater levels?

Response

Eleven new monitoring wells and five piezometers were installed, and two previously installed monitoring wells were utilized. Groundwater elevations were obtained in the fall of 1993 and spring of 1994 by measuring the depth of the water in monitoring wells and piezometers, and surveying the locations.

Question

What about seasonal fluctuations in groundwater levels?

Response

Given that the summer of 1993 was dry, and there was significant snowfall in the winter of 1994, a significant fluctuation from fall to spring was observed. Contaminate transport models used worst case (high water) conditions.

Question

What about flood conditions, or seasons that are wetter than was used in modeling?

Response

The limits of waste are outside the boundary of the 100 year and 500 year flood plains. It is believed that the spring 1994 conditions provide data for estimates that are conservative enough, and that the groundwater conditions have been adequately characterized.

Question

What about encroachment of groundwater once the site is capped? How will that effect the contamination at the edge of the landfill?

Response

There are features that can be built into the design of a landfill cap, such as anchors at the edges of the membrane, to help ensure the integrity of the landfill cap in the event of high water conditions. Routine maintenance on the cap will also help to ensure it's integrity. A flood event could leach some contaminants from the landfill mass, but the remedy proposed, Alternative 3, would still be effective in meeting objectives even in the event of a flood, and as previously stated the limits of waste are outside the boundary of the 100 year and 500 year flood plains.

Question

Do metals, such as lead and arsenic, break down like VOCs do?

Response

No, and they do not migrate in groundwater as quickly as VOCs.

Question

Wouldn't it behoove the DEC and DOH to identify the full extent of the groundwater contaminate plume?

Response

Groundwater flow in the site vicinity is generally to the northeast in the shallow unconfined aquifer, deeper intermediate zone of the unconfined aquifer and in the bedrock aquifer. A comparison of shallow and bedrock water levels indicates that the unconfined and bedrock aquifers are nearly at equilibrium along the west side of the landfill, but there is a large upward vertical gradient on the east side of the landfill. In fact, bedrock wells on the east side of the landfill exhibited flowing artesian conditions. This prevents the downward migration of contaminants. Unconsolidated sediments on the east side of the landfill consist of clayey, sandy silt with relatively low permeabilities and very slow groundwater movement. Although the shallow groundwater eventually discharges to Wetland MT-26 and the Webatuck Creek further east, groundwater modeling indicates that it takes many years for this to occur. There is very little potential for human consumption of groundwater impacted by the landfill since future development within the designated wetlands is not likely. Many contaminants in groundwater are naturally attenuated, dispersed, and broken down in wetland environments. Volatilization and dilution will also serve to reduce contaminant concentrations over time. Further investigation northeast of the landfill would require obtaining easements to drill on private property and would require the construction of access roads to drill sites in the designated wetlands. These may alter hydrology and destroy wetland habitat. If further investigation northeast of the landfill indicated low levels of VOCs in the shallow groundwater, it would not change the selection of the remedy, since groundwater pumping in the clayey, sandy silt unit would not be effective due to its low permeability.

Question

Have the impacts to the wetland habitat and the bog turtle been assessed?

Response

Yes. Hazard Quotients calculated for wildlife exposure to each of the site contaminants of potential concern indicate potential chronic toxic effects for the meadow jumping mouse from arsenic and manganese in the localized area of the seep northeast of the landfill. No other potential landfill impacts, to the bog

turtle or wetland habitat, were identified. Sediment remediation included in the remedy will eliminate the potential ecological risk which has been identified.

Question

Shouldn't contaminated sediments be taken offsite to a hazardous waste facility?

Response

No. Although the sediments in the small seep area northeast of the landfill appear to have elevated concentrations of certain metals, the sediments are not hazardous waste. Due to the limited area of sediments to be remediated (approximately 0.2 acres), and the objective to minimize impacts on the wetlands, large equipment excavation methods would not be appropriate at this site. Contaminated sediments (up to about 300 cubic yards), will be transported, deposited, graded, and spread on the landfill for drying prior to landfill cap construction. A berm may have to be constructed to control runoff. Appropriate hydrophilic soils will then be placed in the wetland and plant species would be introduced by seed or live transplants to promote growth of species already adapted to the area. The actual sediment removal and restoration methods will be determined during remedial design.

Question

Why do some alternatives include constructing an on site treatment facility, rather than evaluating treatment off site at an existing waste water treatment plant? Where would on site treatment discharge?

Response

Alternatives 5 and 6, which are not proposed, include the construction of an onsite leachate/groundwater treatment facility. Off site treatment is not practical due to the volume of water that would have to be transported and the distance to the nearest treatment plant. No conceptual design for on site treatment was developed, but a logical discharge point would be the tributary to the Webatuck Creek that runs near the site.

Question

The remedy doesn't include bringing construction and demolition material on site, does it?

Response

Approximately 70,000 cubic yards of material will be required in preparing the landfill cap subgrade. Alternative Grading Material (AGM) may be considered for use in preparing the subgrade rather than soil determined to be available during

the remedial design phase. AGM is processed construction and demolition debris which has been used in other 'closures. The use of AGM would require the preparation and Department acceptance of an AGM Program Operations Plan in order to ensure that the AGM would be of a select and uncontaminated nature, the AGM would be properly placed and compacted, and the AGM would meet all State and local requirements. In order to solicit public comments and concerns, a public availability session would be held prior to the Department's determination of the acceptability of the AGM Program Operations Plan.

Question

What kind of odor problems can be expected? Won't gas vents concentrate odors?

Response

Based on the data collected during the RI and experience at other sites, odors are not expected after the landfill is capped. If odor problems are reported to or detected by the NYSDEC or NYSDOH, odors will be eliminated by fitting gas vents with carbon filters.

Question

Can the site be used for anything after it has been capped, such a grazing livestock or growing hay?

Response

Theoretically the surface of the cap could be used for grazing or growing hay, but that is not likely, and may not be a good idea. Although the Town will mow the cap as needed, the amount of heavy equipment used on the cap should be minimized. The surface of the cap will be occasionally inspected and maintained as necessary to ensure it's integrity.

Question

How tall will the gas vents be above the ground?

Response

Gas vents will be 3 or 4 feet in height. They will be goosenecked plastic pipes, 6" in diameter, and will be earth tones in color to blend with natural surroundings. There will be roughly one per acre.

Question

Will the remediation interfere with the proposed "Rail Trail" or vice versa?

Response

No. Apparently the rail trail next to the landfill is currently privately owned, but will be acquired. The cap will not extent that far west. More information

on the exact route of the rail trail can be obtained from the Town Supervisor.

Comment by Town Engineer

The Town requests that "FML" cap be deleted from the Record of Decision in order to allow the Town to consider the use of an equivalent clay cap.

Response

The DEC will allow for the option of clay or an FML as a barrier layer in the cap. A properly designed clay cap could be as effective as a properly designed FML cap.

The public meeting ended at about 8:45pm.

Written Comments

Written comments were accepted until September 6, 1995. The following are the Department's responses to the comments received.

1. August 25, 1995 correspondence from George Kastner

Point One - General Comment

Metals in the spring seep area northeast of the landfill may be redeposited after the cleanup, and this may require another remediation in the future. Metals are naturally occurring, and we may be trying to fix a natural situation. No other chemicals, such as pesticides or PCBs were found in the sediments.

Response to Point One -

Shallow groundwater flow is toward the northeast. Based on a visual inspection of the seep area alone, it is apparent that the landfill has impacted the seep. The amount of metals staining visible on vegetation and sediments is definitely not typical for spring seeps in the area. Metals are naturally occurring, but certain metals in the seep are present in concentrations above background levels. Analytical results of sediment samples in the seep area northeast of the landfill indicate concentrations of arsenic, cadmium, chromium, iron, lead, manganese, and mercury that exceed levels that are known to be protective of fish and wildlife. Hazard Quotients calculated for wildlife exposure to each of the site contaminants of potential concern indicate potential chronic toxic effects for the meadow jumping mouse from arsenic and manganese in the localized area of the seep northeast of the landfill. Currently precipitation is flushing metals and other contaminants from the landfill mass into the shallow groundwater. Once the cap is in place, this will no longer occur as the landfill mass will essentially be above the watertable. The sediment remediation and wetland restoration cost is estimated to be \$28,100. This is less than 1% of the total capital cost of the remedy. This is a conservative estimate assuming 300 yards of sediment removed. The actual cost of the sediment remediation and wetland restoration may be less.

Point Two - General Comment

Six inches of high quality top soil at a cost of over \$ 200,000 is excessive. Cover native to the area grows well in poorer grades of soil. The remediation should be done properly, but should also be cost effective.

Response to Point Two -

Vegetative cover on the landfill cap is necessary to minimize erosion. If significant erosion occurs the cap can be exposed, and repairs can be very expensive. A good quality top soil is necessary to ensure a drought resistant low maintenance vegetative cover. Cost estimates in the FS for topsoil are \$16 per yard, delivered and graded. This is only \$1 per yard more than general fill. In general, the FS cost estimates may be conservative, and actual total costs may be less. It may also be possible for the Town to generate some revenue that would help off set the landfill cap costs if AGM is used in grading.

2. August 29, 1995 correspondence from Kevin P. Smith

General Comment

Further testing is needed to determine the nature and extent of off site contamination and possible effects on dairy cattle.

Response to Comments -

The data collected during the RI indicated that groundwater flow in the site vicinity is to the northeast. Unconsolidated sediments on the east side of the landfill consist of clayey, sandy silt with relatively low permeabilities and very slow groundwater movement. Although the shallow groundwater eventually discharges to Wetland MT-26 and the Webutuck Creek further east, groundwater modeling indicates that it takes many years for this to occur. There is very little potential for human consumption of groundwater impacted by the landfill since future development within the designated wetlands is not likely. Many contaminants in groundwater are naturally attenuated, dispersed, and broken down in wetland environments. Further investigation northeast of the landfill would require obtaining easements to drill on private property and would require the construction of access roads to drill sites in the designated wetlands. These may alter hydrology and destroy wetland habitat. If further investigation northeast of the landfill indicated low levels of VOCs in the groundwater, it would not change the selection of the remedy, since groundwater pumping in the clayey, sandy silt unit would not be effective due to its low permeability. Samples of surface water and sediments were obtained at various locations around the site. Other than a detection of 11ppb of 2-Butanone in SW-2 and 2ppb of bis-phthalate in SW-7, no volatile or semivolatile compounds were detected in surface water. Iron was detected in surface water above background concentrations in SW-1 and SW-2 on the east side of the landfill. Trace levels of mercury were detected in SW-2 and SW-7, 0.86 ppb and 0.28 ppb respectively, slightly exceeding the surface water standard of 0.2 ppb. SW-5, taken in the stream on the side of the landfill was clean.

Based on the data collected during the RI, no impact to wildlife in the wetland or pasture east of the landfill would be expected from the landfill. Hazard Quotients calculated for wildlife exposure to each of the site contaminants of potential concern indicate potential chronic toxic effects for the meadow jumping mouse from arsenic and manganese only in the localized area of the seep northeast of the landfill. Wildlife, especially smaller mammals would probably have more exposure to soils and vegetation in this area over a lifetime than livestock grazed in the pasture. There may be explanations for abnormalities in cattle grazing in the pasture east of the landfill other than effects from the landfill. Certain plants that grow in wetland areas can have toxic effects when ingested. Division of Fish and Wildlife staff would be interested in reviewing any studies, reports, or correspondences that you may have from other professionals who may have investigated any abnormalities in cattle using the pasture to the east of the landfill. More information on acceptable water quality for dairy cattle can be obtained from Dr. John Huntley, NYS Department of Agriculture and Markets, Division of Animal Industry in Albany, (518) 457-3502.

3. September 5, 1995 correspondence from Daniel F. Wheeler, P.E.

General Comment

The proposed remedy as stated in the PRAP should be modified to allow for consideration of a clay cap in design.

Response to Comments -

The Record of Decision will not specify an FML impervious layer to allow for consideration of a clay impervious layer in design.

4. September 5, 1995 correspondence from Lynn Mordas

General Comment

Extensive Comments on the RI/FS Workplan submitted May 28, 1993 were not addressed.

Response to Comment -

All comments received on the RI/FS Workplan were addressed in the document entitled Responsiveness Summary for the Public Comments on the Proposed Remedial Investigation/ Feasibility Study at the Northeast Landfill prepared by URS Consultants, Inc., dated September 1993. This document is available at the document repositories.

General Comment

The RI failed to adequately assess current usage of groundwater in the vicinity of the landfill and additional data collection is warranted. All residences within a one mile radius of the site were not sampled. The RI indicates groundwater flow is to the northeast, yet only residents to the south were sampled. No statistically relevant data base exists for residential wells. Information on residential wells is inaccurate or incomplete.

Response to Comment -

As is documented in the RI Report, an attempt was made to interview all homeowners within a mile of the site. Questionnaires were mailed to residents that were not available. Considerable data has been collected from residential wells over the years by the the DCDH and the NYSDOH. As was stated at the public meeting the NYSDOH will continue to monitor residential wells in the future. Residential well sampling was more concentrated south of the landfill because there are more residences in closer proximity to the landfill in this area. As is documented in the RI Report, there is no indication of site contaminants in any residential wells. The decision on which residential wells to sample during the RI was made by the NYSDOH. Any resident in the area that has concerns about their water quality should contact the NYSDOH or DCDH. There are no residential wells in close proximity to the site to the northeast. Collecting samples for analysis from all wells within a one mile radius in all directions from the site is beyond the scope of this project.

General Comment

Sampling was limited. Leachate and on site surface soils were not sampled.

Response to Comment -

Many environmental samples were collected during the RI. Numerous samples of air, surface water, surface sediments, groundwater, and subsurface soils were collected and analyzed at many locations in order to characterize the site. Landfill leachate was not sampled because there was no leachate to sample on the landfill in the fall of 1993 or the spring of 1994 when sampling occurred. In addition to surface water and sediments east and south of the site, surface water and sediments north and west of the site were sampled. Naturally, there does have to be some limit to sampling. The cost of the RI was over \$ 400,000. Enough data was collected to characterize the site and evaluate remedies.

General Comment

Risk associated with chemical reactions of contaminants, secondary exposure routes (ingested crops and vegetation), and risks to livestock were not assessed. Health risks for children are based on only a 5 year duration. Wildlife exposure pathways ignore the food chain and the impact to trout in the Webutuck Creek is not assessed.

Response to Comment -

The Health Risk Assessment (HRA) performed for the Northeast Landfill was based on the analytical results of environmental media sampled during the RI. The HRA used actual results and did not take into account chemical reactions that may take place, such as chemical degradation, dilution, and volatilization. Therefore, the HRA was conservative, and actual chemical concentrations within the environmental media may be less than assumed in the HRA. The exposure parameters used in the HRA were taken from USEPA risk guidance documents. An exposure duration of 5 years was used for a child since 5 years was assumed to be the amount of time that a child in the area might have direct contact with the landfill. The HRA assumes that young children would not be likely to be trespassing unsupervised on the landfill and older children (16 and over) are modeled as adults. The HRA demonstrated that under the current land use scenario, noncarcinogenic and carcinogenic chemicals pose no unacceptable threat to the population (i.e. residents and trespassers). Since this is the case for primary exposure routes, additional study to assess secondary exposure routes is not warranted. Contaminants with high bioaccumulation factors, such as PCBs, were not detected at the landfill. The tributary to the Webatuck Creek that flows near the landfill was sampled, and was found to be clean. The RI data indicates that there would be no impact on trout in the Webatuck from the landfill.

General Comment

The remedy proposed is a "band-aid" approach. The potential for horizontal and vertical contaminant migration has not been adequately assessed in the shallow and principal aquifers. The possible effects of groundwater encroachment and flooding have not been considered. Little or no provision is made for groundwater monitoring off site.

Response to Comment -

Groundwater movement was assessed through data collected from 13 monitoring wells around the landfill perimeter and 5 piezometers within the fill area. Groundwater flow in the site vicinity is generally to the northeast in the shallow watertable aquifer, deeper intermediate zone of the watertable aquifer and in the bedrock aquifer. A comparison of shallow and bedrock water levels indicates that the watertable and bedrock aquifers are nearly at equilibrium along the west side of the landfill, but there is a large upward vertical gradient on the east side of the landfill. The site does not overlie a Principal aquifer. This site specific determination was made by the Department based on the data collected during the RI. The remedy provides for long term groundwater monitoring.

Further investigation northeast of the landfill would require obtaining easements to drill on private property and would require the construction of access roads to drill sites in the designated wetlands. This may alter hydrology and destroy wetland habitat. If further investigation northeast of the landfill indicated low levels of VOCs in the groundwater, groundwater pumping in the clayey, sandy silt unit that exists in this area would not be effective due to its low permeability. The landfill needs to be regraded and properly capped as

expeditiously as possible in order to prevent further degradation to the environment. The landfill cap will result in the watertable being lowered below the waste over all but a small area on the east side of the site where groundwater mounding during springtime conditions may saturate approximately 6 inches of refuse. Significantly reduced infiltration and a lowered water table would substantially reduce contaminant migration from the landfill such that groundwater SCGs would be met at the nearest potential future groundwater receptor. It would take about 2 to 5 years for this lowering of the watertable to fully occur. The limits of waste are outside the boundry of the 100 year and 500 year flood plains. Additional study would be time consuming and expensive, and the State can not envision how additional study would alter the remedy selected.

General Comment

As one of the few areas of sustainable agriculture in Dutchess County, the Town of Northeast requires and deserves special consideration.

Response to Comment -

The landfill is located within Agrilculture District #21 as mapped by the NYS Department of Agriculture and Markets. The remedy will not adversely impact agricultural activities in the area in any way. The site is also located within the National Register listed Coleman Station Historic District and therefore input on the proposed remedy was solicited and received from the Office of Parks, Recreation and Historic Preservation.

APPENDIX B

APPENDIX B
Administrative Record

A. Reports

- 1) Proposed Remedial Action Plan "Town of Northeast Landfill" prepared by the New York Department of Environmental Conservation August 1995
- 2) Feasibility Study at the Northeast Landfill prepared by URS Consultants, Inc. June 1995
- 3) Remedial Investigation at the Northeast Landfill; Volume I, Report, Volume II Appendices A-M; prepared by URS Consultants, Inc. October 1994
- 4) Responsiveness Summary for the Public Comments on the Proposed Remedial Investigation/Feasibility Study at the Northeast Landfill prepared by URS Consultants, Inc., September 1993
- 5) Work Plan, Quality Assurance Project Plan, & Field Sampling Plan prepared by URS Consultants, Inc., August 1993
- 6) Citizen Participation Plan, prepared by URS Consultants, Inc., April 1993
- 7) Health and Safety Plan, prepared by URS Consultants, Inc., January 1993

B. Previous Studies

- 1) Phase II Investigation for the Town of Northeast Landfill, prepared by Wehran Engineering, November, 1984.
- 2.) Phase I Investigation for the Town of Northeast Landfill, prepared by Wehran Engineering & CDM, November, 1983.

C. Court Orders

Order on Consent, Index # W3-0181-87-12, August 13, 1991

D. Corrspondence & Memorandums

July 30, 1995 correspondence from G. Anders Carlson, NYSDOH, to Mr. Michael J. O'Toole, NYSDEC - concurrence on the PRAP.

July 7, 1995 memorandum from Richard Koeppicus, Division of Fish and Wildlife to Brian Davidson - concurrence on the PRAP

May 9, 1994 memorandum from N.G. Kaul, P.E., Director, Division of Water, to Michael J. O'Toole, P.E., Aquifer Determination: Northeast Landfill



NEW YORK STATE
DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

Environmental Remediation Databases

Summary of Project Completion Dates

Site Name: North East Town Landfill

Site Code: 314048

Program: State Superfund Program

Locality: Northeast

DEC Region: 3

Operable Unit: 01 - REMEDIAL PROGRAM

Project Name	Completion Date
Site Characterization	01/01/1986
Remedial Investigation	09/01/1995
Remedial Design	03/01/1997
Remedial Action	09/01/1998

Citizen Participation is an important part of the Department's efforts to remediate abandoned and inactive hazardous waste disposal sites in New York. Fact sheets have been developed to provide the public with information about the major elements of the State's Superfund program (given in the completion dates above) and to help citizens understand how the program works.

[Refine This Search](#)



Environmental Site Remediation Database Search Details

Site Record

Administrative Information

Site Name: North East Town Landfill

Site Code: 314048

Program: State Superfund Program

Classification: 02

EPA ID Number:

Location

DEC Region: 3

Address: Coleman Station Road

City: Northeast **Zip:** 12546

County: DUTCHESS

Latitude: 41.906491700

Longitude: -73.514572830

Site Type: LANDFILL

Estimated Size: 15.000 Acres

Site Owner(s) and Operator(s)

Current Owner Name: Town of Northeast

Current Owner(s) Address: Maple Avenue
Northeast, NY, 12546

Owner(s) during disposal: TOWN OF NORTHEAST

Operator during disposal: Town of Northeast

Stated Operator(s) Address: Maple Avenue
Northeast, NY 12546

Hazardous Waste Disposal Period

From: 1969 **To:** 1971

Site Description

Location Description: The Town of Northeast Landfill is an approximately 15 acre landfill located on the Regan Road in the Town of Northeast, in northeastern Dutchess County. The site is bordered by Regan Road on the south, an abandoned railroad grade on the west, and

NYSDEC regulated Wetland MT-26 on the north and east. The site is located within the Coleman Station National Historic Register District. Predominant Site Features: The landfill is situated at the southern end of a relatively long and wide valley. Unnamed tributaries to the Webatauk Creek flow to the northeast both south and north of the site. The unnamed tributaries join with the southeast flowing Webatauk Creek approximately 2,000 feet northeast of the site. Current Use: The site is fenced and the entrance gate is padlocked. It is maintained but otherwise unused. Surrounding Uses: The site is located among farm land and residences on large properties. Operable Units: The site is currently being operated as a single operable unit. Site Geology and Hydrogeology: The geology below the site consists of a fill layer (municipal and industrial waste in a mix of sand and silt) from 0 to 25 feet below ground surface. Underlying this layer is a sand and gravel layer ranging up to 64 feet thick. Below this unit is a clayey-sandy silt layer that ranges from 1 foot to 55 feet in thickness. Finally a bedrock layer consisting of gray limestone was encountered between 51 and 90 feet below ground surface. The depth to groundwater ranged from 10 to 15 feet below ground surface, and generally flowed to the northeast.

Summary of Project Completion Dates

Projects associated with this site are listed in the Project Completion Dates table and are grouped by Operable Unit (OU). A site can be divided into a number of operable units depending on the complexity of the site and the number of issues associated with a site. Sites are often divided into operable units based on the media to be addressed (such as groundwater or contaminated soil), geographic area, or other factors.

Contaminants of Concern (Including Materials Disposed)

Type of Waste	Quantity of Waste
METALS	UNKNOWN
METHANE	UNKNOWN
VOLATILE ORGANICS	UNKNOWN

Site Environmental Assessment

Prior to Remediation: Based on historical information and the results of a soil gas survey, four areas were identified at the site where industrial waste was concentrated. These areas coincide with a former sludge burial area, a potential industrial waste disposal area, a former burn pit area, and a possible former lagoon area. Soil gas results indicated that the highest levels of volatile organic compounds (VOCs) are to be found in the former burn pit area and the former sludge burial area. Red iron staining on the ground surface is visible in several locations around the landfill. Semi-VOCs were also found to be present. Iron was detected in surface water above background concentrations, in surface water samples on the east side of the landfill. Trace levels of mercury were detected in the surface water. Post-Remediation: A Part 360 cap was installed at the site. A chain-link fence was placed around the entire property. Remediation of sediments and wetlands restoration in the seep area northeast of the landfill was completed. In 2007, a vapor intrusion investigation was completed at the residence and shop near the landfill and it was determined that there was no impact from landfill gases. The potential for soil vapor intrusion was evaluated by the NYSDOH and the NYSDEC, and no further actions were deemed necessary.

Site Health Assessment

No complete exposure pathways exist: the landfill is capped which prevents direct contact exposures and no contaminants have been detected in nearby private wells. The potential for soil vapor intrusion was evaluated, and no further actions were deemed necessary.

For more Information: E-mail Us

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APPENDIX G

LONG-TERM MONITORING PLAN

MONITORING WELL BORING AND CONSTRUCTION LOGS

QUALITY ASSURANCE PROJECT PLAN

FIELD SAMPLING PLAN

FINAL
LONG TERM MONITORING PLAN
FOR THE
NORTH EAST LANDFILL

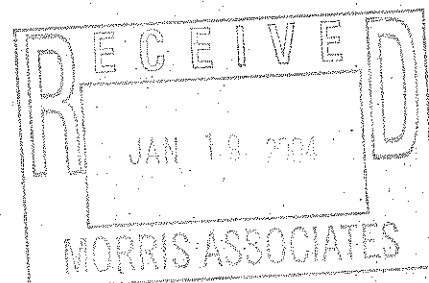
Town of North East, New York

Prepared For:

Town of North East

Prepared By:

URS Consultants, Inc.
282 Delaware Avenue
Buffalo, New York 14202



March 1999

**FINAL
LONG TERM MONITORING PLAN
FOR THE
NORTH EAST LANDFILL SITE
NYSDEC SITE NO. 314048
NORTH EAST (T), DUTCHESS (C) NEW YORK**

**PREPARED FOR
TOWN OF NORTH EAST, NEW YORK**

**PREPARED BY:
URS CONSULTANTS, INC
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202**

MARCH 1999

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C	Field Sampling Plan

1.0 INTRODUCTION

The Town of North East Landfill site is located on Regan Road in the Town of North East, Dutchess County, New York. It has been assigned the site registry number 3-14-048 and is the subject of an Order on Consent, entered into between the New York State Department of Environmental Conservation (NYSDEC) and the Town of North East (Town), which requires the remediation of the site. The Town and NYSDEC have entered into a contract under which State Assistance is provided to the Town for meeting the remediation requirements.

URS completed a Remedial Investigation/Feasibility Study (RI/FS) for the site and a Record of Decision (ROD) was issued in September 1995 setting forth the plan to be used in site remediation.

The remediation goals selected for this site are:

- Reduce, control, or eliminate the contamination present within the soils/waste on site (generation of leachate within the fill mass).
- Eliminate the threat to surface waters by eliminating any future contaminated surface run-off from the contaminated soils on site.
- Eliminate the potential for direct human or animal contact with the contaminated soils and sediments on site.
- Mitigate the impacts of contaminated groundwater to the environment.
- Prevent, to the extent possible, migration of contaminants in the landfill to groundwater.
- Provide for attainment of Standards, Criteria and Guidance (SCG) values for groundwater quality at the limits of the area of concern (AOC).

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Uncertainties identified during the RI/FS will be resolved. The remedial design was completed by URS and is presented in the design Analysis Report (URS, 1996).
2. A remedial construction program consisting of the following:
 - Regrading the landfill with the placement of approximately 20,000 cubic yard of clean fill or AGM;
Alternate gravel material
 - Installation of a cap over the landfill that meets NYSDEC Part 360 standards;
 - Fencing, posting, and deed restrictions that prohibit the use of onsite groundwater and intrusive activities;
 - Sediment remediation in the seep area northeast of the landfill;
 - Long-term monitoring and maintenance with periodic reviews.

Installation of a low permeability layer (geomembrane) will reduce infiltration of surface water into the landfill wastes, thereby reducing the potential for migration of contaminants into groundwater flowing under the site. Additionally, capping of the landfill with construction of surface drainage control features will eliminate erosion of contaminated soils and prevent stormwater from contacting the waste materials.

To provide information necessary to evaluate and monitor the effectiveness of the remediation, the Town will implement an environmental sampling and testing program as described in this document.

9.51

2.0 EXISTING SITE CONDITIONS

2.1 Site Description

The North East Landfill is located north of Regan Road and east of the former railroad spur at Coleman Station in the Town of North East, Dutchess County, New York (Figure 2-1). The surrounding countryside is sparsely populated rural farmland. The site property is approximately 30 acres in size. Landfill activities previously were carried out over what is presently a relatively flat-topped, 14.1-acre mound which was filled from a former gravel pit. The site is depicted on Figure 2-2. The landfill surface is vegetated with field grass and small trees. Uncovered refuse can be found at locations on and around the fill; however, during the RI, the landfill generally was found to be covered with up to 12 inches of material. No leachate seeps were observed onsite during the RI. A shed utilized by the Town Highway Department is currently the only permanent structure onsite.

The site is located adjacent to the floodplain of a Webatuck Creek tributary. Thickly vegetated, low-lying wet areas border most of the relatively steep north and east slopes of the fill. An abandoned Conrail right-of-way, which forms a local topographic high point, and private residential property border the west side of the site. Along the southern perimeter of the site is Regan Road and a steep cut-bank from the former gravel pit. Unnamed tributaries direct drainage from the landfill to Webatuck Creek approximately 2,000 feet east of the site. Webatuck Creek lies in the Ten Mile River drainage basin which discharges to the Housatonic River in Connecticut.

Wetland habitats in the vicinity of the landfill have been confirmed to contain the bog turtle, a New York State protected species.

2.2 Site Geology

The overburden deposits at, and around the landfill, and the upper portion of bedrock were investigated to depths that ranged up to 103 feet. The stratigraphic sequence was interpreted from field and laboratory classification of the sediments encountered during the drilling program. A

brief description of each strata encountered at the site is given below in inverse chronological order based upon their relative ages.

Fill:

The fill material at the North East Landfill Site consists of municipal and industrial waste in a matrix of sand and silt with a trace of gravel. Moisture conditions in the fill mound were generally dry to very moist but perched water was encountered in several instances. The water-table was encountered within the fill at B-2 located near the eastern perimeter of the landfill. Wastes encountered in the fill include paper, plastic, wood, cardboard, rags, tires, metal and brick.

Sand and Gravel:

This unit comprises gray and brown, loose to very dense, moist to wet, sand and gravel with variable silt content and little clay. The soil texture was generally variable with little evidence of stratification other than occasional interbeds. The sand content likely exceeded the gravel content on a bulk basis and the quantity of fines varied irregularly from nearly absent to silty. The sand and gravel was the uppermost soil unit observed in the western portion of the site where its thickness ranged up to 64 feet. This unit appears to become finer to the east and grades laterally beneath the fill mound into adjacent clayey, sandy silt deposits.

The sand and gravel unit is relatively permeable, particularly in seams where the sediments are well sorted. The unit contains a vadose zone and the water-table aquifer in the western portion of the site.

Clayey, Sandy Silt:

This unit comprises gray, very loose to medium dense, very moist to wet silt with variable amounts of fine sand and clay. The soil is generally non-cohesive and is stratified. Bedding thicknesses of the sandier or clay-rich beds varied from less than 1/2 inch to

greater than 1 foot. The clayey, sandy silt unit ranged from 55 feet thick east of the landfill to less than one foot thick southwest of the landfill at the background well locations. There appears to be a lateral gradational contact between this unit and the sand and gravel.

The clayey, sandy silt unit transmits water but is significantly less permeable than the sand and gravel. The clayey, sandy silt contains a vadose zone and the water table aquifer in the eastern portion of the site, however, it is considered an aquitard relative to the sand and gravel unit. Its occurrence at MW-1 and other perimeter boring locations suggests that the unit is present beneath the entire landfill.

Silt and Gravel:

This unit comprises gray dense to very dense, moist silt and gravel with some sand and little clay. It was observed only at MW-4 (southwest of the site) at a depth of 75.5 feet. The unit is interpreted as a till deposit and was approximately 16 feet thick. It was overlain by the sand and gravel unit and underlain by bedrock at MW-4.

The silt and gravel unit is relatively impermeable. It likely composes a local confining layer between the bedrock and overburden aquifers. It does not appear to be present beneath the landfill mound.

Bedrock:

Limestone bedrock of the Stockbridge Group was encountered at each of the bedrock monitoring well locations. The rock is composed primarily of gray, hard limestone which appears to have been recrystallized to a significant degree. The limestone was very broken and fracture surfaces were typically stained to a rust color. Bedding was not apparent in the rock cores but

chevron folds in brown bands within the limestone were noted at several locations. Small solution cavities and calcite or quartz veins were also observed. The depth to the weathered bedrock surface ranged from 51 feet at MW-2 to 90.5 feet at MW-4.

The upper portion of bedrock that was investigated during the RI (to a maximum depth of 34 feet below the bedrock surface) was relatively permeable, due to the fractured nature of the limestone.

Subsurface information gathered at the site suggests that the Webatuck Creek valley is filled primarily by fine grained lacustrine sediments. These sediments were likely deposited in a proglacial lake. The sand and gravel sediments observed in the western portion of the site are more likely near shore ice-contact or kame deposits rather than the fluvial deposits interpreted in earlier Dutchess County groundwater studies (Simmons, 1961; Gerber, 1982).

The elevation of the weathered bedrock surface rose from 503 feet amsl at MW-4 to 525 feet amsl at MW-2. The site bedrock elevations suggest the bedrock surface rises to the northeast. Because the central axis of the Webatuck Creek valley, where the greatest amount of bedrock erosion would be expected, lies northeast of the site, it is possible that the northeast rising bedrock surface is a local feature specific to the site.

The landfill covers an area of 613,120 square feet (14.1 acres) as delineated on Figure 2-2. The thickness of waste observed in the landfill borings was a minimum of 8 feet at B-6 and a maximum of 25 feet at B-4. The elevation of the bottom of waste ranged from 591 feet amsl at B-5 to 580 feet amsl at B-2. Boring B-2 on the eastern margin of the landfill was the only location where waste was observed below the water table.

2.3 Subsurface Drilling Programs

Morris and Andros Consulting Engineers completed an engineering study for the Town of North East to assess the potential future development of the landfill (Morris and Andros, 1977). An addenda to that study (Morris and Andros, 1979) included five soil borings ranging from 16

feet to 36 feet in depth, installation of two PVC monitoring wells, in-situ soils permeability testing and groundwater sampling.

NYSDEC Phase I and Phase II Investigation reports were completed at the landfill by Wehran Engineering P.C. and Camp, Dresser & McKee (Wehran Engineering and CDM, 1983, 1984). The Phase I report summarized information known about the site at that time. The Phase II investigation included the installation of two shallow groundwater monitoring wells (MW-01 and 02) and analysis of groundwater samples from four site monitoring wells (the two Phase II and two Morris and Andros wells), a leachate sample, and two surface water/sediment samples. The monitoring well locations are shown on Figure 2-2.

The RI subsurface drilling program conducted by URS included the installation of 11 new monitoring wells at 4 locations around the landfill perimeter and construction of 5 piezometers within the fill area at the locations shown on Figure 2-2. Well triplets consisting of shallow (S) and intermediate (I) overburden wells with a bedrock (B) well were installed at locations MW-1 and MW-2. A well couplet consisting of only a shallow overburden and bedrock well was installed at MW-3 due to the homogenous and fine-grain nature of the overburden deposits at that location. A well triplet consisting of a shallow (S), intermediate (I), and deep (D) overburden well was installed at the offsite background location MW-4. Five shallow piezometers (B-1 to B-5) were installed in the landfill to monitor groundwater elevations in the landfill. Four (4) additional soil borings (B-6 to B-9) were drilled during the second round sampling effort to better delineate the depth of fill in the southern portion of the landfill. The monitoring well, piezometer and boring locations are shown on Figure 2-2. The RI drilling programs were conducted between October 26 and November 23, 1993 and on July 21-22, 1994.

Overburden monitoring well and piezometer boreholes were drilled with 4-1/4 inch ID hollow-stem augers. Bedrock well boreholes were advanced to the bedrock surface using 6-5/8 inch hollow-stem augers and drilled into bedrock using a diamond bit rock coring tool.

Overburden monitoring wells were constructed with 10-foot long, 2-inch ID stainless-steel screens with a 0.01-inch slot size. The well screens were attached to 2-inch ID stainless-steel risers and completed with a filter pack of poured quartz sand, a bentonite seal, and cement-

bentonite grout, as specified in the Field Sampling Plan. All wells and piezometers were finished with a stick-up type steel protective casing with a lockable cap.

Bedrock monitoring wells were completed by drilling a rock socket a minimum of 5 feet into bedrock and grouting permanent 4-inch ID stainless-steel casing into the socket. The boreholes were then advanced with a NX-size core barrel a minimum of 15 feet below the permanent casing. MW-1B and MW-3B were completed as open rock wells. A fifteen foot long 2-inch ID stainless steel screen attached to stainless steel riser was required at MW-2B to prevent a degraded rock zone (encountered below the permanent casing) from filling the well with rock fragments. The bedrock wells were also fitted with a steel protective casing with a lockable cap. Table 2-1 summarizes construction details of the RI monitoring wells and the wells installed during the 1984 Phase II investigation. Boring logs, and monitoring well and piezometer construction diagrams are included in Appendix A.

2.4 Surface Water Hydrology

Surface water hydrology was examined to aid in the assessment of the effect of the landfill on the surrounding water bodies. There are no developed drainageways off the landfill surface and precipitation pools in local depressions to infiltrate or evaporate. A swale adjacent to the railroad grade diverts any surface water runoff from the western slope of the landfill northward to low lying areas that are intermittently ponded north of the landfill. These ponds probably collect most of the runoff from the north landfill slope. Runoff from the east landfill slope enters the western margin of Wetland MT-26 which is only intermittently wet. A natural spring located approximately 200 feet northeast of the landfill at the location of SW/SED-1 on Figure 2-2 flows eastward into the permanently wet portion of MT-26. A tributary of Webatuck Creek passes through a culvert under Regan Road just southeast of the landfill entrance.

Another tributary of Webatuck Creek meanders eastward across the northern portion of MT-26 and then bends southward to flow through a relatively narrow valley into Connecticut. Webatuck Creek returns into New York and ends at its confluence into the Tenmile River at Wassaic, New York. The Tenmile River discharges to the Housatonic River in Connecticut.

The Webatuck Creek drainage area is approximately 66 square miles between Millerton and South Amenia. This includes approximately 112 acres of wetland MT-26 which is adjacent to the site. The average discharge of Webatuck Creek increases from 15.5 cubic feet per second (cfs) at Millerton to 67 cfs at South Amenia (Ayer, 1968).

2.5 Groundwater Conditions

2.5.1 Groundwater Occurrence

Groundwater at the site is typically encountered at shallow depths under unconfined conditions. On the west side of the landfill the water table surface ranges from about 7 to 10 feet below the ground surface, whereas to the north and east, beyond the limits of the landfill, the water table is at, or very near, the ground surface. In many cases, the groundwater table is coincident with the water surface in the wetlands in these areas.

The site is underlain primarily by sands and silts to depths of 100 feet or more. These units, which range in permeability from about $10E-3$ to $10E-5$ cm/sec, are fully saturated and do not provide a confining layer for the underlying bedrock. The bedrock consists of highly fractured limestone and marble, with a typical permeability value of about $10E-4$ cm/sec.

For investigatory purposes, the saturated zone which includes the full overburden sequence and the upper portion of the bedrock, was sub-divided into the shallow, or near surface, zone; the intermediate, or deep overburden, zone; and, the bedrock zone.

2.5.2 Flow Directions

Groundwater elevations recorded during the RI investigation were used to evaluate groundwater flow directions at the site. Groundwater measurements obtained in the shallow water-table aquifer during the winter and spring months indicate that some mounding associated with the landfill occurs, and is most pronounced along the eastern margin of the landfill. Some very localized radial flow appears to emanate from the vicinity of B-2. This radial flow pattern appears to be superimposed over a more regional northeastward flow trend which is evident in the west and

*

northwest portions of the site. Shallow groundwater flowing beneath the landfill apparently discharges to Wetland MT-26 along the northeastern and eastern portions of the site.

The tendency for groundwater mounding to be more pronounced in the eastern portion of the landfill reflects the lower permeability of the underlying sediments. The transition to a regional flow pattern in the western portion of the site indicates the location where the sand and gravel unit is more prevalent in the subsurface.

The flow pattern interpreted in the deeper intermediate zone of the water-table aquifer is significantly less complex than the shallow zone based on the attenuation of mounding effects with depth. The apparent groundwater flow direction is east-northeast. A very similar groundwater flow pattern was observed during the spring.

In the bedrock, a northeast groundwater flow direction exists beneath the site.

A comparison of the vertical hydraulic gradients observed at the monitoring well locations indicates that conditions in the western and southwestern portions of the site (MW-1 and MW-4) differ from the eastern portion of the site (MW-2 and MW-3). Downward gradients were typically observed at MW-4 suggesting that the area southwest of the site is primarily a recharge zone for the water table aquifer. Vertical gradients within the water table aquifer between MW-1S and MW-1I were consistently upward while downward gradients of relatively low magnitude were observed between the intermediate and bedrock wells at that location. Comparison of shallow and bedrock water levels at MW-1 suggest that the water table and bedrock aquifers are nearly at equilibrium along the western edge of the landfill. The relatively large upward vertical gradients observed at MW-2 and MW-3 indicate a discharge condition for both the water-table and bedrock aquifers to Wetland MT-26 and confirmed by the presence of a spring near the locations of samples SED-1 and SED-2.

Based on the observations of the groundwater conditions during both rounds of sampling, monitoring wells MW-4S, -4I, -4D can be considered hydraulically upgradient of the site. Monitoring wells MW-1S, -1I, -1B could probably best be characterized as side-gradient to the

site. Monitoring wells MW-2S, -2I, -2B, MW-01, MW-02, and MW-3S, -3B are downgradient of the site. *

2.6 Nature And Extent of Contamination

The analytical results obtained from two rounds of sampling at the site during the RI and supplemental sediment sampling during the FS were compared with the applicable NYSDEC SCG values to determine the nature and extent of contamination at the site. The analytical data for groundwater, surface water and sediments are presented in Tables 2-2 through 2-4. These data include the appropriate SCGs, and identify any exceedances.

A discussion of the SCG exceedances for each media is presented in the following sections.

2.6.1 Groundwater SCG Exceedances

Shallow Wells

Groundwater SCG exceedances were observed for VOCs at downgradient monitoring wells MW-2S, MW-01 and MW-02. The vinyl chloride standard was contravened at MW-2S and MW-02. The acetone standard was exceeded at MW-2S and MW-01. All of the other VOC exceedances, which include chloroethane, 1,1-dichloroethane, 1,2-dichloroethene, MEK, 1,2-dichloropropane, MIBK, toluene, ethylbenzene, styrene, and xylene, were observed at MW-01. *

Pesticide SCG exceedances for heptachlor and dieldrin were observed upgradient of the site during first round sampling at MW-4S. These compounds were not detected during second round sampling. Metals SCG exceedances were common at the site. The standards for iron and manganese were exceeded at all sample locations. Other metals SCG exceedances include antimony (MW-1S), lead (MW-2S), magnesium (MW-1S, MW-2S, MW-01, and MW-02), and sodium (MW-1S). *

The SCG for total dissolved solids was exceeded at MW-1S, MW-2S, MW-01 and MW-02. The phenols SCG was exceeded at MW-02 and MW-4S. The sulfide concentration at MW-1S also exceed the SCG value.



Intermediate and Deep Overburden Wells

Intermediate and deep overburden well SCG exceedances were limited to pesticides and inorganics. The pesticide exceedances were observed for 4,4'-DDT at MW-1I and aldrin at MW-4I. These compounds were observed only during the first round samples and may be attributable to contaminated surficial soils which were transported downward through the drilling process.

Metals SCGs for iron and manganese were exceeded at all intermediate well sample locations. The iron and magnesium SCGs were also contravened in the deep overburden well MW-4D. The magnesium SCG was also exceeded at MW-1I and MW-2I. The chromium SCG was exceeded at MW-1I and MW-4I. The sodium SCG was exceeded at MW-2I as was the standard for total dissolved solids.

Bedrock Wells

Bedrock well SCG exceedances were also limited to pesticides and inorganics. The pesticide exceedances were for 4,4'-DDT at MW-1B (first round only) and for beta-BHC at MW-2B (second round only).

Metals SCG exceedances were observed in bedrock wells for chromium (MW-1B and MW-2B), iron (MW-1B, MW-2B and MW-3B), manganese (MW-3B) and sodium (MW-3B). The total dissolved solids SCG was exceeded at MW-2B and the sulfide SCG was exceeded at both MW-1B and MW-3B.

2.6.2 Surface Water and Sediment SCG Exceedances

Surface Water

Surface water SCGs were exceeded only for inorganic analyses. The aluminum SCG was exceeded at both upgradient (SW-3) and downgradient (SW-5 and SW-7) locations. SCGs were exceeded at sample locations associated with the springs for iron (SW-1 and SW-2), mercury (SW-1, SW-2 and SW-7), and vanadium (SW-1). The selenium SCG was exceeded at upgradient location SW-6. The sulfide SCG was exceeded at all sampling locations.

Sediments

The sediment SCG for the pesticide 4,4'-DDE was exceeded at SED-1. The detected concentration there (2.1 ppb) exceeded the guidance for human health bioaccumulation risk only. Metals SCG exceedances in sediments include arsenic (SED-1, SED-2, SED-4, SED-6 and SED-7), cadmium (SED-2), copper (SED-4 and SED-6), iron (SED-1, SED-3, SED-4, SED-6 and SED-7), lead (SED-4, SED-6 and SED-7), manganese (SED-1, SED-2, SED-3, SED-4, SED-6, SED-7), mercury (SED-2 and SED-7), nickel (SED-1, SED-3, SED-4 and SED-6) and zinc (SED-4). The SCG for total phenols was exceeded at SED-4.

3.0 LONG TERM MONITORING PLAN

This section discusses the particulars of the proposed post-remediation, Environmental Monitoring Program for the Town of North East Landfill. The various aspects of the Environmental Monitoring Program addressed are:

- Groundwater monitoring system and sampling program
- Surface water/sediment sampling
- Leachate sampling
- Gas migration monitoring
- Sampling Methodology
- Reporting of data
- Contingent Sampling

Site specific hydrogeological and site reconnaissance data has been employed in the design of the Environmental Monitoring Plan. Throughout, the program has been assembled in such a way that any changes in the type or concentrations of contaminants associated with the landfill should be detected at their earliest occurrence. Additionally, the Environmental Monitoring Program has been structured to conform to the regulatory framework of 6NYCRR Part 360.

The monitoring and sampling programs for each media at the site are discussed below. Included in the discussion are:

- Identification of parameters of concern
- Proposed monitoring points and the rationale for their selection
- Sampling frequency
- Analytical testing requirements
- Action levels

3.1 Groundwater Sampling

3.1.1 Identification of Parameters of Concern

During the RI, VOCs exceeded NYSDEC Standards, Criteria and Guidance (SCG) values during the first round of sampling, and more so during the second round. VOCs exceeding SCGs include vinyl chloride, acetone, chloroethane, 1,1-dichloroethane, 1,2-dichloroethene, MEK, 1,2-dichloropropane, MIBK, toluene, ethyl benzene, styrene, and xylene. Second round groundwater sampling data indicate that organic contaminant concentrations increased with the raised groundwater table associated with springtime hydrologic conditions. Pesticides not attributable to the landfill exceeded SCGs in samples collected from background overburden wells and the sidegradient bedrock well. Metals SCGs were exceeded at numerous sample locations both upgradient and downgradient of the landfill, indicating a regional groundwater condition. Elevated concentrations of lead and manganese were observed in downgradient monitoring wells which may be due to the landfill. The hydrogeological conditions present in the vicinity of the landfill limit the potential for horizontal and vertical migration of contaminants in groundwater.

Sampling of nearby residential wells by the NYS Department of Health (NYSDOH) shows no indication of the presence of site contaminants.

For purposes of long-term monitoring of groundwater at the site, only VOCs and inorganics are considered to be parameters of concern and as such, will comprise the site-specific parameter list (SSPL).

3.1.2 Determination of Sampling Locations

As required by NYSDEC Part 360 2.11 (c) (1), groundwater monitoring wells must be capable of detecting landfill-derived contamination within the critical stratigraphic section. In the first water-bearing unit, monitoring well spacing must not exceed 500 feet along the downgradient perimeter, or 1500 feet for upgradient or crossgradient wells. Well spacing must provide at least one upgradient and three downgradient monitoring wells. The downgradient wells must be located as close as practical to but not more than 50 feet from the waste boundary, whereas the upgradient

wells must be placed far enough from the waste boundary to avoid any facility derived impacts. The well screens must be located to readily detect groundwater contamination within the saturated thickness of the first water-bearing unit, and at a representative number of points at each subsequent permeable unit throughout the critical stratigraphic section.

Based on the observations of the groundwater conditions during the RI, the following monitoring wells will be included in the long-term monitoring program:

Shallow

- MW-01, MW-02, MW-2S, MW-3S and MW-4S (upgradient)

Intermediate

- MW-2I and MW-4I (upgradient)

Bedrock

- MW-2B, MW-3B and MW-4B (upgradient)

A review of the well construction details, screen placement depths, horizontal spacing and locations of these wells relative to each other and the landfill indicates that they satisfy the requirements of Part 360 2.11(c)(1).

Locations of the wells to be sampled are shown on Figure 3-1. The boring logs and well installation details are contained in Appendix A.

3.1.3 Sampling Frequency

As required by Part 360 2.11(c)(5)(ii), sampling will be conducted quarterly during the first year following closure of the landfill. During each sampling event, groundwater samples will be obtained from shallow monitoring wells, MW-01, -02, -2S, -3S, and -4S; intermediate

monitoring wells MW-2I and -4I: and bedrock wells MW-2B, -3B and -4B. These samples will be analyzed for the parameters identified in Section 3.1.4. *

After the first year (four quarters) of sampling has been completed, the data will be reviewed to determine whether the nature and extent of contamination is comparable to that which was identified during the RI. Assuming the type of compounds detected, the concentrations and distribution are similar to those identified during the RI, the sampling frequency will be decreased to semi-annually. Additionally, sampling of intermediate monitoring wells (MW-4I and MW-2I) will not be conducted unless there is an unexplained increase in contamination at one or more of the routinely sampled downgradient points. Any subsequent increase or decrease in sampling frequency will be based on the evaluation of the available data obtained during the long term monitoring program. The sampling frequency will only be revised in consultation between NYSDEC and the Town. *

3.1.4 Analytical Program

The chemical analyses will be performed in accordance with NYSDEC Analytical Services Protocol (ASP) 10/95 Edition (or latest publication). Initially, during the first quarterly sampling event, the groundwater samples will be analyzed for Baseline parameters, as specified in Table 3-1. The subsequent three quarterly sampling events will be analyzed for Routine parameters, as specified in Table 3-1. Following completion of the first year (four quarters) of sampling, assuming the type of contaminants detected, the concentrations, and distribution are similar to what was identified during the RI, the list of parameters to be monitored will be reduced to the Site Specific Parameter List (SSPL) as shown in Table 3-2. Any additional compounds detected during the first year monitoring which exceed the SCGs, but are not on the SSPL, will be added to the list and monitored during the subsequent sampling events. In addition to the analytical testing, field measurements as outlined in Table 3-1 will be obtained during each sampling event.

3.1.5 Action Levels

Concentrations at which SSPL compounds are detected during long term monitoring may initially be above those detected during the Remedial Investigation without implying a failure in

the remedial program. That is due primarily to variability inherent in sampling and analysis but may also come from other (e.g., seasonal) factors. To allow for that variability, action levels are established as concentrations twice that of the highest contaminant levels observed during the Remedial Investigation. Over the long term, however, contaminant loadings are expected to steadily decrease. Once that trend is established, action levels will change to twice the value of a moving average of the previous three sampling results. *

In the event that action level concentrations are obtained at one or more sampling locations, contingent sampling will be instituted as described in Section 3.7.

3.2 Surface Water/Sediment Sampling

3.2.1 Identification of Parameters of Concern

Surface water/sediment data (Section 2.6.2) indicates that Webatuck Creek (north of landfill) and the unnamed tributary to Webatuck Creek (southeast of landfill) have not been impacted by contaminants derived from the landfill. These data indicate, however, that surface water and sediments in the vicinity of groundwater seeps located northeast of the landfill (SW/SED-1) and southeast of the landfill (SW/SED-2) have been impacted by inorganics. Relatively high concentrations of metals are discharged to surface water at these locations. These metals, which include aluminum, iron, mercury, selenium and vanadium, are largely attributed to regional groundwater conditions. Similarly, elevated metals concentrations for arsenic, cadmium, copper, iron, lead manganese mercury, nickel, and zinc were evident in the two sediment samples (SED-1, -7) collected northeast of the landfill. Landfill soil erosion and shallow groundwater discharge are contributing to this condition. How?

Based on the analytical data, only inorganics associated with the seeps east of the landfill are assumed to be parameters of concern, and as such will comprise the site specific parameter list (SSPL).

3.2.2 Determination of Sampling Locations

As required by Part 360 2.11 (c)(ii), monitoring points must be established for all surface water bodies that may be significantly impacted by a contaminant release from the facility. Sampling activities at these monitoring points shall be for surface water and sediment. In bodies of standing water, these points must be located at the closest point to the landfill. In flowing water bodies, these points must include sufficient upgradient and downgradient locations to allow the facility's impact to be measured.

Based on observations of the surface water (i.e. streams, seeps and wetlands) conditions at the site, the following points will be included in the long-term monitoring program:

- Seeps/Wetlands

SW/SED 1	-	Seep area northeast of landfill
SW/SED 2	-	Seep area southeast of landfill

Locations of the sampling points are shown on Figure 3-1.

3.2.3 Sampling Frequency

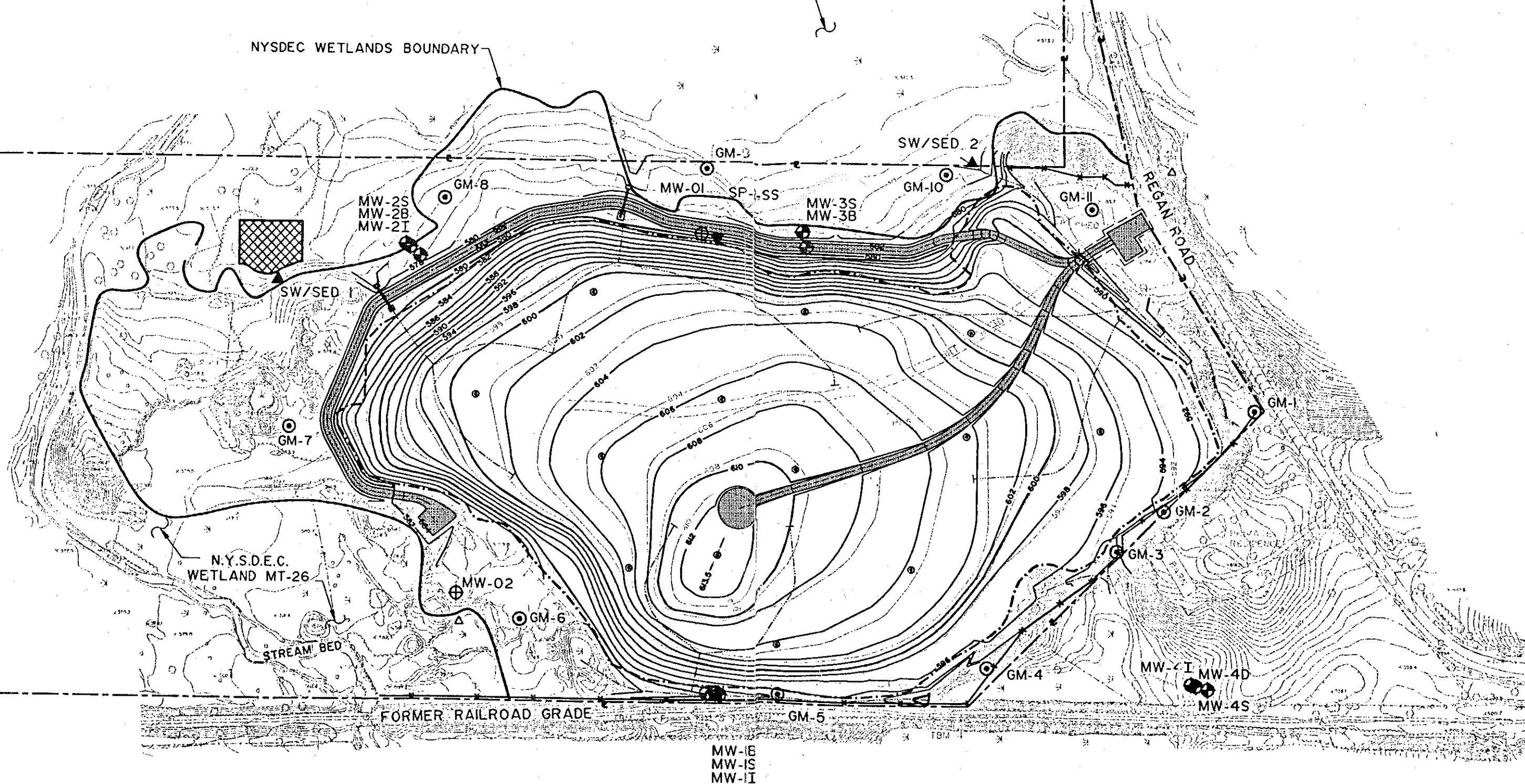
As required by Part 360 2.11 (c)(5)(ii), sampling will be conducted quarterly during the first year following closure of the landfill. During each sampling event, surface water and sediment samples will be obtained from monitoring points SW/SED 1 and SW/SED 2. These samples will be analyzed for the parameters identified in Section 3.2.4.

After the first year (four quarters) of sampling has been completed, the data will be reviewed to determine whether the nature and extent of contamination is comparable to that which was identified during the RI. Assuming the type of compounds detected, the concentrations and distribution are similar to those identified during the RI, the sampling frequency will be decreased to semi-annually. Any subsequent increase or decrease in sampling frequency will be based on the



N.Y.S.D.E.C.
WETLAND MT-26

NYSDEC WETLANDS BOUNDARY

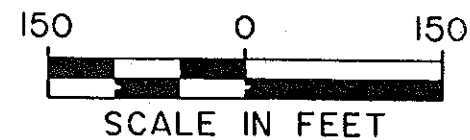


NOTES

1. BASE MAPPING WAS PREPARED BY AIR SURVEY CORP., RESTON, VA. USING AERIAL PHOTOGRAPHY TAKEN APRIL 14, 1993. GROUND CONTROL WAS BY URS.
2. PROJECT VERTICAL CONTROL IS BASED UPON NATIONAL GEODETIC VERTICAL DATUM OF 1929 AS ESTABLISHED ON USGS MONUMENT "ALBANY 573" ELEV. 575.540.

LEGEND

- ⊙ GAS MONITORING POINT
- ⊕ RI MONITORING WELL (1993)
- ⊕ NYSDEC PHASE II MONITORING WELL (1984)
- ▲ SURFACE WATER/SEDIMENT SAMPLE POINT

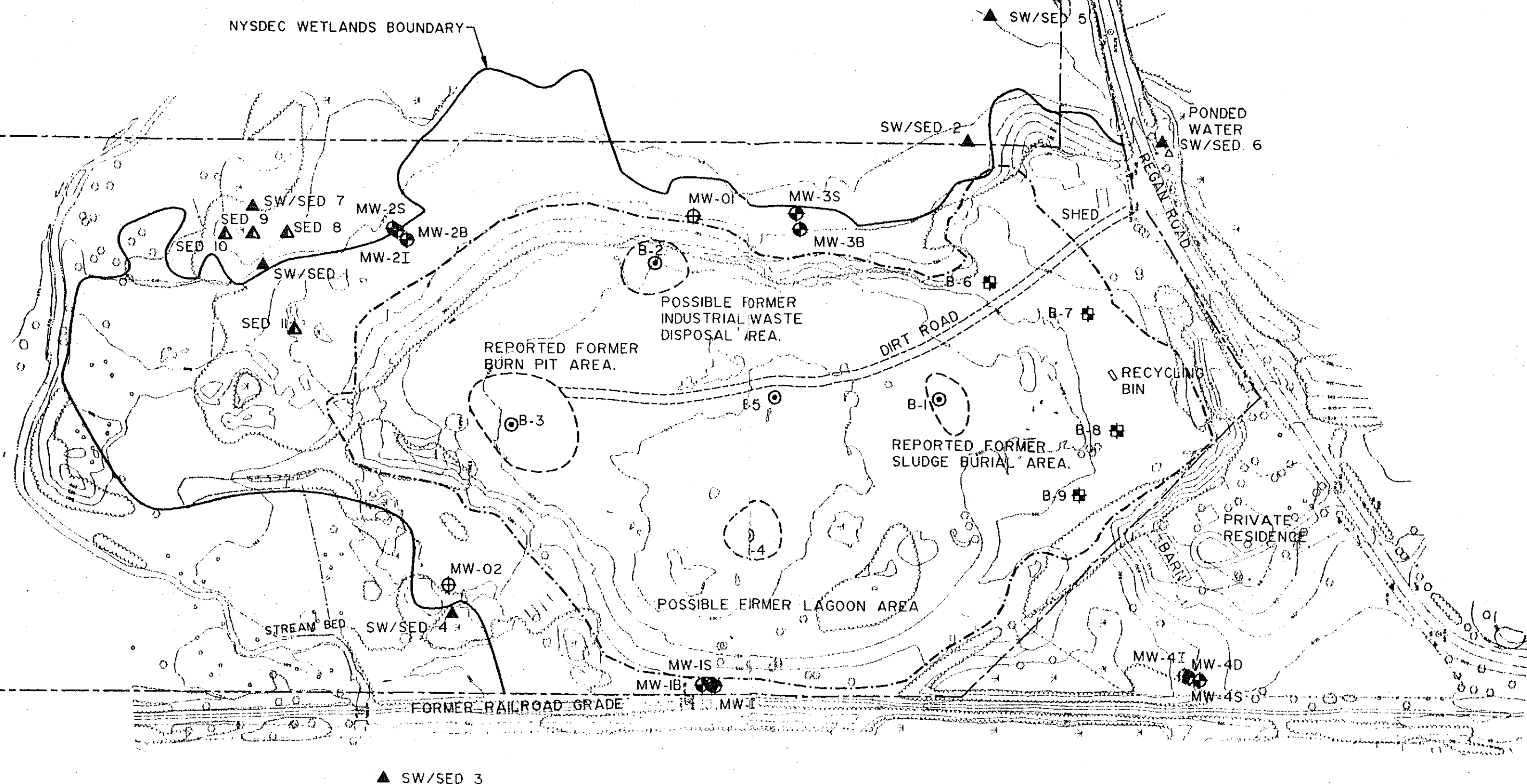


CONTOUR INTERVAL = 2 FEET

MONITORING POINT LOCATION PLAN

URS
CONSULTANTS, INC.

FIGURE 3-1

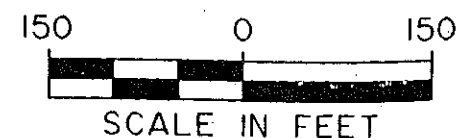


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2. PROJECT VERTICAL CONTROL IS BASED UPON NATIONAL GEODETIC VERTICAL DATUM OF 1929 AS ESTABLISHED ON USGS MONUMENT "ALBANY 573" ELEV. 575.540.

LEGEND

● RI MONITORING WELL (1993)	⊕ NYSDEC PHASE II MONITORING WELL (1984)
⊙ RI PIEZOMETER (1993)	▲ SURFACE WATER/SEDIMENT SAMPLE (1993, 1994)
⊠ RI SOIL BORING (1994)	



**NORTH EAST LANDFILL SITE PLAN,
EXISTING SITE CONDITIONS**

URS
CONSULTANTS, INC.

FIGURE 2-2

evaluation of the available data obtained during the long term monitoring program. The sampling frequency will only be revised in consultation between NYSDEC and the Town.

3.2.4 Analytical Program

The chemical analyses will be performed in accordance with NYSDEC Analytical Services Protocol (ASP) 10/95 Edition (or latest publication). Initially, during the first quarterly sampling event, the surface water and sediment samples will be analyzed for Baseline parameters, as specified in Table 3-1. The subsequent three quarterly sampling events will be analyzed for Routine parameters as specified in Table 3-1. Following completion of the first year (four quarters) of sampling, assuming the type of contaminants detected, the concentrations, and distribution are similar to what was identified during the RI, the list of parameters to be monitored will be reduced to the Site Specific Parameter List (SSPL) as shown on Table 3-2. Any additional compounds detected during the first year monitoring which exceed the SCGs, but are not on the SSPL, will be added to the list and monitored during the subsequent sampling events.

3.2.5 Action Levels

Similar to action levels proposed for monitoring well sample results, action levels for surface water and sediments are established as concentrations twice that of the highest contaminant levels observed during the RI as shown in Tables 2-2 and 2-3. Over the long term, however, contaminant levels are expected to steadily decrease. Once that trend is established, action levels will change to twice the value of a moving average of the previous three sampling results.

In the event that action level concentrations are obtained at one or more sampling locations, contingent sampling will be instituted as described in Section 3.7. Additionally, should a contaminant release from the landfill (e.g. leachate seep) be observed, contingent sampling may also be instituted.

3.3 Leachate Monitoring

There is presently no leachate collection system, nor are there any plans to install one, at the Town of North East Landfill. Additionally, there are no documented reports of leachate seeps/breakouts associated with the landfill. Consequently, no monitoring of leachate at the site is proposed as part of the long term monitoring plan.

In the event any leachate seeps are identified during the inspection or monitoring events at the site, they will be repaired as outlined in the O&M Manual. If persistent leachate seeps are observed, samples will be collected and analyzed for the routine parameters listed in Table 3-1.

3.4 Landfill Gas Monitoring

3.4.1 Landfill Gas Concerns

With regard to gas emissions associated with the landfill there are two potential concerns:

- Emissions to the atmosphere of non-methane organic compounds (NMOCs) and,
- Offsite migration of methane gas generated by decomposition of wastes in the landfill through the subsurface.

In March 1996, New Source Performance Standard (NSPS) Emission Guidelines for municipal solid waste landfills (MSWLs) were promulgated into law. These new guidelines are applicable to MSWLs that meet the following three conditions:

- Accepted waste after November 8, 1987 or have additional design capacity available for future waste deposition;
- Has a design capacity greater than or equal to 2.5 million megagrams (2.75 million tons) or 2.5 million cubic meters (3.25 million cubic yards); and,

- Has a nonmethane organic compound (NMOC) emission rate of 50 megagrams (55 tons) per year as determined by an NMOC emission rate calculation.

MSWLs meeting this criteria must file a design capacity report and install collection and control systems meeting the requirements of 40 CFR 60.752 (b)(2)(ii) and obtain a Title V permit.

Whereas the Town of North East landfill did not close until 1989, the capacity of the landfill is only about 0.5 million cubic yards, which is well below the required volume. Additionally, the soil gas survey of the landfill conducted during the RI indicated that many of the chemical constituents associated with industrial waste disposal at the site were still present in soil pore space above the water table over a large portion of the landfill. The highest concentrations of these constituents were observed at the former burn pit and sludge burial areas. Actual landfill gas emission rates for chemical constituents were measured using an emission isolation flux box and modeled to predict ambient air concentrations at the site. The predicted emissions rate potential and ambient concentrations are within acceptable limits as defined in NYSDEC's "Air Guide-1" for each of the constituents detected in the samples. These data indicate that the landfill does not adversely impact air quality above the landfill or beyond its perimeters. On this basis, monitoring of the landfill for NMOC emissions is not required, nor warranted, and consequently, will not be included in the environmental program. The potential for offsite migration of methane at the Town of North East landfill is minimized by the subsurface geologic and hydrogeologic conditions. Gas migrates through the subsurface in areas where soils are permeable and unsaturated. At the site the soils to the east consist of low permeability, silty clay. Additionally, the groundwater to the north and east, beyond the limits of the landfill, is at or very near the ground surface. Consequently, the potential for lateral gas migration to the north or east, beyond the limits of the landfill is very limited. To the south and west, the soils consist predominantly of sands and the groundwater table varies from about 10 to 15 feet below the ground surface. These conditions are more conducive to gas migration. However, the areas to the west and south are topographically higher than the landfill which helps to minimize the lateral migration. Inasmuch as the gas, if any, will follow the path of least resistance to the surface, it is more likely to discharge to the atmosphere at or near the landfill boundary where the soils are thinner. This is even more likely, in that the depth of the wastes along the western and southern portions of the

landfill is only a few feet (maximum) below the ground surface, and there are no confining layers to prevent the gas from migrating vertically to the surface.

3.4.2 Monitoring

While offsite migration of gas through the subsurface is expected to be minimal for the reasons indicated previously, it is still necessary to monitor for methane in accordance with Part 360 2.17 (f). To accomplish this monitoring, a program of on-site testing for gas migration is detailed below:

During the first year following completion of the landfill closure, monitoring for gas migration will be performed during three of the four quarterly monitoring events:

- Mid-Spring (May)
- Mid-Summer (August); and
- Mid-Fall (November).

These times were selected to coincide with the time when gas is most likely to be actively migrating. The mid-spring date represents the time when the gas collected and retained in the landfill, due to winter freezing of the soils, could be released. Mid-summer should see a drop in the groundwater table which could allow a greater volume of subsurface gas to migrate. Also, during this period the summer temperatures will cause any gas to expand enhancing detection capabilities. The fall period offers the greatest available cross-section of unsaturated soil for gas to migrate through since it is at this time of the year when the groundwater table is at its lowest. Finally, it should be noted that no winter sampling is planned because at that time of year the soil column is generally frozen to two to three feet thereby effectively limiting the potential for gas migration. 

Monitoring will be performed around the entire periphery of the landfill at points located approximately 400 feet apart except in the southwest corner of the site in the vicinity of the nearby residence (the approximate locations are shown on Figure 3-1). The actual methodologies of the

Gas Monitoring Program are described in the Quality Assurance Project Plan (QAPP) which is included as Appendix B.

Should gas monitoring indicate that offsite migration of gas through the subsurface is below action levels (Sect. 3.4.3) during the first year, then the monitoring frequency will be decreased to annually.

3.4.3 Action Levels

Should the combustible gas concentration be determined to exceed the lower explosive limit (LEL) at any of the monitoring points or 25 percent of the LEL within a structure, an evaluation will be made to determine whether the frequency of monitoring should be increased and whether the monitoring network and/or approach should be modified to enhance detection capabilities. This evaluation and any subsequent recommendation will be submitted to the NYSDEC for concurrence.

3.5 Methodology

A QAPP including data audit procedures, is included as Appendix B.

A Field Sampling Plan is included as Appendix C.

3.6 Reporting Requirements

A report detailing the results obtained from each sampling event will be submitted for review by NYSDEC within 90 days of the completion of each round of sampling. This report will include:

- Gas Monitoring Point Readings
- Analytical results for Groundwater, Surface Water and Sediments
- Groundwater elevations and other pertinent field observations;

- Field sampling logs, including purging methods, description of sampling equipment, and field parameter measurements;
- Discussion of results; and,
- Analysis of causes of unexpected results, if any, and proposed actions.

3.7 Contingent Sampling

3.7.1 Determination of Need for Contingent Sampling

In the event that a groundwater, surface water, sediment, or gas concentration detected during a sampling event exceeds the established action level concentration, contingent sampling will be required to confirm, and aid in determination of probable cause for, the exceedance.

3.7.2 Contingent Sampling Locations

If an increase in contamination in groundwater surface water or sediments is indicated through the exceedance of the action levels, the affected monitoring points will be sampled and analyzed for the baseline parameters (Table 3-1) within 90 days of noting the exceedance. Contingency monitoring will continue quarterly until the elevated parameter(s) is shown not to be landfill-derived or that the release by the landfill has been remediated. If the concentrations of any of the baseline parameters are shown to be at or below the existing water quality values for two consecutive sampling events, they will be removed from the contingency water quality monitoring program. If the concentrations for all the baseline parameters are shown to be at or below existing water quality values for two consecutive sampling events, the monitoring will return to the original operational water quality monitoring.

If a contaminant release (i.e. leachate seep) from the landfill is observed, appropriate remedial actions as outlined in the O & M manual will be reviewed and implemented as necessary. Additionally, surface water at the nearest point downstream from the release will be sampled and analyzed for the Routine parameters (Table 3-1) within 30 days of the release. Contingency monitoring will continue quarterly until the release from the landfill has been remediated, or until it has been shown that there is no impact to surface water from the release.

Where combustible gas concentrations exceed the LEL at a perimeter monitoring point or 25 percent of the LEL within a structure, these locations will be identified in a separate report. Immediately upon detection of gas at these levels, appropriate remedial actions as outlined in the O & M Manual will be reviewed and implemented as necessary. Where imminent danger does not exist, NYSDEC will be consulted to obtain concurrence regarding the selected remedial action.

3.7.3 Contingent Sample Frequency

Contingent sampling is performed to aid in the determination of the cause of an action level exceedance and, in many cases, to aid in selection of a remedy. The frequency and duration of contingent sampling, if required, will be a subject for discussion between the Town and NYSDEC.

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- NYSDEC, 1995. Record of Decision for the North East Landfill, September, Albany, NY
- Simmons, E.T., et al., 1961. Groundwater Resources of Dutchess County, New York: U.S. Geological Survey Bulletin GW-43, Albany, New York, 82 pp. and Plates.
- URS, 1994. Remedial Investigation at the North East Landfill, October 1994.
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- Wehran Engineering P.C., and CDM, 1983. Engineering Investigations and Evaluations of Inactive Hazardous Waste Disposal Sites. Phase I Investigation North East Landfill.
- Wehran Engineering P.C., and CDM, 1984. Engineering Investigations at Inactive Hazardous Waste Sites - Phase II Investigation, Town of North East Landfill.

TABLE 2-1
SUMMARY OF MONITORING WELLS AND PIEZOMETERS
INSTALLED AT NORTH EAST LANDFILL

WELL ID	RISER ELEVATION	GROUND ELEVATION	SCREEN DEPTH	SCREEN ELEVATION	WELL TYPE	SCREENED UNIT
MW-1S	591.82	590.03	10-20'	580.0-570.0	2" stainless steel	S&G
MW-1I	592.15	590.20	48-58'	542.2-532.2	2" stainless steel	S&G
MW-1B	591.57	589.60	85-103'	504.6-486.6	3-5/8" open rock	LS
MW-2S	578.05	575.86	4-14'	571.9-561.9	2" stainless steel	CSS
MW-2I	577.62	575.66	32-42'	543.7-533.7	2" stainless steel	CSS/S&G
MW-2B	578.94	576.45	67-82'	509.5-494.5	2" stainless steel	LS
MW-3S	578.96	577.75	5-15'	572.8-562.8	2" stainless steel	CSS
MW-3B	580.94	578.62	66-83'	512.6-495.6	3-5/8" open rock	LS
MW-4S	597.49	595.64	13-23'	582.6-572.6	2" stainless steel	S&G
MW-4I	594.89	592.75	43-53'	549.8-539.8	2" stainless steel	S&G
MW-4D	595.73	594.19	66-76'	528.2-518.2	2" stainless steel	S&G
B-1**	607.25	604.70	15-25'	589.4-579.4	2" PVC	FILL/CSS
B-2**	603.13	601.40	15-25'	585.9-575.9	2" PVC	FILL/CSS
B-3**	604.43	602.70	25-35'	577.3-567.3	2" PVC	S&G
B-4**	613.59	611.60	31-41'	580.7-570.7	2" PVC	S&G
B-5**	610.87	608.80	21-31'	588.0-578.0	2" PVC	CSS
MW-01*	581.07	579.77	5-20'	574.8-559.8	2" PVC	CSS
MW-02*	583.28	582.07	15-25'	567.1-557.1	2" PVC	S&G

NOTES: * - Well installed by CDM, 1984 Phase II Investigation.
 ** - Piezometer elevation increased since original installation due to landfill cap.
 S&G - Sand and Gravel unit.
 CSS - Clayey, Sandy Silt unit.
 FILL - Fill unit.
 LS - Limestone Bedrock

TABLE 2-2
NORTH EAST LANDFILL RI/FS
SURFACE WATER ANALYTICAL RESULTS
ORGANIC AND INORGANIC ANALYSIS

Sample ID	SCG	SW-1	SW-3	SW-4	SW-5	SW-6	SW-1 *	SW-2	SW-7
Date Sampled	VALUE	12/7/93	12/7/93	12/7/93	12/7/93	12/7/93	5/26/94	05/26/94	05/26/94
2-Butanone	--							11.00	
bis(2-Ethylhexyl)phthalate	50		1						2
Aluminum	100		169		169		19.6		166
Antimony	1600								84.4
Arsenic	190	6.4					17.9		
Barium	--	174	7	17	9		188	152	16
Beryllium	--						0.4		
Cadmium	--								
Calcium	--	104000	34500	93900	51500	60200	92200	90500	71400
Chromium	--								
Cobalt	--						4.2		
Copper	CALC		3.7						
Iron	300	5570	153	70	278	174	6870	1330	167
Lead	CALC				2.4		4.9	3.4	3.7
Magnesium	--	45400	12300	33700	21700	25100	41000	37800	31200
Manganese	--	1080	15.6	24.8	37.1	30.6	1300	757	21.9
Mercury	0.2	0.25						0.86	0.28
Nickel	--								
Potassium	--	4350	2820	1270	1750	2240	4140	3020	1290
Selenium	1					2.3			
Silver	--								
Sodium	--	20200	11300	15100	4180	4870	19200	17000	14400
Thallium	--								
Vanadium	14		4.8				15.5		
Zinc	CALC	3.9	3.8	92.1	5.6	3.7	3.2	5.0	
Cyanide	--								

Only detected results reported.

All values are ug/L (ppb).

-- No SCG value identified for this parameter.

* - NYSDEC Sample Analysis (data not audited by URS)

- SCG exceedance

TABLE 2-2 (cont'd)
NORTH EAST LANDFILL RI/FS
SURFACE WATER ANALYTICAL RESULTS
WET CHEMISTRY PARAMETERS

Sample ID	SCG	SW-1	SW-3	SW-4	SW-5	SW-6	SW-2	SW-7
Date Sampled	VALUE	12/7/93	12/7/93	12/7/93	12/7/93	12/7/93	05/26/94	05/26/94
Hardness	--	446.	137.	373.	218.	254.	382	307
Total Dissolved Solids	--	504	200	453	256	254	1470	668
Total Suspended Solids	--	9					652	125
Total Phosphorus	--	0.024	0.016			0.045		
Nitrate	--	0.317	3.04	0.837	0.582	0.626	0.042	0.27
Phenols	--							
Sulfate	--	33.1	23.5	32.5	29.8	28.4	29.8	69.5
Alkalinity	--							
p.H. (Field)	--	7.8	8.4	7.8	8.6	8.4	7.83	7.62
Bicarbonate	--	185	67	258	168	166	16	8
BOD	--			35	19			
COD	--							
Chloride	--	55	21	51	1	1	51	50
Ammonia - Nitrogen	CALC	0.20			0.09	0.13	0.178	
TKN	--	0.56	0.12	0.09	0.50	0.56	0.279	
Acidity	--	62.1	0.9	33.1	7.1	7.1	56	76
Oil & Grease	NV	2	1.8	1.6	4.2			
TOC	--	4	3	3	4	3		
Sulfide	0.002	0.42	0.20	0.26	0.30	0.44	38.8	44

All results reported in mg/L, unless otherwise noted.

Only detected results reported.

NV - Not visible

-- - No SCG value identified for this parameter.

CALC - Calculated value. See Table 4-3.

- SCG exceedance

TABLE 2-3
NORTH EAST LANDFILL RI/FS
SEDIMENT ANALYTICAL RESULTS
ORGANIC AND INORGANIC ANALYSIS

Sample ID	SCG		SED-1	SED-3	SED-4	SED-5	SED-6	SED-2	SED-7
Date Sampled			12/7/93	12/7/93	12/7/93	12/7/93	12/7/93	05/26/94	05/26/94
Methylene Chloride (ppb)	-		22	5	5	4	4		
Fluoranthene (ppb)	17340 *						48		
bis(2-Ethylhexyl)phthalate (ppb)	3891.5 *						54		
4,4'-DDE (ppb)	0.53 *		2.1						
Endrin (ppb)	32.8 *							0.44	
	Low	Severe							
Aluminum			7530	11000	16300	4750	13900	6400	2750
Antimony	2	25							
Arsenic	6	33	595	5.6	9.3	3.7	12	10.8	664
Barium			242	44	61.2	11.4	32.5	16	1020
Beryllium				0.25	0.52	0.11	0.29	0.13	
Cadmium	0.6	9						3.1	
Calcium			20000	3380	11900	84600	65300	39100	27900
Chromium	26	110	9.6	12.6	20.6	6.6	17	3.2	
Cobalt			23.2	12.9	17	5.9	14.6	9.5	60.4
Copper	16	110	15.3	12.8	43.5	7.9	40.1	8.4	
Iron	20000	40000	227000	30600	39000	15800	38200	15700	253000
Lead	31	110	29.4	11.4	33.3	10.3	31.1	21.7	71.1
Magnesium			5400	7560	10000	46200	40500	20900	1760
Manganese	460	1100	1710	1930	987	358	1180	666	10700
Mercury	0.15	1.3						0.36	7.4
Nickel	16	50	60.5	21.2	32.5	9.5	30.2	7.4	
Potassium			773	849	1600	421	135	190	
Selenium									
Silver	1	2.2							
Sodium			230	45.3	83.6	34.7	92		
Thallium									
Vanadium			42	17	27.3	9.3	25.6	8.5	11.1
Zinc	120	270	58.2	62.7	371	47.2	88	35.9	20.6
Cyanide									

Only detected results reported.

All values are mg/kg(ppm), unless otherwise specified.

- No value identified for this parameter.

- Sample exceeds SCG.

- Sample exceeds severe effect level SCG (metals only).

* - Guidance value specific to sample with detection.

TABLE 2-3 (cont'd)
NORTH EAST LANDFILL RI/FS
SEDIMENT ANALYTICAL RESULTS
WET CHEMISTRY PARAMETERS

Sample ID	SCG	SED-1	SED-3	SED-4	SED-5	SED-6	SED-2	SED-7
Date Sampled	VALUES	12/7/93	12/7/93	12/7/93	12/7/93	12/7/93	05/26/94	05/26/94
Ammonia - Nitrogen	--	4	1	4.95	0.6	1.1	13.5	25.6
Nitrate - Nitrogen	--	R	R	R	R	R	239	1330
TKN	--	460	200	975	108	330	215	148
% Moisture	--	33	35	53	49	41	25.9	85.4
P.H. (s.u.)	--	R	R	R	R	R	8.6	7.73
TOC	--	53000	4700	22000	12000	17000	41000	45000
PHENOLS	13.2 *			50				

All results reported in mg/kg, unless otherwise noted.

R - Data rejected due to ASP holding time exceedance.

* - Guidance for benthic aquatic life chronic toxicity specific to SED-4

- Sample exceeds SCG.

TABLE 2-3A
FS SEDIMENT SAMPLING ANALYTICAL RESULTS

Sample I.D.			SED 8	SED 9	SED 10	SED 11
Date Sampled			12/22/94	12/22/94	12/22/94	12/22/94
SCG						
Compound	Low	Severe				
Aluminum			40200 J	3580 J	10500 J	10200 J
Antimony	2	25				
Arsenic	6	33	26.5 J	545 J	14.8 J	7.1 J
Barium			292 J	1910 J	162 J	37.9 J
Beryllium						
Cadmium	0.6	9		12.8 J		3.2 J
Calcium			19900 J	45800 J	27200 J	31900 J
Chromium	26	110	46.2 J		11.5 J	13.7 J
Cobalt			29.1 J	51.7 J	15.3 J	10.7 J
Copper	16	110	61.4 J		17.6 J	25.4 J
Iron	20000	40000	76000 J	165000 J	27600 J	20000 J
Lead	31	110	59.1 J	8.2 J	47.1 J	41.7 J
Magnesium			23800 J	5860 J	6910 J	19600 J
Manganese	460	1100	3950 J	23600 J	2940 J	221 J
Mercury	0.15	1.3	3.0 J	0.47 J	0.87 J	0.34 J
Nickel	16	50		41.4 J	28.1 J	21.9 J
Potassium			2510 J			702 J
Selenium			7.2 J		5.2 J	0.63 J
Silver	1	2.2				
Sodium						
Thallium						
Vanadium			50 J	17.5 J	15.9 J	15.4 J
Zinc	120	270	209 J	56.2 J	109 J	130 J

Only detected results reported.

All results reported in mg/kg.

J-values are estimated due to % moisture being >50%.

 - Sample exceeds SCG.

 - Sample exceeds severe effect level SCG (metals only).

TABLE 2-4
NORTH EAST LANDFILL RI/FS
GROUNDWATER ANALYTICAL RESULTS
ORGANIC ANALYSIS

Sample ID	SCG	MW-1S	MW-1S	MW-1I	MW-1I	MW-1B	MW-1B	MW-2S	MW-2S	MW-2S *	MW-2I	MW-2I
Date Sampled	VALUE	12/8/93	05/25/94	12/8/93	05/26/94	12/8/93	05/26/94	12/9/93	05/26/94	05/26/94	12/9/93	05/26/94
Vinyl Chloride	2							13	32	23		
Chloroethane	5											
Methylene Chloride	5	2	2		2		2			2		
Acetone	50							52	19	25		
Carbon Disulfide	50											
1,1-Dichloroethane	5											
1,2-Dichloroethene (total)	5											
2-Butanone (MEK)	50							22	5	10		
1,2-Dichloropropane	5											
4-Methyl-2-pentanone (MIBK)	50											
2-Hexanone	50											
Tetrachloroethene	5		4				3					
Toluene	5											
Ethylbenzene	5											
Styrene	5											
Xylene (total)	5											
Di-n-butylphthalate	50											
Butylbenzylphthalate	50											
bis(2-Ethylhexyl)phthalate	50			3		5	1					
beta-BHC	ND											
Heptachlor	ND											
Aldrin	ND											
Endosulfan I	50											
Dieldrin	ND											
4,4'-DDT	ND			0.043		0.062						
Methoxychlor	35				0.099							

Only detected results reported.

All values reported in µg/L (ppb).

-SCG exceedance.

* NYSDDEC split sample results (data not audited by URS)

TABLE 2-4 (cont'd)
NORTH EAST LANDFILL RI/FS
GROUNDWATER ANALYTICAL RESULTS
ORGANIC ANALYSIS

Sample ID	SCG	MW-2B	MW-2B	MW-3S	MW-3S	MW-3S	MW-3S *	MW-3B	MW-3B	MW-4S	MW-4S	MW-4I
Date Sampled	VALUE	12/9/93	05/26/94	12/9/93	05/26/94	05/26/94	05/26/94	12/9/93	05/26/94	12/8/93	05/24/94	12/8/93
Vinyl Chloride	2											
Chloroethane	5											
Methylene Chloride	5						4			3		
Acetone	50						8					
Carbon Disulfide	50											
1,1-Dichloroethane	5											
1,2-Dichloroethene (total)	5											
2-Butanone (MEK)	50				23							
1,2-Dichloropropane	5											
4-Methyl-2-pentanone (MIBK)	50											
2-Hexanone	50											
Tetrachloroethene	5											
Toluene	5											
Ethylbenzene	5											
Styrene	5											
Xylene (total)	5											
Di-n-butylphthalate	50										5	
Butylbenzylphthalate	50											2
bis(2-Ethylhexyl)phthalate	50									1		
beta-BHC	ND		0.0066									
Heptachlor	ND									0.42		0.11
Aldrin	ND											
Endosulfan I	50									0.023		
Dieldrin	ND									0.019		
4,4'-DDT	ND											
Methoxychlor	35											

Only detected results reported.

All values reported in µg/L (ppb).

-SCG exceedance.

• NYSDEC split sample results (data not audited by URS)

TABLE 2-4 (cont'd)
NORTH EAST LANDFILL RI/FS
GROUNDWATER ANALYTICAL RESULTS
ORGANIC ANALYSIS

Sample ID	SCG	MW-4I	MW-4D	MW-4D	MW-01	MW-01	MW-02	MW-02
Date Sampled	VALUE	05/24/94	12/8/93	05/24/94	12/9/93	05/25/94	12/9/93	05/26/94
Vinyl Chloride	2							5
Chloroethane	5					140		
Methylene Chloride	5		2					
Acetone	50		11			460		
Carbon Disulfide	50					22		
1,1-Dichloroethane	5				12	220		
1,2-Dichloroethene (total)	5					18		
2-Butanone (MEK)	50				12	400		44
1,2-Dichloropropane	5					5		
4-Methyl-2-pentanone (MIBK)	50					58		
2-Hexanone	50					31		
Tetrachloroethene	5							
Toluene	5				4	100		
Ethylbenzene	5					11		
Styrene	5					34		
Xylene (total)	5					84		
Di-n-butylphthalate	50	5		9				
Butylbenzylphthalate	50							
bis(2-Ethylhexyl)phthalate	50							
beta-BHC	ND							
Heptachlor	ND							
Aldrin	ND							
Endosulfan I	50							
Dieldrin	ND							
4,4'-DDT	ND							
Methoxychlor	35							

Only detected results reported.

All values reported in µg/L (ppb).

-SCG exceedance.

TABLE 2-4 (cont'd)
NORTH EAST LANDFILL R/FS
GROUNDWATER ANALYTICAL RESULTS
INORGANIC ANALYSIS

Sample ID	SCG	MW-1S	MW-1S	MW-1I	MW-1I	MW-1B	MW-2S	MW-2S	MW-2S *	MW-2I	MW-2I	MW-2B
Date Sampled	VALUE	12/8/93	05/25/94	12/8/93	05/26/94	12/8/93	05/26/94	12/9/93	05/26/94	12/9/93	05/26/94	12/9/93
Aluminum	--	658	518	812	147	628		158	10400	1440	252	145
Antimony	3		69.1									
Arsenic	25	3.6						4.9	3.1	6.2	7.9	3.2
Barium	1000	23	15	21	15	15		18	55	32.7	35	41
Beryllium	--								0.8			12
Cadmium	--									4.6		
Calcium	--	94400	101000	92300	85700	61500	254000	45800	101000	56200	66800	33500
Chromium	50	35.8	43	105	56	68.2	11.4	6.4	26.6	10.2	5.9	10.4
Cobalt	--											
Copper	200	6.4	4.2	5.4		3.6	3.8	4.3			3.9	6.1
Iron	300	2480	1860	2270	810	2840	309	1660	24800	3480	3810	175
Lead	15	3.1	4.5	1.09	8.6			1.7	19.3	2.5		3.8
Magnesium	35000	40000	40400	37500	34100	30900	21900	22600	45100	25800	42000	17700
Manganese	300	405	344	341	87.6	70.2		152	849	223	501	29.9
Mercury	2											0.22
Nickel	--	22.2		68.3	28.2	34.7		41.2	121	57.8	36.9	
Potassium	--	1030	845	1610	800	2590	5320	957	1380	1110	4680	2120
Selenium	10										3	3.5
Silver	50											
Sodium	20000	19300	22200	14400	13300	11600	14600	11900	13900	12700	38900	16200
Thallium	--											
Vanadium	--					4.7			14	11.9		
Zinc	300	28.6	7.8	22.7	18.9	19.5		37.3	69.2	34	26.2	36.7
Cyanide	--											

Only detected results reported.

All values are µg/L (ppb).

ND - Not detected

-- No SCG value identified for this parameter.

- SCG exceedance.

*. NYSDEC split sample analysis (data not audited by URS).

TABLE 2-4 (cont'd)
NORTH EAST LANDFILL RI/FS
GROUNDWATER ANALYTICAL RESULTS
INORGANIC ANALYSIS

Sample ID	SCG	MW-2B	MW-3S	MW-3S	MW-3S *	MW-3B	MW-3B	MW-4S	MW-4S	MW-4I	MW-4I	MW-4D	MW-4D
Date Sampled	VALUE	05/26/94	12/9/93	05/26/94	05/26/94	12/9/93	05/26/94	12/8/93	05/24/94	12/8/93	05/24/94	12/8/93	05/24/94
Aluminum	--	1080	1790	6100	860		1150	1610	901	377		161	
Antimony	3												
Arsenic	25		6.7	4.7	3.3			2.7			2.9		
Barium	1000	18	27	35	23	6	16	26	29	15	9	10	11
Beryllium	--	1.4		0.3							1		
Cadmium	--												
Calcium	--	36800	42100	62800	38100	57400	89300	74300	80800	54400	50600	77600	74900
Chromium	50	59.1		32.4	3.6	4.9		25.2	23.7	162		47.8	17.7
Cobalt	--						13.4		7.2				9.8
Copper	200	8.3	4.7	16.3	4.2			12.3	8	9.7			
Iron	300	2150	3970	14300	1740	152	1210	9890	6310	2460	1430	511.1	290
Lead	15	4.6		14.7	1.4		10.8	3.9	6.1		4.1		3.1
Magnesium	35000	17600	16500	25500	15100	27700	36.4	26700	30300	14300	11700	37900	35000
Manganese	300	172	262	570	145	20.6	457	817	665	981	568	51.3	20.7
Mercury	2								0.2				
Nickel	--	3.8		28.4	12.2			129	56.4	122	22.7	20.4	
Potassium	--	1230	1160	1370		2850	1180	1430	1690	1140	600	1820	1320
Selenium	10					2.6							
Silver	50								10.1			3.5	
Sodium	20000	8490	2250	2850	2970	15300	23500	7460	7820	5740	4510	17200	15100
Thallium	--												
Vanadium	--		5.3		9			7.4				4.9	
Zinc	300	75.6	10.4	46.6	23.6		18.4	26.2	38.2	35.1	29.3	41.3	9.5
Cyanide	--												

Only detected results reported.

All values are µg/L (ppb).

ND - Not detected

-- No SCG value identified for this parameter.

- SCG exceedance.

*- NYSDEC split sample analysis (data not audit

TABLE 2-4 (cont'd)
NORTH EAST LANDFILL RI/FS
GROUNDWATER ANALYTICAL RESULTS
INORGANIC ANALYSIS

Sample ID	SCG	MW-01	MW-01	MW-02	MW-02
Date Sampled	VALUE	12/9/93	05/25/94	12/9/93	05/26/94
Aluminum	--	2510	225		387
Antimony	3				
Arsenic	25		3.2	3.6	
Barium	1000	35	47	17	22
Beryllium	--				
Cadmium	--				
Calcium	--	165000	168000	99500	110000
Chromium	50	6	6.6		
Cobalt	--		18.9		
Copper	200	9.3			6.8
Iron	300	5780	8720	292	1000
Lead	15	5.7	6.7	2.1	3.8
Magnesium	35000	38600	33800	41000	42200
Manganese	300	174	3900	164	393
Mercury	2				
Nickel	--				
Potassium	--	4710	8820	2710	25300
Selenium	10	2.7			
Silver	50			3.6	
Sodium	20000	11700	13500	16400	16100
Thallium	--				
Vanadium	--				
Zinc	300	20.6	9.4	6.6	17.3
Cyanide	--				

Only detected results reported.

All values are µg/L (ppb).

ND - Not detected

-- No SCG value identified for this parameter.

- SCG exceedance.

TABLE 2-4 (cont'd)
NORTH EAST LANDFILL RI/FS
GROUNDWATER ANALYTICAL RESULTS
WET CHEMISTRY ANALYSIS

Sample ID	SCG	MW-1S	MW-1S	MW-1I	MW-1I	MW-1B	MW-1B	MW-2S	MW-2S	MW-2I	MW-2I	MW-2B	MW-2B
Date Collected	VALUE	12/8/93	05/25/94	12/8/93	05/26/94	12/8/93	05/26/94	12/9/93	05/26/94	12/9/93	05/26/94	12/9/93	05/26/94
Hardness	--	400	419	385	354	281	154	207	438	340	340	157	164
Total Dissolved Solids	500	461	505	433	413	348	269	304	1350	472	2200	212	1450
Total Suspended Solids	--	693	219	40		70	28	76	3000	97	545	9	630
Total Phosphorus	--	0.112	0.027	0.037	0.054	0.033	0.119	0.087		0.107		0.062	
Nitrate	--	R	3.27	R	2.24	R	2.54	R		R	0.453	R	0.408
Phenols	0.001												
Sulfate	250	27.2	R	22.2	R	25.4	R	2.1	23.1	35.9	63.8	21	14.9
Alkalinity	--						20						
Bicarbonate	--	294	312	268	260	172	74	180	8	332	12	130	10
BOD	--				3			17	20	4		2	
COD	--												
Chloride	250	57	69	50	43	32	48	42	53	53	55	16	14
Ammonia - Nitrogen	2	0.05	0.195	0.03	1.03	0.07	0.195		0.108	0.765	1.04	0.06	0.113
TKN	--	0.12	4.28	0.09	6.52	0.11	0.195	0.35	0.177	1.13	2.56	0.07	0.517
Acidity	--	25.3	9	15.1	44	3.5	16	9.4	32	20.3	40	2	40
Oil & Grease	Non Visible	3.1				1.8		1.1		1.3		1.7	
TOC	--	1		1		2		9	1	65	1	3	1
Sulfide	50	29.4	70.4	29.8		33.6	63.6	32.4	40.8	28.7	20.4	35.2	20.4
pH (Field)		8.30	7.60	8.30	8.00	8.70	9.21	8.80	7.54	8.30	7.84	8.80	8.33

Only detected results reported.

All values are mg/L (ppm), except pH.

ND - Not detected

-- No SCG value identified for this parameter.

- SCG exceedance.

TABLE 2-4 (cont'd)
NORTH EAST LANDFILL R/F/S
GROUNDWATER ANALYTICAL RESULTS
WET CHEMISTRY ANALYSIS

Sample ID	SCG	MW-3S	MW-3S	MW-3B	MW-3B	MW-3B	MW-4S	MW-4S	MW-4I	MW-4I	MW-4D	MW-4D
Date Collected	VALUE	12/9/93	05/26/94	12/9/93	05/26/94	12/8/93	05/24/94	12/8/93	05/24/94	12/8/93	05/24/94	05/24/94
Hardness	--	173	262	248	313	295	326	195	175	350	334	
Total Dissolved Solids	500	204	485	343	490	341	369	209	282	400	496	
Total Suspended Solids	--	6760	4000		17	922	683	34	7	7		
Total Phosphorus	--	0.218		0.076		0.11	0.027	0.02	0.056		0.06	
Nitrate	--	R		R	1.51	R	1.44	R	0.2	R	8.12	
Phenols	0.001						2.73					
Sulfate	250	45.6	81.6	38.4	56.2	17.5	47.1	17.7	30.3	22.8	35.2	
Alkalinity	--											
Bicarbonate	--	129	10	217	10	220	12	156	8	255	10	
BOD	--									2		
COD	--								15			
Chloride	250	1	14	35	48	23	41	8	37	44	46	
Ammonia - Nitrogen	2		0.088		0.136	0.03	0.086	0.15	0.086	0.06	0.076	
TKN	--	0.25	0.084	0.07	0.156	0.55	0.114	0.49	0.065	0.27	1.28	
Acidity	--	5.8	28	4.8	60	17.7		11.6	20	12.5	12	
Oil & Grease	Non Visible					3.9	2.2				2.4	
TOC	--	1		2		3		1		1		
Sulfide	50	34.2	28.8	34.8	53.2	31.9		32	4	32		
pH (Field)		7.50	8.05	9.00	7.60	8.30	7.95	8.30	7.86	8.20	8.25	

Only detected results reported.

All values are mg/L (ppm), except pH.

ND - Not detected

-- No SCG value identified for this parameter.

- SCG exceedance.

TABLE 2-4 (cont'd)
NORTH EAST LANDFILL R/FS
GROUNDWATER ANALYTICAL RESULTS
WET CHEMISTRY ANALYSIS

Sample ID	SCG	MW-01	MW-01	MW-02	MW-02
Date Collected	VALUE				
Hardness		571	558	417	448
Total Dissolved Solids	500	728	860	554	587
Total Suspended Solids	--	19060	10300	366	2260
Total Phosphorus	--	1.88	0.346	0.074	
Nitrate	--	R		R	0.14
Phenols	0.001			0.046	
Sulfate	250	72	13	42.2	74.6
Alkalinity	--				
Bicarbonate	--	444	630	344	420
BOD	--	8		4	
COD	--	80	203		
Chloride	250	18	34	45	55
Ammonia - Nitrogen	2	0.08	0.489	0.28	0.807
TKN	--	0.62	0.58	0.48	0.476
Acidity	--	65.1	148	69.3	96
Oil & Grease	Non Visible	8.2			
TOC	--	7	16	3	
Sulfide	50	44.8	16	29.2	40
pH (Field)		8.10	7.34	7.70	7.11

Only detected results reported.

All values are mg/L (ppm), except pH.

ND - Not detected

-- No SCG value identified for this parameter.

SCG - SCG exceedance.

TABLE 3-1

ANALYTICAL SCHEDULES AND METHOD REFERENCES

Common Name ²	Schedule A Baseline ¹ Parameters	Schedule B Routine Parameters	Suggested Method(s)
Field Parameter			
Static Water Level (in wells and sumps)	X	X	9050
Specific Conductance (field)	X	X	
Temperature (field)	X	X	
Floaters or Sinkers ³	X	X	9040 or 9041
pH (field)	X	X	
Redox Potential (field) Eh	X	X	
Dissolved Oxygen (field) ⁴	X	X	
Field Observations ⁵	X	X	180.1
Turbidity	X	X	
Leachate Indicators			
Total Kjeldahl Nitrogen	X	X	351.1, 351.2, 351.3, or 351.4
Ammonia	X	X	350.1, 350.2, or 350.3
Nitrate	X	X	9200
Chemical Oxygen Demand ⁷	X	X	410.1, 410.2, 410.3, or 410.4
Biochemical Oxygen Demand (BOD ₅) ⁷	X	X	405.1
Total Organic Carbon	X	X	9060
Total Dissolved Solids ⁷	X	X	160.1
Sulfate	X	X	9035, 9036 or 9038
Alkalinity	X	X	310.1 or 310.2
Phenols	X	X	9065, 9066, 9067, or 8040
Chloride	X	X	9250, 9251 or 9252
Total hardness as CaCO ₃ ⁷	X	X	130.1 or 130.2
Color ⁷	X		110.1, 110.2 or 110.3
Bromide	X	X	320.1
Inorganic Parameters			
Aluminum	X	? Exceed	7020
Antimony	X		6010, 7040 or 7041
Arsenic	X		7060 or 7061
Barium	X	x	6010 or 7080
Beryllium	X		6010, 7090 or 7091
Boron	X		6010
Cadmium	X		6010, 7130 or 7131
Calcium	X	x Exceed	7140
Chromium	X		6010, 7190 or 7191
Chromium (Hexavalent) ⁶	X		7195, 7196, 7197 or 7198

TABLE 3-1(Continued)

Common Name ²	Schedule A Baseline ¹ Parameters	Schedule B Routine Parameters	Suggested Method(s)
Cobalt Copper Cyanide	X X X		6010, 7200 or 7201 6010, 7210 or 7211 9010
Iron Lead Magnesium	X X X	X X X	7380 or 7381 6010, 7420 or 7421 7450
Manganese Mercury Nickel	X X X	X	7460 or 7461 7470 6010 or 7520
Potassium Selenium Silver	X X X	X	7610 6010, 7740 or 7741 6010, 7760 or 7761
Sodium Thallium Vanadium Zinc	X X X X	X X	7770 6010, 7840 or 7841 6010, 7910 or 7911 6010, 7950 or 7951
VOCs (47 compounds)	X	X ⁸	8260, 8010, 8020, 8021, and/or 8030

NOTES:

- ¹ This list contains: volatile organics for which possible analytical procedures provided in EPA SW-846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Final Update III, June 1997 (or latest publication) includes Method 8260B; metals for which SW-846 provides either Method 6010B or a method from the 7000A series of methods; and additional parameters for which possible procedures are provided in Methods for Chemical Analysis of Water and Wastes, USEPA-600/4-79-020, March, 1979 1983. The regulatory requirements pertain only to the list of parameters; the right hand column Methods is given for informational purposes only.
- ² Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.
- ³ Any floaters or sinkers found must be analyzed separately for baseline parameters.
- ⁴ Surface water only.
- ⁵ Any unusual conditions (colors, odors, surface sheens, etc.) noticed during well development, purging, or sampling must be reported.
- ⁶ The department may waive the requirement to analyze Hexavalent Chromium provided that Total and Hexavalent and Trivalent Chromium values do not exceed 0.05 mg/l.
- ⁷ These parameters will not be performed on sediment samples.
- ⁸ VOCs will not be performed on surface water and sediment samples for routine parameters.

**TABLE 3-2
SITE SPECIFIC PARAMETER LIST**

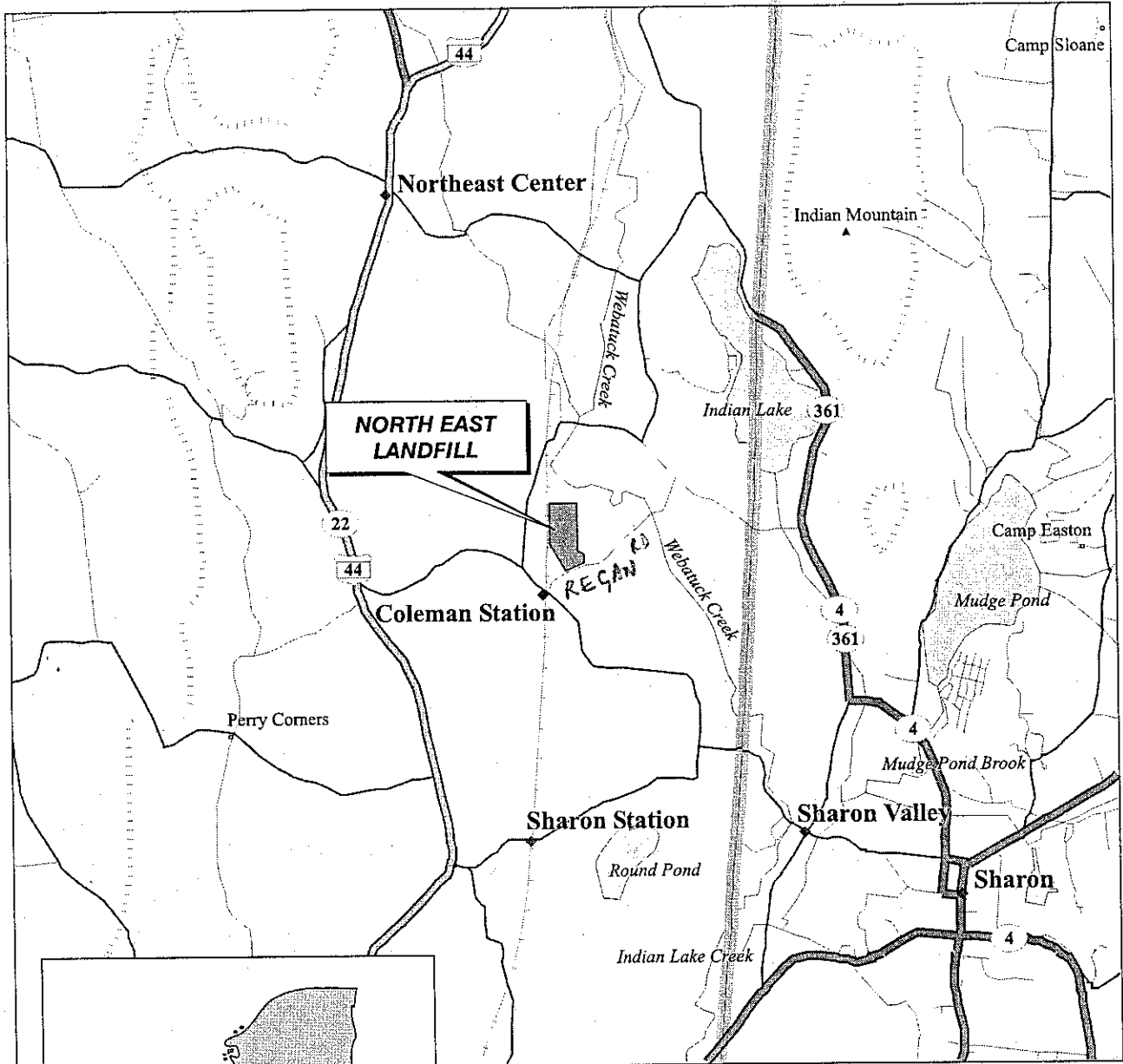
Common Name ²	SCHEDULE C Groundwater	SCHEDULE C Surface Water/Sediments	Suggested Method(s)
Field Parameter			
Static Water Level (in wells and sumps)	x	x	9050
Specific Conductance (field)	x	x	
Temperature (field)	x	x	
Floater or Sinkers ³	x	x	9040 or 9041
pH (field)	x	x	
Redox Potential (field) Eh	x	x	
Dissolved Oxygen (field) ⁴	x	x	
Field Observations ⁵	x	x	
Turbidity	x	x	180.1
Leachate Indicators			
Total Kjeldahl Nitrogen	x	x	351.1, 351.2, 351.3 or 351.4
Ammonia	x	x	350.1, 350.2 or 350.3
Nitrate	x	x	9200
Chemical Oxygen Demand ⁷	x	x	410.1, 410.2, 410.3 or 410.4
Biochemical Oxygen Demand (BOD ₅) ⁷	x	x	405.1
Total Organic Carbon	x	x	9060
Total Dissolved Solids ⁷	x	x	160.1
Sulfate	x	x	9035, 9036 or 9038
Alkalinity	x	x	310.1 or 310.2
Phenols	x	x	9065, 9066, 9067, or 8040
Chloride	x	x	9250, 9251 or 9252
Total hardness as CaCO ₃ ⁷	x	x	130.1 or 130.2
Color ⁷	x	x	110.1, 110.2 or 110.3
Bromide	x	x	320.1
Inorganic Parameters			
Aluminum	x		7020
Antimony	x		6010, 7040 or 7041
Arsenic	x		7060 or 7061
Barium	x		6010 or 7080
Beryllium	x		6010, 7090 or 7091
Cadmium	x	x	6010, 7130 or 7131
Calcium	x	x	7140
Chromium	x		6010, 7190 or 7191
Chromium (Hexavalent) ⁶	x		7195, 7196, 7197 or 7198
Cobalt	x		6010, 7200 or 7201
Copper	x		6010, 7210 or 7211
Cyanide	x		9010
Iron	x	x	7380 or 7381
Lead	x	x	6010, 7420 or 7421
Magnesium	x	x	7450

TABLE 3-2 (Continued)

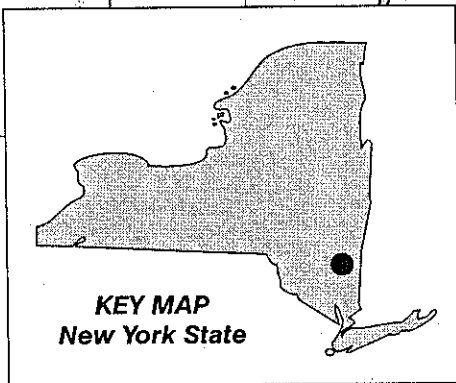
Common Name ²	SCHEDULE C Groundwater	SCHEDULE C Surface Water/Sediments	Suggested Method(s)
Manganese	x	x	7460 or 7461
Mercury	x		7470
Nickel	x		6010 or 7520
Potassium	x	x	7610
Selenium	x		6010, 7740 or 7741
Silver	x		6010, 7760 or 7761
Sodium	x	x	7770
Thallium	x		6010, 7840 or 7841
Vanadium	x		6010, 7910 or 7911
Zinc	x	x	6010, 7950 or 7951
VOCs	x	x	8260, 8010, 8020, 8021, and/or 8030

NOTES:

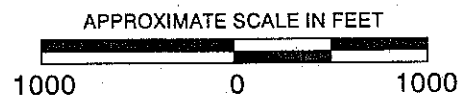
- ¹ This list contains: volatile organics for which possible analytical procedures provided in EPA SW-846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Final Update III, June 1997 (or latest publication) includes Method 8260B; metals for which SW-846 provides either Method 6010B or a method from the 7000A series of methods; and additional parameters for which possible procedures are provided in Methods for Chemical Analysis of Water and Wastes, USEPA-600/4-79-020, March, 1983. The regulatory requirements pertain only to the list of parameters; the right hand column Methods is given for informational purposes only.
- ² Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.
- ³ Any floaters or sinkers found must be analyzed separately for baseline parameters.
- ⁴ Surface water only.
- ⁵ Any unusual conditions (colors, odors, surface sheens, etc.) noticed during well development, purging, or sampling must be reported.
- ⁶ The department may waive the requirement to analyze Hexavalent Chromium provided that Total and Hexavalent and Trivalent Chromium values do not exceed 0.05 mg/l.
- ⁷ These parameters will not be performed on sediment samples.



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KEY MAP
New York State



AG10378-35319-60-080196-GCM

URS
CONSULTANTS, INC.

NORTH EAST LANDFILL SITE LOCATION MAP

FIGURE 2-1

APPENDIX A

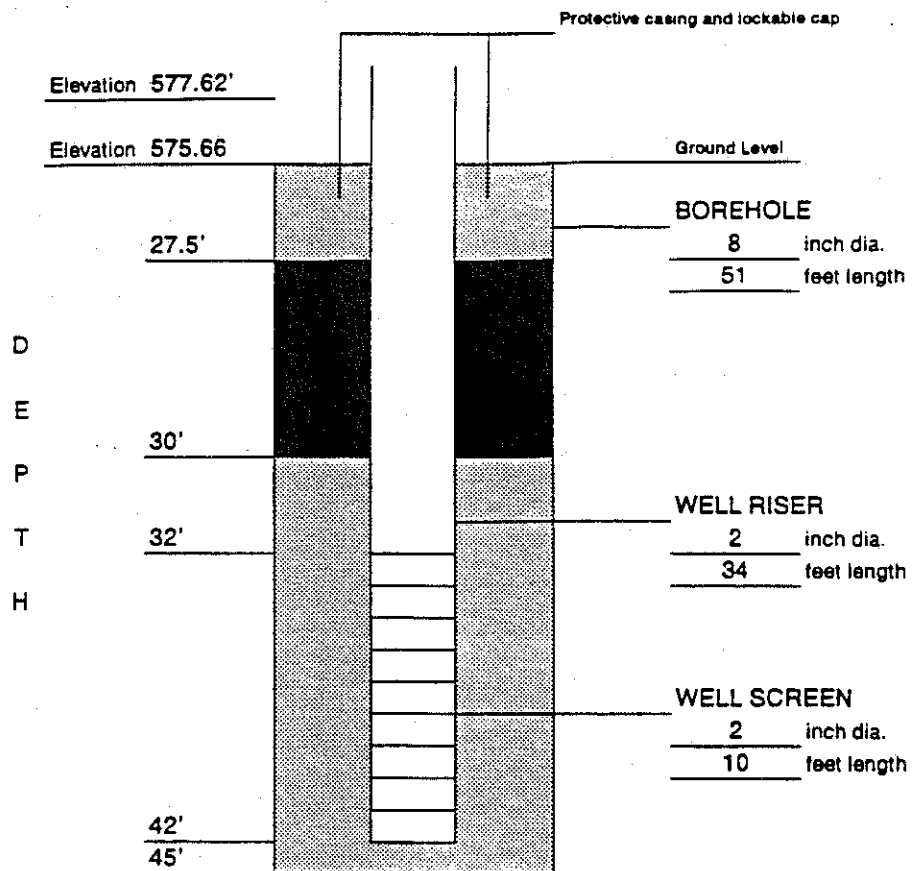
BORING LOGS

PIEZOMETERS AND WELL INSTALLATION DETAILS

Geologist:
Anish Deshpande
Drilling Company:
Soil Testing, Inc.
Driller:
Bob DeAngelis
Date:
11/17/93

depth(ft.)	lithology
0-42.5'	Sandy Silt
42.5-51	Clayey Silt

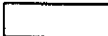
CASING MATERIAL Surface: 4" Steel Monitor: Stainless Steel		SCREEN MATERIAL Type: Stainless Steel Slot Size: 0.010"		SEAL MATERIAL Seal #1 Type: Bentonite Chips Setting: 45-51' Seal #2 Type: Bentonite Chips Setting: 27.5-30'	
FILTER MATERIAL Type: #1 Silica Sand Setting: 30-45'		ROCK CORING Cored Interval: Core Diameter: Reamed Diameter:		LEGEND Cement/Bentonite Grout Bentonite Seal Silica Sandpack	
Client: Town of North East		Project: North East Landfill		Project No.: 35319.20	
URS Consultants Inc.		Monitoring Well Construction Details		Well Number: MW-21	

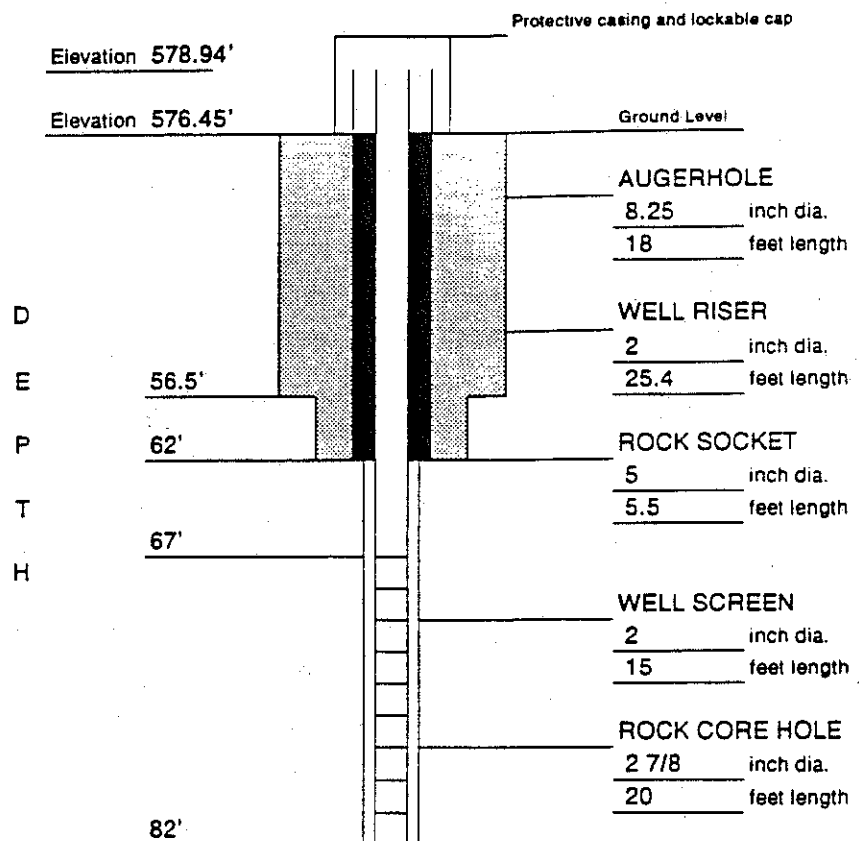


DRILLING SUMMARYGeologist:
Anish DeshpandeDrilling Company:
Soil Testing, Inc.Driller:
Bob DeAngelisDate:
11/22/93**GEOLOGIC LOG**

depth(ft.)	lithology
0-42.5'	Sandy Silt
42.5-51'	Clayey Silt
51-56.5'	Weathered Limestone
56.5-82'	Limestone

WELL DESIGN

CASING MATERIAL Surface: 6" Steel Monitor: 2" Stainless Steel 4" Stainless Steel	SCREEN MATERIAL Type: 2" Stainless Steel Slot Size: 0.010"	SEAL MATERIAL Seal #1 Type: Cement/Bentonite Grout Setting: 0-62' Seal #2 Type: Bentonite Chips Setting: 0-62'
FILTER MATERIAL Type: #1 Quartz Sand Setting: 62-82'	ROCK CORING Cored Interval: 57-82' Core Diameter: 3 7/8" socket 2 7/8" well	LEGEND  Cement/Bentonite Grout  Bentonite Seal  Silica Sandpack
Client: Town of North East	Project: North East Landfill	Project No.: 35319.20
URS Consultants, Inc.	Monitoring Well Construction Details	Well Number: MW-2B



DRILLING SUMMARY

Geologist:

Steve Frank

Drilling Company:

Soil Testing, Inc.

Driller:

Bob DeAngelis

Date:

11/3/93

GEOLOGIC LOG

depth(ft.)	lithology
0-4'	Clayey Silt
4-18'	Silt

WELL DESIGN**CASING MATERIAL**

Surface: 4" Steel

Monitor: Stainless Steel

SCREEN MATERIAL

Type: Stainless Steel

Slot Size: 0.010"

SEAL MATERIAL

Seal #1 Type: Bentonite Chips

Setting: 2-4'

Seal #2 Type:

Setting:

FILTER MATERIAL

Type: #1 Silica Sand

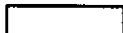
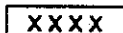
Setting: 4-16'

ROCK CORING

Cored Interval:

Core Diameter:

Reamed Diameter:

LEGEND Cement/Bentonite Grout Bentonite Seal Silica Sandpack Formation Collapse

Client: Town of North East

Project: North East Landfill

Project No.: 35319.20

URS
Consultants Inc.Monitoring Well
Construction DetailsWell Number:
MW-3SD
E
P
T
H

Elevation 578.96'

Elevation 577.75'

Protective casing and lockable cap

Ground Level

BOREHOLE8 inch dia.
18 feet length

2'

4'

5'

15'

18'

WELL RISER2 inch dia.
6.2 feet length**WELL SCREEN**2 inch dia.
10 feet length

X X X X X X X X

PROJECT Northeast Landfill
CLIENT CAMP, DRESSER & MCKEE

BORING NO. _____
 LINE & STA. _____
 OFFSET _____
 GR. ELEV. _____

A	STRATUM DESCRIPTION	BLOWS PER _____	B

[illegible]

- AND - 40 to 50%
SOME - 10 to 40%
TRACE - 0 to 10%

Trio Printers # 1127

PROJ. Northeast Landfill
CLIENT CAMP, DRESSER MCKEE

GR. ELEV

GR. ELEV

A	STRATUM DESCRIPTION	BLOWS PER _____	B

[illegible]

- AND - 40 to 50%
SOME - 10 to 40%
TRACE - 0 to 10%

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. MW-1 S.I.B

PROJECT: NORTH EAST LANDFILL RE/ES

SHEET NO. 1 OF 3

CLIENT: TOWN OF NORTH EAST

JOB NO.: 35319.20

BORING CONTRACTOR: SCILTESTINE, INC.

BORING LOCATION:

GROUND WATER:

CAS. SAMP CORE TUBE

GROUND ELEVATION: 59.53(1) 58.20(2) 57.00(3)

DATE	TIME	LEV	TYPE	TYPE	SPLIT SPERM	HY
11/24		582.80	MW-15	DIA.	2-IN	3 3/8"
11/24		583.01	MW-11	WT.	14CM	1/2"
11/24		582.62	MW-18	FALL	30-IN	2 1/2"

DATE STARTED: 10/26/93

DATE FINISHED: 11/16/93

DRILLER: PAUL/ROBERT DENNIGS

GEOLOGIST: STEVE FRANK/ANISH DESHPANDE

REVIEWED BY:

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE				RECOVERY ROD %	COLOR	CONSISTENCY HARDNESS	DESCRIPTION	CLASS USCS	REMARKS
		NO.	TYPE	BLOWS PER 6"							
0	~	1	SS	2 4		65%	GRAY	MEDIUM DENSE	FILL - REGRADED SAND WITH SOME SILT AND GRAVEL	SM	MOIST
0	0			7 8							
0	~	2	SS	8 8		95%				ML	CLAYEY SILT LAYER 2.4 - 4 FT VERY MOIST
4				6 2							
5	0	3	SS	4 2		30%	BROWN AND GRAY	LOOSE TO MEDIUM DENSE	GRAVELLY SAND TRACE SILT AND CLAY	SW	FINE TO COARSE SAND
5	0			3 3							
5	0	4	SS	3 8		60%					
5	0			6 3							
10	0	5	SS	5 6		40%					SOME ORANGE STAINING VERY MOIST
10	0			7 8							
10	0	6	SS	6 5		60%					2-IN SATURATED SEAM AT 11.5 FT WET AT 12 FT
10	0			4 5							FINE TO MED SILTY SAND LAYER 13-14 FT
10	0	7	SS	7 6		60%	GRAY				
10	0			5 6							
15	0	8	SS	6 6		55%					
15	0			10 9							
15	0	9	SS	9 8		35%					SANDIER 18-20 FT WITH DARK-LOADED WATER
15	0			9 8							
15	0	10	SS	7 9		60%					MOSTLY FINE, ANGULAR GRAVEL
15	0			8 11							
15	0	11	SS	8 8		40%					
15	0			8 8							
15	0	12	SS	12 21		50%		MEDIUM DENSE TO DENSE			
15	0			11 11							
15	0	13	SS	11 10		60%					
15	0			12 12							
15	0	14	SS	8 9		45%					
15	0			11 11							
15	0	15	SS	11 14		75%					BELONGS BETTER SORTED
15	0			16 16							
15	0	16	SS	11 20		80%					
15	0			21 31							
32	0	17	SS	14 22		60%	GRAY	DENSE	SAND TRACE TO SOME SILT AND GRAVEL TRACE CLAY	SW/ SM	
32	0			13 14							
32	0	18	SS	8 11		75%		MEDIUM DENSE			
32	0			8 10							

COMMENTS BORINGS ADVANCED USING 4 1/4" (MW-15, I) OR 6 5/8" (MW-18) HOLLOW-STEM AUGERS: ATV-MOUNTED
DIAPHRAGM DRILL. ALL SAMPLES SCREENED WITH #10... NO ORGANIC VAPORS DETECTED. INSTALLED MONITORING
WELL MW-15 10 - 20 FT. SEE WELL CONSTRUCTION LOG FOR DETAILS.

PROJECT NO.

BORING NO.

MW-1 S.I.B

URS CONSULTANTS, Inc.							TEST BORING LOG				
PROJECT: NORTH EAST LANDFILL RE/FS							BORING NO. MW-1 I, B				
CLIENT: TOWN OF NORTH EAST							SHEET NO. 2 OF 3				
JOB NO.: 35319.20											
DEPTH FT	STRATA	SAMPLE				RECOVERY ROD %	COLOR	CONSISTENCY HARDNESS	DESCRIPTION MATERIAL DESCRIPTION	CLASS USCS	REMARKS
		NO.	TYPE	BLOWS PER 5"							
		19	SS	9	14	55 %	GRAY		SAND	SW/SM	WET
				14	14				TRACE TO SOME SILT AND GRAVEL		
				8	19				TRACE CLAY		
40		20	SS	14	21	50 %		DENSE TO VERY DENSE			2" SANDY SILT SEAM AT 39.5 FT
				11	25						
		21	SS	30	41	55 %					GRAVELLY 42-44 FT
				20	20						
		22	SS	15	16	60 %					
45				16	19						
		23	SS	15	32	60 %					
				20	30						
		24	SS	27	33	30 %					
				12	15						
50		25	SS	17	16	70 %					
				4	9						
		26	SS	10	19	90 %					
				9	19						
		27	SS	17	19	100 %					
55				14	14		BROWN	MEDIUM DENSE	BECOMES SILTY SAND	SM	
		28	SS	17	19	100 %					
				24	14						
		29	SS	14	17	50 %					
60				5	4		GRAY	LOOSE	SILT	ML	NON-COHEIVE RAPID DILATANCE
		30	SS	5	8	60 %			TRACE TO SOME CLAY		
				3	4				TRACE VERY FINE SAND		
		31	SS	5	4	70 %					
				4	4						
		32	SS	5	4	80 %					BECOMING STICKY
65				5	6						
		33	SS	4	5	100 %					
				3	4						
		34	SS	4	4	40 %					
69				6	34						
70		35	SS	50 1/2"		100 %	GRAY	HARD	WEATHERED LIMESTONE	V. BR.	ALGER REFUSAL AT 72 FT IN MW-1I
		36	SS	50 1/2"		90 %					
75									LOG CONTINUES NEXT PAGE		ALGER REFUSAL AT 75 FT IN MW-1B

COMMENTS: INSTALLED MONITORING WELL - MW-1I 48-52 FT. SEE WELL CONSTRUCTION LOG FOR DETAILS

PROJECT NO. _____
BORING NO. MW-1 I, B

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. MW-1 B

PROJECT: NORTH EAST LANDFILL RI/ES

SHEET NO. 3 OF 3

CLIENT: TOWN OF NORTH EAST

JOB NO.: 3531920

DEPTH FT	STRATA	SAMPLE				COLOR	CONSISTENCY HARDNESS	DESCRIPTION	CLASS USCE	REMARKS
		NO.	TYPE	BLOWS PER 6"	RECOVERY RCD %					
80		C-1	Hx		35% REC 6% RCD	WHITE AND GRAY	HARD	LIMESTONE / META-LIMESTONE - THINLY BEDDED TO LAMINATED AND CRENNULATED - HIGHLY FRACTURED ALONG MULTIPLE TRENDS	V. B2.	ROCK CORE: BREAKING INTO BLOCKY CHIPS OF VARIABLE SIZE AND SHAPE DRILLER ACCIDENTALLY REACHED TO 84 FT
85		C-2	Hx		57% REC					SET 4" STAINLESS STEEL CASING AT 85'
90		C-3	Nx		60% REC 29% RCD					CHEVRON-SHAPED BROWN BRANDING FRACTURE SURFACES TYPICALLY STAINED BROWN
95		C-4	Nx		60% REC 0% RCD					NUMEROUS SMALL ($< 5mm$) SOLUTION CAVITIES
100		C-5			100% REC 10% RCD					
103								COMPLETED BORING AT 103 FT		

COMMENTS COMPLETED BORING AS OPEN ROCK WELL 85-103 FT.

PROJECT NO.

BORING NO.

MW-1 B

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. MW-2 S.I.B

SHEET NO. 1 OF 3

PROJECT: NORTH EAST LAURELL RT/FS

CLIENT: TOWN OF NORTH EAST

BORING CONTRACTOR: SOILTESTING, INC.

JOB NO.: 35319.20

BORING LOCATION:

GROUND WATER:

CAS. SAMP CORE TUBE

GROUND ELEVATION: 575.86(S) 575.40(I) 576.45(B)

DATE TIME LEV TYPE TYPE SPLIT SPOON HX SAELOBY

DATE STARTED: 11/17/93

11/24 575.36 MW-2S DIA. 2 IN 3 7/8" 3 IN

DATE FINISHED: 11/22/93

11/24 576.80 MW-2T WT. 140 LB NY

DRILLER: BOB DEANGELIS

11/24 577.42 MW-2B FALL 30 IN 2 1/8"

GEOLOGIST: STEVE FRANK/ANISH DESAI/ANDRE

* POCKET PENETROMETER READING

REVIEWED BY:

DEPTH FT	STRATA	SAMPLE				TESTS				MATERIAL DESCRIPTION	SPT BLows	REMARKS
		NO.	TYPE	BLows PER 6"	RECOVERY PER %	TOC	WATER CONTENT	UNIFORMITY COEFF	LIQUID LIMIT			
		1	SS	4 5	90%	DARK BROWN	LOOSE			SILTY SAND TRACE TO SOME CLAY	OL	ORGANIC FOREST MAT
		2	SS	8 7	80%	GRAY	LOOSE TO MEDIUM DENSE			SANDY SILT TRACE CLAY	ML	WET AT 3.6 FT
5		3	SS	5 5	55%							
		4	SS	5 8	65%							
10		5	SS	10 10	70%							
		6	SS	6 8	70%							
		7	SS	5 5	90%							
15		8	SS	7 6	100%							SLIGHTLY COHESIVE
		9	SS	8 8	70%							NON-COHESIVE... BECOMING SANDIER
		10	SS	7 9	85%							
20		11	SS	10 12	90%							
		12	SS	10 12	90%							
25		13	SS	8 8	90%	GRAY	MEDIUM DENSE			SAND AND SILT TRACE CLAY AND FINE GRAVEL	SM/ML	INTERBEDDED CLAYEY SILT SEAMS 3"-4" TYP.
		14	SS	7 8	80%							SILT AND SAND LAYERS 10"-15" TYP.
		15	SS	8 9	75%							
30		16	SS	6 9	80%							
		17	SS	8 4	90%							
		18	SS	12 16	90%							
35		19	SS	WR WR	45%		VERY LOOSE TO MEDIUM DENSE					FINE TO COARSE SAND
		20	SS	WR WR	45%							
		21	SS	6 7	65%							
		22	SS	9 10	65%							
		23	SS	WH WH	50%							
		24	SS	3 2	50%							

COMMENTS BORINGS ADVANCED USING 4-1/4" (MW-2S,I) OR 6-5/8" (MW-2B) HOLLOW-STEM AUGERS: ATU-MOUNTED

DIEDRICH D-50 DRILL RIG. ALL SAMPLES SCREENED WITH #10... NO ORGANIC VAPORS DETECTED. INSTALLED MONITORING

WELL MW-2S 4-14 FT. SEE WELL CONSTRUCTION LOG FOR DETAILS.

PROJECT NO.

BORING NO.

MW-2 S.I.B

URS CONSULTANTS, Inc.										TEST BORING LOG		
PROJECT: NORTH EAST LANDFILL RI/FS										BORING NO. MW-2 I, B		
CLIENT: TOWN OF NORTH EAST										SHEET NO. 2 OF 3		
										JOB NO. : 35319.20		
DEPTH FT	STRATA	SAMPLE				DESCRIPTION				REMARKS		
		NO.	TYPE	BLOWS PER 6"	RECOVERY ROD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS			
37	~	19	SS	7 9 12 13	100%	GRAY AND BROWN	MEDIUM DENSE	SAND AND SILT TRACE CLAY AND FINE GRAVEL	SM/ML	VERY THIN BEDDED 0.5-5cm GRAY AND BROWN INTERBEDS		
40	~	20	SS	6 10 12 15	70%							
	~	21	SS	8 10 20 22	100%							
	~	22	SS	6 8 8 10	100%	GRAY	STIFF	CLAYEY SILT TRACE FINE SAND	ML	+ 0.25 TSF + POINT PENETROMETER + 1.25 TSF		
45	~	23	SS	10 12 11 10	40%							
	~	0	ST		0%							
	~	1	ST	PU SH	95%							
50	~											
	1/1	24	SS	8 10 50/10"	100%	GRAY	HARD	WEATHERED LIMESTONE		ALGAL REFUSAL AT 52 FT IN MW-2I		
		25	SS	83 100/5"	45%							
55												
		26	SS	50/12"	0%	GRAY	HARD	LIMESTONE/META-LIMESTONE - THINLY BEDDED	V. BR.	ALGAL REFUSAL AT 56.5 FT IN MW-2B		
										HIGHLY FRACTURED ALONG NUMEROUS PLANES IRON-STAINED FRACTURES		
60		C-1	Hx		20% REL 20% ROD					SET 4" STAINLESS STEEL CASING AT 62 FT		
65		C-2	Nx		50% REL 0% ROD					CALCITIC VEINS SOLUTION CAVITIES		
70		C-3	Nx		50% REL 0% ROD							
75		C-4	Nx		30% REL 0% ROD							
77												

COMMENTS INSTALLED MONITORING WELLS MW-2I 32-42 FT AND MW-2B 67-82 FT.
SEE WELL CONSTRUCTION LOGS FOR DETAILS

PROJECT NO.
BORING NO.

MW-2 I, B

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. MW-3 S.I.B

PROJECT NORTH EAST LANDFILL RI/ES

SHEET NO. 1 OF 3

CLIENT TOWN OF NORTH EAST

JOB NO.: 35319.20

BORING CONTRACTOR: SOILTESTING, INC.

BORING LOCATION:

GROUND WATER:

CAS.

SAMP

CORE

TUBE

GROUND ELEVATION: 522.75(5)

519.62(8)

DATE TIME

LEV

TYPE

TYPE

TYPE

TYPE

TYPE

TYPE

TYPE

TYPE

TYPE

TYPE

TYPE

TYPE

TYPE

TYPE

TYPE

TYPE

TYPE

TYPE

TYPE

11/24 516.10

MW-35

DIA.

2 IN

3 7/16"

3 IN

DATE STARTED: 11/3/93

DATE FINISHED: 11/10/93

DRILLER: BOB DE ANGELIS

GEOLOGIST: STEVE FRANK / ANISH DESHPANDE

REVIEWED BY:

REVIEWED BY:

REVIEWED BY:

REVIEWED BY:

REVIEWED BY:

REVIEWED BY:

REVIEWED BY:

REVIEWED BY:

REVIEWED BY:

REVIEWED BY:

REVIEWED BY:

11/24 520.04

MW-33

WT.

140#

Nx

FALL

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

11/24 520.04

MW-33

WT.

140#

Nx

FALL

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

11/24 520.04

MW-33

WT.

140#

Nx

FALL

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

11/24 520.04

MW-33

WT.

140#

Nx

FALL

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

11/24 520.04

MW-33

WT.

140#

Nx

FALL

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

11/24 520.04

MW-33

WT.

140#

Nx

FALL

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

11/24 520.04

MW-33

WT.

140#

Nx

FALL

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

11/24 520.04

MW-33

WT.

140#

Nx

FALL

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

11/24 520.04

MW-33

WT.

140#

Nx

FALL

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

11/24 520.04

MW-33

WT.

140#

Nx

FALL

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

11/24 520.04

MW-33

WT.

140#

Nx

FALL

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

11/24 520.04

MW-33

WT.

140#

Nx

FALL

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

2 7/8"

30 IN

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. MW-3 IB

PROJECT: NORTH EAST LANDFILL RT/FS

SHEET NO. 2 OF 3

CLIENT:

JOB NO.:

DEPTH FT	STRATA	SAMPLE				DESCRIPTION				REMARKS
		NO.	TYPE	BLOWS PER 5'	RECOVERY REC %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS CODE	
37	~	19	SS	3 2	90%	GRAY	LOOSE	SILT TRACE TO SOME SAND AND CLAY	ML	INTERBEDDED SANDY SILT AND CLAY/SILT
	~			4 3						
40	~	20	SS	3 3	65%					
	~			3 1						
	~	21	SS	1 2	80%					
	~			3 4						
	~	22	SS	2 2	75%					
45	~			4 2						
	~	23	SS	3 3	100%					
	~			4 3						
	~	24	SS	2 2	100%					
	~			7 6						
50	~	25	SS	5 7	95%					
	~			5 6						
	~	26	SS	7 6	100%					
	~									
	~	2	ST							
55	~			8 6						
	~	27	SS	13 50	100%					
				100/4"						
		28	SS		100%	GRAYISH BROWN	HARD	WEATHERED LIMESTONE	V.BR.	ABANDONED BOREHOLE MW-3 I-00 WELL INSTALLED
				37 50 1/2"	0					
60		29	SS							
				35 50 1/3"	55%					
		30	SS							
				50 1/5"	50%					
		31	SS							
65										
		C-1	Hx		40% REC 7% RAD					
70										
		C-2	Nv		100% REC 32% RAD					
75										
		C-3	Nx		100% REC 8% RAD					

COMMENTS: COMPLETED BORING AS OPEN ROCK HOLE 66-83 FT.

PROJECT NO.

35319.20

BORING NO.

MW-3 IB

TEST BORING LOG

PROJECT: NORTH EAST LANDFILL RT/FS

CLIENT: TOWN OF NORTH EAST

[illegible]

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. MW-4 S.I.D

PROJECT: NORTH EAST LANDFILL RI/FS

SHEET NO. 1 OF 3

CLIENT: TOWN OF NORTH EAST

JOB NO.: 35319.20

BORING CONTRACTOR: SOILTESTING, INC.

BORING LOCATION:

GROUND WATER:

CAS. SAMP CORE TUBE

GROUND ELEVATION: 595.41(5) 592.75(2) 591.11(0)

DATE	TIME	LEV	TYPE	TYPE	SPLIT SPRINT
11/24		562.75	MW-4S	DIA.	2 IN
11/24		562.75	MW-4E	WT.	140 LB
11/24		562.75	MW-4D	FALL	70 IN

DATE STARTED: 10/28/93

DATE FINISHED: 11/2/93

DRILLER: PHIL/BOB DEANGELIS

GEOLOGIST: STEVE FRANK/AUGUST DESPANDUE

REVIEWED BY:

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE				RECOVERY ROD %	COLOR	CONSISTENCY HARDNESS	DESCRIPTION	MATERIAL DESCRIPTION	CLASS USCC	REMARKS
		NO.	TYPE	BLOWS PER 6"								
	~	1	SS	3	3	45%	BROWN	LOOSE	SAND		SW	SAMPLED TOP SOIL
	0			4	4				SOME GRAVEL			MOSTLY FINE-MEDIUM SAND
	.	2	SS	3	3	40%			TRACE TO SOME SILT			
	.			4	3							MOIST
5	0	3	SS	3	3	30%						
	.			3	3							
	~	4	SS	3	4	45%						
	0			4	4							
10	0	5	SS	4	5	60%	GRAY	MEDIUM DENSE				
	.			7	7							
	0	6	SS	3	12	90%			SILTY SAND AND GRAVEL		SH/GW	MOTTLED BROWN AND RED-COLOR
	~			16	20				TRACE CLAY			
	0	7	SS	9	9	65%						
	.			9	8							
15	0	8	SS	4	3	55%		LOOSE				VERY MOIST
	~			3	6							
	0	9	SS	4	3	60%						WET AT 16 FEET
	.			3	2							MOSTLY FINE ANGULAR GRAVEL
20	0	10	SS	3	3	60%						
	~			3	4							VARIABLE TEXTURE BUT NO APPARENT STRATIFICATION
	0	11	SS	6	4	90%						
	.			3	3							
25	0	12	SS	3	3	55%	GRAY	LOOSE	SAND AND GRAVEL		SW/GW	
	.			3	3				TRACE TO SOME SILT			
	0	13	SS	1	2	25%		VERY LOOSE				
	.			2	2							
	0	14	SS	1	2	30%						
	.			2	1							
30	0	15	SS	2	2	60%						
	.			2	3							
	0	16	SS	4	7	50%		MEDIUM DENSE				
	.			7	7							
	0	17	SS	5	4	45%						SOME WELL-SORTED
	.			14	26							MED. SAND TO FINE
35	0	18	SS	4	9	90%						GRAVEL INTERBEDDED
	~			9	15							

COMMENTS

BORINGS ADVANCED WITH 4 1/4" ID HOLLOW-STEM AUGERS: ATU-MOUNTED DEDRICH D50 DRILL 1216

ALL SAMPLES SCREENED WITH #10... NO ORGANIC MATTER DETECTED. INSTALLED MONITORING WELL MW-4S

13 - 23 FT. SEE WELL CONSTRUCTION LOG FOR DETAILS

PROJECT NO.

BORING NO.

MW-4 S.I.D

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MW-4 I,D

PROJECT: NORTH EAST LANDFILL RI/FS

SHEET NO. 2 OF 3

CLIENT: TOWN OF NORTH EAST

JOB NO.: 35319.20

DEPTH FT	STRATA	SAMPLE				RECOVERY REC %	COLOR	CONSISTENCY HARDNESS	DESCRIPTION		CLASS NEEDS	REMARKS
		NO.	TYPE	BLOWS PER 5"					MATERIAL DESCRIPTION			
37	0.0	19	SS	4	9	95%	GRAY	MEDIUM DENSE	SAND AND GRAVEL TRACE TO SOME SILT			
				16	20							
				7	9							
40	0.0	20	SS	2	6	100%	GRAY	MEDIUM DENSE	SAND TRACE TO SOME SILT AND GRAVEL	SW/SM		FINE TO MEDIUM SAND
				9	16			VERY DENSE				
		21	SS	36	4	100%						
				11	15							
		22	SS	19	19	55%		DENSE				
				24	26							
45	0.0	23	SS	20	23	65%						FINE TO COARSE SAND
				29	19							
		24	SS	23	25	50%						
				10	16							
50	0.0	25	SS	24	25	50%					SM	BECOMES SILTY
				18	13							
		26	SS	18	25	55%						
				19	24							
		27	SS	25	30	100%						
55	0.0			21	26		BROWN	VERY DENSE	SANDY AND GRAVELLY SILT TRACE CLAY		ML	
		28	SS	31	32	50%	GRAY	DENSE	GRAVELLY SAND TRACE SILT			
				26	21							
		29	SS	20	22	35%						
				31	16						SW	
60	0.0	30	SS	16	14	45%						
				31	18							
		31	SS	20	18	90%						
				31	31			VERY DENSE				
		32	SS	27	20	55%						
				19	31							
65	0.0	33	SS	36	35	35%						
				15	19				SAND TRACE TO SOME SILT AND GRAVEL TRACE CLAY	SW/SM		
		34	SS	31	24	45%						
				19	32							
70	0.0	35	SS	42	46	65%						SILTY SEAM AT 69.5 FT
				18	35							
		36	SS	50	6"	95%						
				16	35							
		37	SS	30	38	100%						
75	0.0			21	31							
		38	SS	34	40	100%						
				9	23		GRAY	DENSE	SILT AND GRAVEL SOME SAND TRACE CLAY	GM		MOIST DENSE TILL
		39	SS	26	50	25%						

COMMENTS: INSTALLED WELL MW-4I 43-53 FT AND WELL MW-4D 66-76 FT. SEE WELL CONSTRUCTION LOGS FOR DETAILS.

PROJECT NO.
BORING NO.

MW-4 I,D

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. MW-4 D

PROJECT: NORTH EAST LANDFILL RT/FS

SHEET NO. 3 OF 3

CLIENT: TOWN OF NORTH EAST

JOB NO.: 35319.20

DEPTH FT	STRATA	SAMPLE				COLOR	CONSISTENCY HARDNESS	DESCRIPTION MATERIAL DESCRIPTION	CLASS CODE	REMARKS
		NO.	TYPE	BLOWS FEET	RECOVERY FEET					
80	0.0	40	SS	27 37	35%	GRAY	VERY DENSE	SILT AND GRAVEL SOME SAND TRACE CLAY	GM	LIMESTONE FRAGMENTS
	0.0			42 47						
	0.0	41	SS	18 28	60%					
	0.0			34 50 1/2"						
85	0.0	42	SS	87 71	25%					
	0.0			43 36						
	0.0	43	SS	50 54	45%					
	0.0			50 1/4"						
	0.0	44	SS	45 73	65%					
	0.0			50 1/2"						
90	0.0									
	0.0	45	SS	50 115 1/4"	30%			WEATHERED LIMESTONE		
	11-11-							ANGER REFUSAL AT 91.5 FEET END OF BOREHOLE		

COMMENTS: INSTALLED BENTONITE SEAL 86-88 FT. THEN BACKFILLED WITH FORMATION COLLAPSE TO SET WELL MW-4D

PROJECT NO.

BORING NO.

MW-4D

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. B-1

PROJECT: NORTH EAST LANDFILL RT/ES

SHEET NO. 1 OF 1

CLIENT: TOWN OF NORTH EAST

JOB NO.: 35319.20

BORING CONTRACTOR: SOLTESTING, INC.

BORING LOCATION:

GROUND WATER:

CAS.

SAMP

CORE

TUBE

GROUND ELEVATION: 601.37

DATE: 11/24

TIME: 08:40

LEV: PIEZOMETER

TYPE: DIA.

WT: 140#

FALL: 30-IN

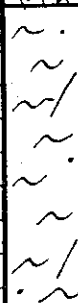
DATE STARTED: 11/23/93

DATE FINISHED: 11/23/93

DRILLER: KEVIN RONACUM

GEOLOGIST: STEVE FRANK

REVIEWED BY:

DEPTH FT	LITHATA	SAMPLE				DESCRIPTION				PID (PR)	
		NO.	TYPE	BLIND REF. FT	RECOVERED FOOT	SOIL	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	SM ML		
		1	SS	5 7 7 10	20%	GRAY AND BROWN	MEDIUM DENSE	FILL - SANDY MATRIX WITH SILT AND GRAVEL	SM	MOIST ROLLED PLASTIC 2.5%PM HEAVYWEIGHT PID	0
		2*	SS	10 8 6 8	80%						
5											
		3	SS	8 16 11 13	10%						
										PLASTIC 4 PAPER	0.2
10											
		4	SS	38 18 12 10	0						
		5	SS	40 9 7 6	35%	GRAY	MEDIUM DENSE	SILT TRACE TO SOME CLAY AND SAND	ML	WOOD & CARDBOARD WET AT 12 FT BOTTOM OF FILL AT 12.5 FT	0
15			6	SS	3 4 7 7					45%	
20											
							LOOSE				0
		7	SS	3 2 3 4	60%						
25								COMPLETED BORING AT 22 FT			
30											
35											

COMMENTS: BORING ADVANCED WITH 1/4" ID HOLLOW-STEM AUGERS: DIEBICH D-50 TRAILER-MOUNTED DRILL
INSTALLED PIEZOMETER B-1 12-22 FT SEE WELL CONSTRUCTION LOG FOR DETAILS

* ENVIRONMENTAL SAMPLE

PROJECT NO.

35319.20

BORING NO.

B-1

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. B-2

PROJECT: NORTH EAST LANDFILL RI/FS

SHEET NO. 1 OF 1

CLIENT: TOWN OF NORTH EAST

JOB NO.: 35319.20

BORING CONTRACTOR: SOILTESTING, INC.

BORING LOCATION:

GROUND WATER:

GROUND ELEVATION: 599.92

DATE: 11/24/94 TIME: 1992.95

DATE STARTED: 11/22/94

LEV: 1992.95 TYPE: PIEZOMETER

DATE FINISHED: 11/22/94

TYPE: DIA.

DRILLER: BOO DEANGELOS

WT: 140 #

GEOLOGIST: ANISH DESHPANDE

FALL: 35-5W

REVIEWED BY:

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE				COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	SM/ML	PID (ft)
		NO.	TYPE	EL. WT PER FT	RECOVER FOOT					
		1*	SS	3 3 4 3	50%	GRANISH BROWN	LOOSE	FILL - SAND AND SILT MATEX SOME GRAVEL	SM/ ML	0.8
		2	SS	3 2 3 3	25%					0
5		3	SS	3 3 3 3	20%	BROWN				0.6
10		4	SS	50%	0	GRAY	MEDIUM DENSE			
		5	SS	15 12 11 8	25%					4.5
15		6	SS	7 9 20 25	0					
		7	SS	15 30 36 25	0					
20		8	SS	8 12 4 6	75%	GRAY	MEDIUM DENSE	SILT - TRACE FINE SAND AND CLAY	ML	2.0
		9	SS	5 7 6 5	60%					0.2
25								COMPLETED BORING AT 24 FT		
30										
35										

COMMENTS BORING ADVANCED USING 4 1/4" ID HOLLOW-STEM AUGERS; DIEDRICH D-50 ATV-MOUNTED
DRILL. INSTALLED PIEZOMETER B-2 14-24 FT. SEE WELL CONSTRUCTION LOG FOR DETAILS.

f ENVIRONMENTAL SAMPLE

PROJECT NO. 35319.20

BORING NO. B-2

TEST BORING LOG

BORING NO. R-3

PROJECT. NORTH EAST LANDFILL BILES

SHEET NO. OF

CLIENT: TOWN OF NORTH EAST

JOB NO. : 35319.20

BORING CONTRACTOR: SOILTESTING, INC.

BORING LOCATION:

GROUND WATER.

ICAS.

SAMP	CORE	TUBE

GROUND ELEVATION: 600.34

DATE	TIME	LEV	TYPE

ITYPE

SS (SPLIT-SPOON)

DATE STARTED: 11/23/93

11/24	577.39

B-2

|DIA.

2-

150 #

DATE FINISHED: 11/23/93

DRILLER: BOB DEAN

GEOLOGIST: ANISH DESHPANDE

REVIEWED BY:

• **REPORT FROM THE SECRETARY OF THE ARMY**

[illegible]

COMMENTS: BORING ADVANCED USING 4 1/4" ID HOLLOW-STEM AUGERS: DIEDRICH D-50 ATV-MOUNTED DRILL.
INSTALLED PIEZOMETER B-3 23-33 FT. SEE WELL CONSTRUCTION LOG FOR DETAILS

* ENVIRONMENTAL SAMPLE

PROJECT NO.

35319.20

BORING NO.

3-3

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. B-4

PROJECT: NORTH EAST LANDFILL #1/15

SHEET NO. 1 OF 1

CLIENT: TOWN OF NORTH EAST

JOB NO.: 35319.20

BORING CONTRACTOR: SOILTESTING, INC

BORING LOCATION:

GROUND WATER:

CAS. SAMP CORE TUBE

GROUND ELEVATION: 608.71

DATE TIME LEV TYPE TYPE SS (SILT-CLAY)

DATE STARTED: 11/22/93

11/24 581.46 PIEZOMETER DIA. 2 IN

DATE FINISHED: 11/22/93

WT. 140 #

DRILLER: KEVIN BOWMAN

FALL 30 IN

GEOLOGIST: STEVE FRANK

* POCKET PENETROMETER READING

REVIEWED BY:

DEPTH FT	STRATA	SAMPLE				RECOVERY %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	SM	REMARKS	PID (ft)
		NO.	TYPE	BLOWS FEET	FEET							
		1	SS	8	7	40%	GRAY AND BLACK	MEDIUM DENSE	FILL - SAND MATRIX	SM	PAPER/GLASS/ PLASTIC/METAL	0
				9	8						VERY MOIST TO WET	1.5
		2	SS	4	7	25%					MOIST	0
				9	9							
5		3	SS	8	9	25%						
				10	10							
10												
		4	SS	12	8	10%	GRAY AND BROWN				STRIP PLASTIC	0.2
				14	24							
15												
		5*	SS	7	4	60%					4mm HEADSTAKE PID	1
				9	13							
20		6	SS	9	13	40%	GRAY				CARDBOARD - WOOD PULP MOIST	2.5
				50/2"								
		7	SS	5	9	25%						0.4
				8	5							
				7	9							
25		8	SS	10	8	65%					REGRADED SOIL MOIST	0.4
				10	14							
		9	SS	15	13	50%	GRAYISH BROWN	MEDIUM DENSE	SAND AND FINE GRAVEL SOME SILT	SM		0
30												
		10	SS	7	11	60%			SILTY FINE SAND TRACE GRAVEL		WATER CURRENT AT 29 FT WET SAMPLE	0
				12	7							
35												
		11	SS	2	4	70%		LOOSE				0
				4	6							

BORING COMPLETED AT 38 FT

COMMENTS BORING ADVANCED USING 4 1/4" ID HOLLOW-STEM AUGERS - DIEDRICH D-50 TRAILER-MOUNTED DRILL. INSTALLED PIEZOMETER B-4 28-30 FT. SEE WELL CONSTRUCTION LOG FOR DETAILS

* ENVIRONMENTAL SAMPLE

PROJECT NO.

35319.20

BORING NO.

B-4

URS CONSULTANTS, Inc.										TEST BORING LOG	
PROJECT: NORTH EAST LANDFILL RI/FS										BORING NO. B-5	
CLIENT: TOWN OF NORTH EAST										SHEET NO. 1 OF 1	
BORING CONTRACTOR: SOILTESTING, INC.										JOB NO.: 35319.20	
GROUND WATER:										BORING LOCATION:	
CAS. SAMP CORE TUBE										GROUND ELEVATION: 608.03	
DATE	TIME	LEV	TYPE	TYPE		SS	(SPLIT-SPAWN)	DATE STARTED: 11/23/93			
11/24/93		590.78	PIEZOMETER	DIA.		2-IN		DATE FINISHED: 11/23/93			
				WT.		140#		DRILLER: KEVIN BONACUM			
				FALL		30 IN		GEOLOGIST: STEVE FRANK			
* POCKET PENETROMETER READING										REVIEWED BY:	
DEPTH FT	STRATA	SAMPLE				DESCRIPTION				REMARKS	
		NO.	TYPE	BLOWS PER 6"	RECOVERY ROD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS		PID. (FOT)
5	X	1	SS	6 7 50/1	45%	BROWN	MEDIUM DENSE	FILL - SAND AND SILT MATRIX	SM/ ML	PAPER/CARDBOARD/ TILE	0
		2	SS	16 10 10 8	50%	BROWN AND GRAY	↓			MOIST PAPER	0.4
		3	SS	7 8 9 8	30%					PAPER AND PLASTIC	0.2
10	X	4	SS	6 50 1/2"	40%	↓	↓	↓		MOISTLY PAPER	0.8
15	X	5	SS	5 4 4 7	25%					MOIST BOTTOM OF FILL AT 17 FT.	0
20	~	6*	SS	8 7 13 9	35%					GRAY	MEDIUM DENSE TO LOOSE
25	~	7*	SS	3 4 3 5	40%	↓	↓	↓		INTERBEDDED SANDY, CLAYEY LAYERS	0.6
		8	SS	8 7 5 3	35%					WET	0
		9	SS	3 4 3 3	90%						0.2
30	~					BORING COMPLETED AT 30 FT					
35											

COMMENTS BORING ADVANCED USING 4 1/4" ID HOLLOW-STEM AUGERS. DIEDRICH D50 TRAILER-MOUNTED DRILL
 INSTALLED PIEZOMETER B-5 20-30 FT. SEE WELL CONSTRUCTION LOG FOR DETAILS
 * ENVIRONMENTAL SAMPLE PROJECT NO. 35319.20
 BORING NO. B-5

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO.

B-6

SHEET NO. 1 OF 1

JOB NO.: 0535319.20

BORING LOCATION:

GROUND ELEVATION:

DATE STARTED: 7-21-94

DATE FINISHED: 7-21-94

DRILLER: MIKE MULHERN

GEOLOGIST: JOHN TOMASELLO

REVIEWED BY:

PROJECT: NORTH EAST LANDFILL RI/ES

CLIENT: TOWN OF NORTH EAST

BORING CONTRACTOR: SOILTESTING INC

GROUND WATER:

DATE	TIME	LEV	TYPE	TYPE	CAS.	SAMP	CORE	TUBE
				DIA.		SS (SPLT SPOON)		
				WT.		2"		
				FALL		40#		
						30"		

* POCKET PENETROMETER READING

DESCRIPTION											REMARKS
DEPTH FT	STRATA	SAMPLE				COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	(WASTE)	
		NO.	TYPE	BLOWS PER 6"	RECOVERY ROD %						
		51	SS	9 8	8 10	65	BRN	MED. DENSE	FILL; FINE SAND SOME SILT	PLASTIC DEBRIS WOOD FRAGMENTS	
		52	SS	8 4	4 6	50		LOOSE			
5		53	SS	5 4	4 3	85					
		54	SS	3 6	5 8	80		MED. DENSE			
10	SSSSS SSSS	55	SS	2 4	2 4	65	GRAY/ BRN/ RED	LOOSE	SILT, TRACES CLAY	SM-	WET
									BORING COMPLETED AT 10 FEET		
15											
20											
25											
30											
35											

COMMENTS BORING ADVANCED USING 4 1/4" I.D. H.S. AUGERS, TRAILER MOUNTED
DIEDRICH D-50 DRILL RIG. UPON COMPLETION THE BORING WAS FILLED
WITH COMBUST BENTONITE GROUT.

PROJECT NO.

0535319.20

BORING NO.

B-6

URS CONSULTANTS, Inc.										TEST BORING LOG BORING NO. <u>B-7</u>	
PROJECT: <u>NORTH EAST LANDFILL RI/ES</u>										SHEET NO. <u>1</u> OF <u>1</u>	
CLIENT: <u>TOWN OF NORTH EAST</u>										JOB NO.: <u>0535319.20</u>	
BORING CONTRACTOR: <u>SOILTESTING INC.</u>										BORING LOCATION:	
GROUND WATER:										GROUND ELEVATION:	
DATE	TIME	LEV	TYPE	TYPE	CAS.	SAMP	CORE	TUBE	DATE STARTED: <u>7/21/94</u>		
				DIA.		<u>SS (SPUTS)</u>			DATE FINISHED: <u>7/21/94</u>		
				WT.		<u>2"</u>			DRILLER: <u>MIKE MULHERN</u>		
				FALL		<u>40"</u>			GEOLOGIST: <u>JOHN TOMASELLO</u>		
										REVIEWED BY:	
										* POCKET PENETROMETER READING	

DEPTH FT	STRATA	SAMPLE				RECOVERY ROD %	COLOR	CONSISTENCY HARDNESS	DESCRIPTION	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
		NO.	TYPE	BLOWS PER 6"								
5	X	S1	SS	5	8	80	BRN	MED DENSE	↓	FILL; SAND MATRIX		CARD BOARD, PLASTIC, GLASS, PAPER.
				12	18							
		S2	SS	12	14	40	BRN/ GRAY	VERY DENSE				
				7	8							
10	X	S3	SS	18	32	55		MED DENSE				
				25	17							
		S4	SS	18	8	25	BRN	DENSE				
				22	12							
15	X	S5	SS	11	24	15		DENSE	FINE SAND AND FINE TO MED GRAVEL	SW	WET	
				14	18							
		S6	SS	13	11	30	GRAY	MED DENSE				
				8	8							
20	X	S7	SS	4	8	40			FINE TO MEDIUM GRAVEL, SOME FINE TO MED SAND	GW		
				10	12							
25												
30												
35												
BORING COMPLETED AT 14 FEET												

COMMENTS BORING ADVANCED USING 4 1/4" I.D. H.S. AUGERS, DIEHDRICH D-5C TRAILER MOUNTED DRILL RIG. UPON COMPLETION THE BORING WAS FILLED WITH CEMENT BENTONITE GROUT

PROJECT NO. 0535319.20
BORING NO. B-7

23

PROJECT NO. 0535319.20
BORING NO. 3-8

URS CONSULTANTS, Inc.										TEST BORING LOG	
										BORING NO. <u>B-9</u>	
PROJECT: <u>NORTH EAST LANDFILL RI/FS</u>										SHEET NO. <u>1</u> OF <u>1</u>	
CLIENT: <u>TOWN OF NORTH EAST</u>										JOB NO.: <u>0535319.20</u>	
BORING CONTRACTOR: <u>SOILTESTING INC</u>										BORING LOCATION:	
GROUND WATER:										GROUND ELEVATION:	
DATE	TIME	LEV	TYPE	TYPE	CAS.	SAMP	CORE	TUBE	DATE STARTED: <u>7-21-94</u>		
				DIA.		SS	(SPLITSPOON)		DATE FINISHED: <u>7-21-94</u>		
				WT.		2"			DRILLER: <u>MIKE MULHERN</u>		
				FALL		140#			GEOLOGIST: <u>JOHN TOMASELLO</u>		
						30"			REVIEWED BY:		
										* POCKET PENETROMETER READING	
DEPTH FT	STRATA	SAMPLE					DESCRIPTION			CLASS USCS	REMARKS
		NO.	TYPE	BLOWS PER 6"	RECOVERY ROD %		COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION		
5		S1	SS	1 3	1 9	15	BRN	LOOSE	FILL; SAND MATRIX		PLASTIC, CLOTH, METAL, PAPER, GLASS
		S2	SS	6 8	7 8	60	GRAY	MED DENSE			
		S3	SS	3 4	7 4	40					
		S4	SS	5 40	14 25	50	GRAY BRN	VERY DENSE			
		S5	SS	3 11	5 7	30	GRAY	MED DENSE			
10		S6	SS	5 3	4 4	45	↓	LOOSE	FINE TO COARSE SAND, SOME GRAVEL	SW	WET
		S7	SS	4 3	3 5	70					
15									BORING COMPLETED AT 14 FBT		
20											
25											
30											
35											

A-3205

COMMENTS BORING ADVANCED USING 4 1/4" ID H.S. AUGERS DIEDRICH D-50
TRAILER MOUNTED DRILL RIG UPON COMPLETION THE BORING WAS FILL
WITH CONCRETE BENTONITE GROUT

PROJECT NO. 0535319.20
BORING NO. B-9

DRILLING SUMMARY

Geologist:

Steve Frank

Drilling Company:

Soil Testing, Inc.

Driller:

Phil DeAngelis

Date:

10/27/93

GEOLOGIC LOG

depth(ft.)	lithology
0-4'	Regraded Sand
4-20'	Gravelly Sand

WELL DESIGN**CASING MATERIAL**

Surface: 4" Steel

Monitor: Stainless Steel

SCREEN MATERIAL

Type: Stainless Steel

Slot Size: 0.010"

SEAL MATERIAL

Seal #1 Type: Bentonite Chips

Setting: 6-8'

Seal #2 Type:

Setting:

FILTER MATERIAL

Type: #1 Silica Sand

Setting: 8-20'

ROCK CORING

Cored Interval:

Core Diameter:

Reamed Diameter:

LEGEND

Cement/Bentonite Grout



Bentonite Seal



Silica Sandpack

Client: Town of North East

Project: North East Landfill

Project No.: 35319.20

URS
Consultants Inc.Monitoring Well
Construction DetailsWell Number:
MW-1SD
E
P
T
H

Elevation 591.82'

Elevation 590.03'

Protective casing and lockable cap

Ground Level

BOREHOLE

8 inch dia.
20 feet length

6'

8'

10'

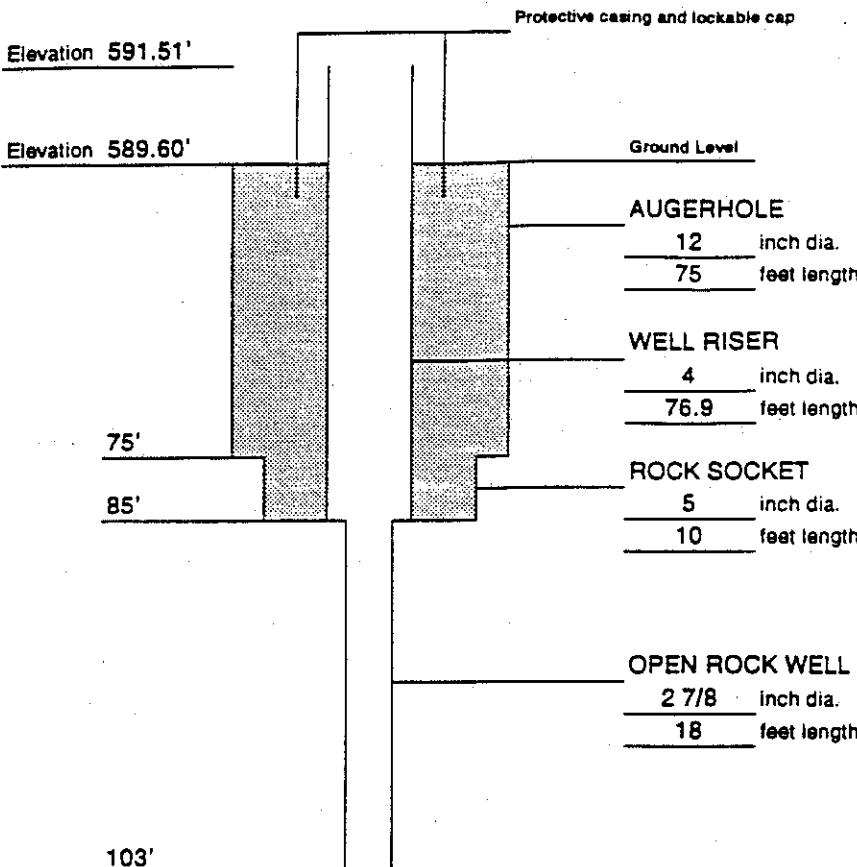
20'

WELL RISER

2 inch dia.
11.9 feet length

WELL SCREEN

2 inch dia.
10 feet length

DRILLING SUMMARY			
Geologist: Anish Deshpande			
Drilling Company: Soil Testing, Inc.			
Driller: Bob DeAngelis			
Date: 11/16/93			
GEOLOGIC LOG		D E P T H	
depth(ft.)	lithology		
0-4'	Regraded Sand		
4-58'	Gravelly Sand and Sand		
58-69'	Silt		
69-75'	Weathered Limestone		
75-103'	Limestone	103'	
WELL DESIGN			
CASING MATERIAL Surface: 6" Steel Monitor: 4" Stainless Steel		SCREEN MATERIAL Type: Open Rock Well Slot Size:	
FILTER MATERIAL Type: NONE Setting:		ROCK CORING Cored Interval: 75-103' Core Diameter: 3 7/8" Socket 2 7/8" Well	
SEAL MATERIAL Seal #1 Type: Cement/Bentonite Grout Setting: 0-85' Seal #2 Type: None Setting:		LEGEND Cement/Bentonite Grout Bentonite Slurry	
Client: Town of North East		Project: North East Landfill	
Project No.: 35319.20		Well Number: MW-1B	
URS Consultants Inc.		Monitoring Well Construction Details	

DRILLING SUMMARY

Geologist:

Anish Deshpande

Drilling Company:

Soil Testing, Inc.

Driller:

Bob DeAngelis

Date:

11/17/93

GEOLOGIC LOG

depth(ft.)	lithology
0-15'	Sandy Silt

WELL DESIGN**CASING MATERIAL**

Surface: 4" Steel

Monitor: Stainless Steel

SCREEN MATERIAL

Type: Stainless Steel

Slot Size: 0.010"

SEAL MATERIALSeal #1 Type: Bentonite Chips
Setting: 1.5-3'Seal #2 Type: None
Setting:**FILTER MATERIAL**

Type: #1 Silica Sand

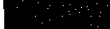
Setting: 3-15'

ROCK CORING

Cored Interval: None

Core Diameter: None

Reamed Diameter: None

LEGEND Cement/Bentonite Grout Bentonite Seal Silica Sandpack

Elevation 578.05'

Elevation 575.86'

Protective casing and lockable cap

Ground Level

AUGERHOLE

8 inch dia.

15 feet length

1.5'

3'

4'

WELL RISER

2 inch dia.

6.2 feet length

WELL SCREEN

2 inch dia.

10 feet length

14'

15'

D
E
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T
H

Client: Town of North East

Project: North East Landfill

Project No.: 35319.20

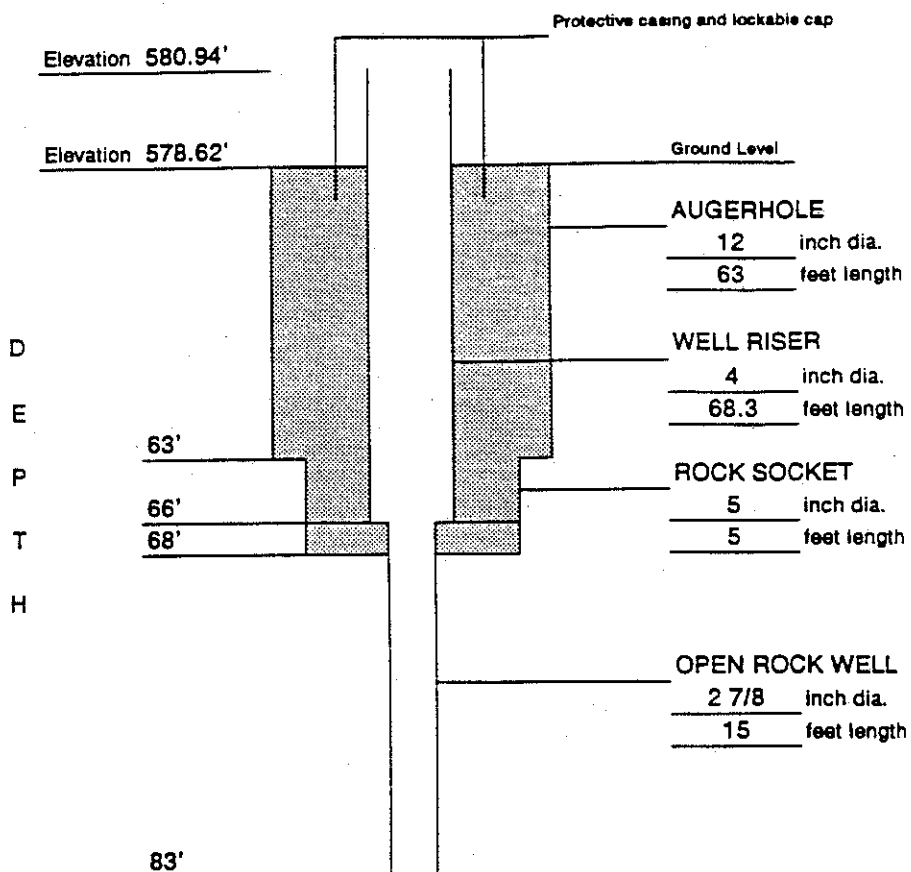
URS
Consultants, Inc.Monitoring Well
Construction DetailsWell Number:
MW-2S

DRILLING SUMMARY

Geologist:
Anish Deshpande
Drilling Company:
Soil Testing, Inc.
Driller:
Bob DeAngelis
Date:
11/10/93

GEOLOGIC LOG

depth(ft.)	lithology
0-4'	Clayey Silt
4-56'	Silt
56-62.5'	Weathered Limestone
62.5-83'	Limestone

WELL DESIGN**CASING MATERIAL**

Surface: 6" Steel
Monitor: 4" Stainless Steel

SCREEN MATERIAL

Type: Open Rock Well
Slot Size:

SEAL MATERIAL

Seal #1 Type: Cement/Bentonite Grout
Setting: 0-68'
Seal #2 Type: None
Setting:

FILTER MATERIAL

Type: NONE
Setting:

ROCK CORING

Cored Interval: 63-83'
Core Diameter: 3 7/8" Socket
2 7/8" Well

LEGEND

 Cement/Bentonite Grout
 Bentonite Slurry

Client: Town of North East

Project: North East Landfill

Project No.: 35319.20

URS
Consultants Inc.

Monitoring Well
Construction Details

Well Number:
MW-3B

DRILLING SUMMARY

Geologist:
Steve Frank

Drilling Company:
Soil Testing, Inc.

Driller:
Bob DeAngelis

Date:
11/2/93

GEOLOGIC LOG

depth(ft.)	lithology

0-23'	Sand and Gravel

WELL DESIGN**CASING MATERIAL**

Surface: 4" Steel

Monitor: Stainless Steel

SCREEN MATERIAL

Type: Stainless Steel

Slot Size: 0.010"

SEAL MATERIAL

Seal #1 Type: Bentonite Chips
Setting: 9-11.5'

Seal #2 Type:
Setting:

FILTER MATERIAL

Type: #1 Silica Sand

Setting: 11.5-23'

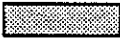
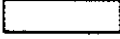
ROCK CORING

Cored Interval:

Core Diameter:

Reamed Diameter:

LEGEND

	Cement/Bentonite Grout
	Bentonite Seal
	Silica Sandpack

Client: Town of North East

Project: North East Landfill

Project No.: 35319.20

URS
Consultants Inc.

Monitoring Well
Construction Details

Well Number:
MW-4S

D
E
P
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H

Elevation 597.49'

Elevation 595.64'

Protective casing and lockable cap

Ground Level

BOREHOLE

8 inch dia.
23 feet length

9'

11.5'

13'

23'

WELL RISER

2 inch dia.
14.9 feet length

WELL SCREEN

2 inch dia.
10 feet length

DRILLING SUMMARY

Geologist:
Steve Frank
Drilling Company:
Soil Testing, Inc.
Driller:
Bob DeAngelis
Date:
11/2/93

GEOLOGIC LOG

depth(ft.)	lithology
0-54'	Sand and Gravel
54-55.5'	Sandy Silt
55.5-56'	Gravelly Sand

WELL DESIGN**CASING MATERIAL**

Surface: 4" Steel

Monitor: Stainless Steel

SCREEN MATERIAL

Type: Stainless Steel

Slot Size: 0.010"

SEAL MATERIAL

Seal #1 Type: Bentonite Chips
Setting: 36-38'

Seal #2 Type:
Setting:

FILTER MATERIAL

Type: #1 Silica Sand

Setting: 38-56'

ROCK CORING

Cored Interval:

Core Diameter:

Reamed Diameter:

LEGEND

	Cement/Bentonite Grout
	Bentonite Seal
	Silica Sandpack
	Formation Sand

Client: Town of North East

Project: North East Landfill

Project No.: 35319.20

URS
Consultants Inc.

Monitoring Well
Construction Details

Well Number:
MW-41

D
E
P
T
H

Elevation 594.89'

Elevation 592.75'

36'

38'

43'

53'

56'

Protective casing and lockable cap

Ground Level

BOREHOLE

8 inch dia.
56 feet length

WELL RISER

2 inch dia.
45.2 feet length

WELL SCREEN

2 inch dia.
10 feet length

DRILLING SUMMARY		
Geologist: Steve Frank		
Drilling Company: Soil Testing, Inc.		
Driller: Phil DeAngelis		
Date: 10/29/93		
GEOLOGIC LOG		
depth(ft.)	lithology	
0-54'	Sand and Gravel	
54-65.5'	Sandy, Gravelly Silt	
55.5-75.5'	Gravelly Sand	
75.5-91.5'	Gravelly Silt	
91.5'	Bedrock	
WELL DESIGN		

**D
E
P
T
H**

Elevation 595.73'

Elevation 594.19'

60.5'

64'

66'

76'

91.5'

Protective casing and lockable cap

Ground Level

BOREHOLE
8 inch dia.
91.5 feet length

WELL RISER
2 inch dia.
67.54 feet length

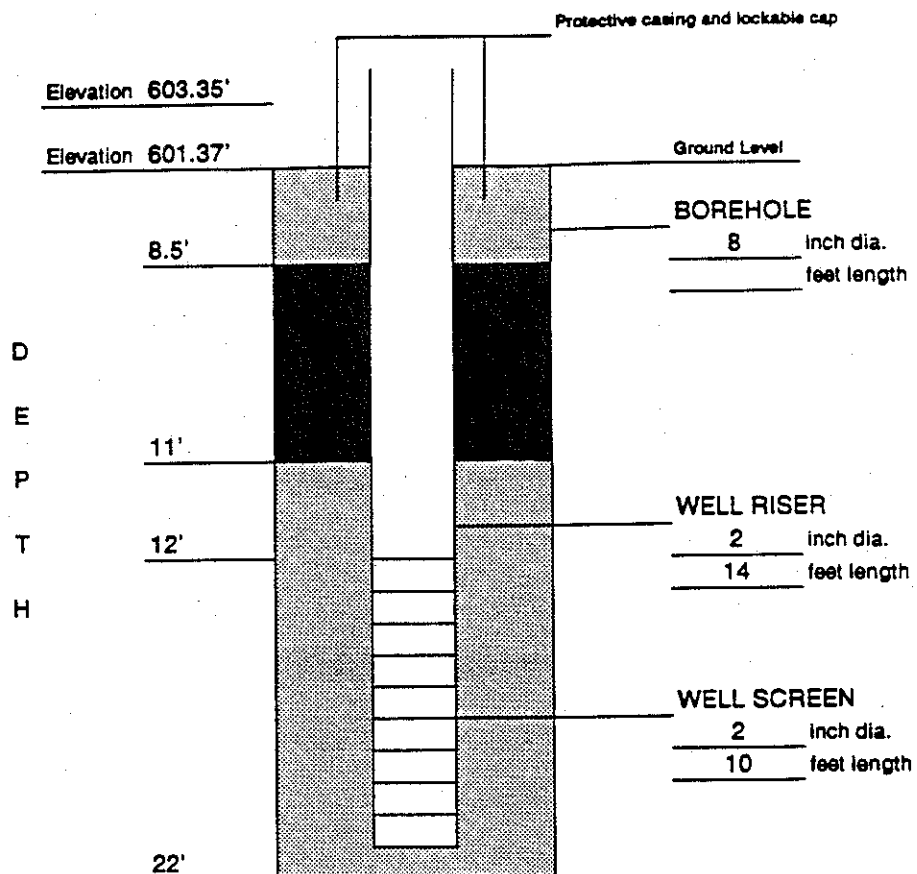
WELL SCREEN
2 inch dia.
10 feet length

CASING MATERIAL Surface: 4" Steel Monitor: Stainless Steel	SCREEN MATERIAL Type: Stainless Steel Slot Size: 0.010"	SEAL MATERIAL Seal #1 Type: Bentonite Chips Setting: 86-88' Seal #2 Type: Bentonite Chips Setting: 60.5-64'
FILTER MATERIAL Type: #1 Silica Sand Setting: 64-76'	ROCK CORING Cored Interval: Core Diameter: Reamed Diameter:	LEGEND Cement/Bentonite Grout Bentonite Seal Silica Sandpack XXXXXXX Formation Sand
Client: Town of North East	Project: North East Landfill	Project No.: 35319.20
URS Consultants Inc.	Monitoring Well Construction Details	Well Number: MW-4D

Geologist: Kevin Bonacum
Drilling Company: Soil Testing, Inc.
Driller: Kevin Bonacum
Date: 11/23/93

depth(ft.)	lithology
0-12.5'	Fill
12.5-22'	Silt

CASING MATERIAL		SCREEN MATERIAL	SEAL MATERIAL		
Surface:	4" Steel	Type:	Stainless Steel	Seal #1 Type:	Bentonite Chips
Monitor:	Stainless Steel	Slot Size:	0.010"	Setting:	8.5-11'
FILTER MATERIAL		ROCK CORING	LEGEND		
Type:	#1 Silica Sand	Cored Interval:	Cement/Bentonite Grout		
Setting:	11-22'	Core Diameter:	Bentonite Seal		
		Reamed Diameter:	Silica Sandpack		
			Formation Sand		
Client:	Town of North East	Project:	North East Landfill	Project No.:	35319.20
URS Consultants Inc.		Monitoring Well Construction Details		Well Number:	B-1



DRILLING SUMMARY

Geologist:
Anish Deshpande
Drilling Company:
Soil Testing, Inc.
Driller:
Bob DeAngelis
Date:
11/23/93

GEOLOGIC LOG

depth(ft.)	lithology
0-20'	Fill
20-24'	Silt

WELL DESIGN**CASING MATERIAL**

Surface: 4" Steel

Monitor: Stainless Steel

SCREEN MATERIAL

Type: Stainless Steel

Slot Size: 0.010"

SEAL MATERIAL

Seal #1 Type: Bentonite Chips
Setting: 10-13'

Seal #2 Type:
Setting:

FILTER MATERIAL

Type: #1 Silica Sand

Setting: 13-24'

ROCK CORING

Cored Interval:

Core Diameter:

Reamed Diameter:

LEGEND

	Cement/Bentonite Grout
	Bentonite Seal
	Silica Sandpack
	Formation Sand

Client: Town of North East

Project: North East Landfill

Project No.: 35319.20

URS
Consultants Inc.

Monitoring Well
Construction Details

Well Number:
B-2

D
E
P
T
H

Elevation 601.89'

Elevation 599.92'

Protective casing and lockable cap

Ground Level

BOREHOLE

8 inch dia.
24 feet length

10'

13'

14'

WELL RISER

2 inch dia.
16 feet length

WELL SCREEN

2 inch dia.
10 feet length

24'

DRILLING SUMMARY

Geologist:
Anish Deshpande
Drilling Company:
Soil Testing, Inc.

Driller:
Bob DeAngelis

Date:
11/23/93

GEOLOGIC LOG

depth(ft.)	lithology
0-16'	Fill
16-34'	Sand

WELL DESIGN

D
E
P
T
H

Elevation 602.34'

Elevation 600.34'

18'

20'

23'

33'

34'

Protective casing and lockable cap

Ground Level

BOREHOLE

8 inch dia.
34 feet length

WELL RISER

2 inch dia.
25 feet length

WELL SCREEN

2 inch dia.
10 feet length

CASING MATERIAL

Surface: 4" Steel

Monitor: Stainless Steel

SCREEN MATERIAL

Type: Stainless Steel

Slot Size: 0.010"

SEAL MATERIAL

Seal #1 Type: Bentonite Chips
Setting: 18-20'

Seal #2 Type:
Setting:

FILTER MATERIAL

Type: #1 Silica Sand

Setting: 20-34'

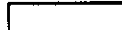
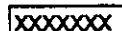
ROCK CORING

Cored Interval:

Core Diameter:

Reamed Diameter:

LEGEND

	Cement/Bentonite Grout
	Bentonite Seal
	Silica Sandpack
	Formation Sand

Client: Town of North East

Project: North East Landfill

Project No.: 35319.20

URS
Consultants Inc.

Monitoring Well
Construction Details

Well Number:
B-3

DRILLING SUMMARY

Geologist:

Steve Frank

Drilling Company:

Soil Testing, Inc.

Driller:

Kevin Bonacum

Date:

11/22/93

GEOLOGIC LOG

depth(ft.)	lithology
0-25'	Fill
25-38'	Gravelly, Silty Sand

WELL DESIGND
E
P
T
H

Elevation 609.90'

Elevation 608.71'

Protective casing and lockable cap

Ground Level

BOREHOLE

inch dia.

38 feet length

24'

26'

28'

38'

WELL RISER

2 inch dia.

29.2 feet length

WELL SCREEN

2 inch dia.

10 feet length

CASING MATERIAL

Surface: 4" Steel

Monitor: Stainless Steel

SCREEN MATERIAL

Type: Stainless Steel

Slot Size: 0.010"

SEAL MATERIAL

Seal #1 Type: Bentonite Chips

Setting: 24-26'

Seal #2 Type:

Setting:

FILTER MATERIAL

Type: #1 Silica Sand

Setting: 26-38'

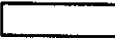
ROCK CORING

Cored Interval:

Core Diameter:

Reamed Diameter:

LEGEND

	Cement/Bentonite Grout
	Bentonite Seal
	Silica Sandpack
	Formation Sand

Client: Town of North East

Project: North East Landfill

Project No.: 35319.20

URS
Consultants Inc.Monitoring Well
Construction DetailsWell Number:
B-4

DRILLING SUMMARY

Geologist:

Steve Frank

Drilling Company:

Soil Testing, Inc.

Driller:

Kevin Bonacum

Date:

11/23/93

GEOLOGIC LOG

depth(ft.)	lithology
0-17'	Fill
17-30'	Sandy Silt

Fill

Sandy Silt

WELL DESIGND
E
P
T
H

Elevation 609.90'

Elevation 608.03'

Protective casing and lockable cap

Ground Level

BOREHOLE

8 inch dia.

30 feet length

16.5'

18.5'

20'

WELL RISER

2 inch dia.

21.9 feet length

WELL SCREEN

2 inch dia.

10 feet length

30'

CASING MATERIAL

Surface: 4" Steel

Monitor: Stainless Steel

SCREEN MATERIAL

Type: Stainless Steel

Slot Size: 0.010"

SEAL MATERIAL

Seal #1 Type: Bentonite Chips

Setting: 16.5-18.5'

Seal #2 Type:

Setting:

FILTER MATERIAL

Type: #1 Silica Sand

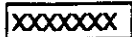
Setting: 18.5-30'

ROCK CORING

Cored Interval:

Core Diameter:

Reamed Diameter:

LEGEND Cement/Bentonite Grout Bentonite Seal Silica Sandpack Formation Sand

Client: Town of North East

Project: North East Landfill

Project No.: 35319.20

URS
Consultants Inc.Monitoring Well
Construction DetailsWell Number:
B-5

APPENDIX B

QUALITY ASSURANCE PROJECT PLAN (QAPP)

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- B-1 - NYSDEC Reporting Forms

B1.0 INTRODUCTION

The Quality Assurance Project Plan (QAPP) is designed to provide an overview of quality assurance and control procedures and programs which will be adhered to during the Long Term Monitoring Program described in the Work Plan. It will give specific methods and Quality Assurance/Quality Control (QA/QC) procedures for chemical testing of environmental samples obtained from the site. The QAPP will help ensure the quality and ultimate defensibility of data produced.

B1.1 Project QA/QC Objectives

The project QA/QC objectives for all tasks performed and data collected during the Long Term Monitoring Program are stated below:

- 1) That the highest possible scientific/professional standards for each task and/or procedure be maintained.
- 2) That all data collected meet or exceed the referenced guidelines and requirements developed and/or approved by USEPA, NYSDEC, or Standard Scientific Methods.
- 3) That the ultimate defensibility of the data produced during the Long Term Monitoring Program be assured.

These objectives will be attained by strict adherence to the Work Plan, QAPP, FSP, and HASP, as well as by utilizing trained and experienced personnel to perform all tasks. Specific QA/QC objectives of the various program elements are discussed in the following sections.

B1.2 QA/QC for Environmental Sampling

The project QA/QC goals will be attained for the collection of environmental samples by strict compliance with the sampling methods as specified in the Field Sampling Plan. Only trained

personnel, after consultation with the Project Manager and/or onsite coordinator, will carry out these sampling procedures. QA/QC will also be assured by the use of appropriate containers and preservatives as listed in Table B1-1. All samples will be held under proper chain-of-custody and be controlled by appropriate labels/paperwork (Section B4.0).

Initially, groundwater and surface water/sediment samples will be analyzed for Baseline parameters only, as specified in Table B1-2, then all subsequent sampling (quarterly for first year) will be analyzed for routine parameters only. After the first year the samples will be analyzed semi-annually for the site specific parameter list, as specified in Table B1-3.

B1.3 Methods for Chemical Measurement

To achieve the previously stated QA/QC goals, most of the chemical analyses, as listed in Table B1-2, will be performed in accordance with the NYSDEC Analytical Services Protocol (ASP) 10/95 Edition (or latest publication) which meets or exceeds USEPA CLP protocols. The NYSDEC ASP requires very strict QA/QC procedures which will be followed on all water samples collected and analyzed for the parameters listed in Table B1-2.

Only one field parameter (i.e., redox potential) will be performed using non-ASP methodologies. However, the chemical analyses on Table B1-2 will be performed using USEPA acceptable methodologies as presented in the table. QA/QC goals are also achieved by the use of the required number of field and laboratory quality control samples as indicated on Table B1-4. The definitions of each QC sample type are found in Section B2.1.

Dilutions may only be performed in order to bring the concentration of a specific analyte within linear range of quantification. All volatile analyses must be completed within 7 days of validated time of sample receipt (VTSR) at the laboratory. All analyses must be completed within the holding times as listed in Table B1-1. Prior to any deviation being made to the above-referenced analytical protocols, the NYSDEC QA/QC officer must be notified, and documentation must follow defining those deviations and their reasons.

B1.4 QA/QC Objectives for Chemical Measurement

The QA/QC objectives for chemical measurement consist of five (5) components: precision, accuracy, sensitivity, representativeness, and comparability. Each of these laboratory/project objectives, as defined below, are designed to assure the data user that proper QA/QC procedures have been implemented. It should be noted that each component is not evaluated separately, instead all are assessed in conjunction with each other to determine the overall acceptability of the analytical results.

- Precision - The laboratory objective for precision is to equal or exceed the precision demonstrated for the applied analytical methods on samples of the same matrix. For this investigation, precision is evaluated using analyses of laboratory matrix duplicate/matrix spike/matrix spike duplicates, which not only exhibit sampling and analytical precision, but also the reproducibility of the analytical results. Relative Percent Difference (RPD) criteria, published by the NYSDEC as part of ASP, and those determined from laboratory performance data, are used to evaluate precision employing matrix duplicate/matrix spike/matrix spike duplicates.
- Accuracy - The laboratory objective for accuracy is to equal or exceed the accuracy demonstrated for the applied analytical methods on samples of the same matrix. Percent recovery criteria, published by the NYSDEC as part of ASP and those determined from laboratory performance data, are used to estimate accuracy based on recovery in the matrix spike and matrix spike duplicate samples. The spike and spike duplicate will give an indication of matrix effects that may be affecting the target compounds, and also are a good gauge of method efficiency.
- Sensitivity - The sensitivity or detection limits that are required for each analysis are those specified by NYSDEC as part of the ASP document. Before any field samples are analyzed under this protocol, the instrument detection limits must be determined by the laboratory for each instrument used. Actual instrument detection limits may be somewhat lower than those required by the ASP protocol. Detection limits for

water quality analyses (Schedule B, Table B1-3) will be the published method detection limits (MDLs) for each analytical method. It should be noted that detection limits are highly matrix-dependent and may not always be achievable.

- Representativeness - Representativeness expresses the degree to which data accurately and precisely represent the environmental condition, characteristics of a population, parameter variations at a sampling point, or a process condition. The representativeness of the data from the site depends on the sampling procedures. The sampling procedures, as described in the FSP, have been designed with the goal of obtaining representative samples for each of the different matrices: groundwater, sediment and surface water.

Representativeness of the analytical data is also a function of the procedures used in processing the samples. Representativeness may be determined for this objective by a comparison of the quality control data for these samples against other data for similar samples analyzed at the same time.

- Comparability - Analytical results are comparable to results of other laboratories because of the following procedures/programs: instrument standards traceable to National Institute of Standards and Technology (NIST) or USEPA sources; the use of standard methodology; reporting results from similar matrices in consistent units; applying appropriate levels of quality control within the context of the laboratory quality assurance program; and participation in interlaboratory studies to document laboratory performance. By using traceable standards and standard methods, the analytical results may be compared to other laboratories operating similarly. The laboratory QA Program documents internal performance, and the interlaboratory studies document performance compared to other laboratories. Periodic laboratory proficiency studies are instituted as a means of monitoring interlaboratory performance.

B2.0 CHEMICAL DATA REDUCTION, VALIDATION, AND USABILITY

For all analyses, the reporting and deliverable requirements for each sampling event will conform to NYSDEC ASP Category A criteria and are to include:

- SDG narrative
- Analytical summary (TCL-no TICs) - Form I (or equivalent)
- Chain-of-Custody forms

Contract required quantitation limits (CRQL) are to be reported in accordance with Exhibit C of NYSDEC ASP, 10/95 Edition (or latest publication), where applicable. The standard NYSDEC ASP report forms (see Appendix B-1) will be completed by the analytical laboratory and included in each deliverable data package.

Laboratory analytical data are first generated in raw form at the instrument. These data may be in either graphic or printed tabular form and are presented in a standard format. Specific data generation procedures and calculations are found in each of the referenced methods (Table B1-2) presented in Section B1.3. Analytical results must be reported consistently. Data for water samples will be reported in concentrations of micrograms per liter (ug/L) or milligrams per liter (mg/L).

Data review and validation is a three-step process. A summary of the process common to all analyses is presented as follows:

A. Data reduction - Identification of all analytes must be accomplished with an authentic standard of the analyte, traceable to NIST or USEPA sources. Other criteria that must be utilized when determining the presence or absence of target compounds are mass spectra comparisons, retention time windows, and response factors relative to those of the authentic standard. Data reduction is to be performed by individuals experienced with a particular analysis, and knowledgeable of ASP and non-ASP requirements.

B. Data validation - This will be accomplished under the supervision of the QA/QC Officer, by environmental chemists. The data will be audited and validated in accordance with the referenced methods and the deliverable criteria, as referenced above. The general guidelines presented in the following document will be used to aide the chemist during the data review:

USEPA Region II CLP *Organic Data Review and Preliminary Review*, SOP HW-6, Revision 11, June 1996; and

USEPA Region II *Evaluation of Metals Data for the Contract Laboratory Program*, HW-2, Revision XI, January 1992

Data deliverables and completeness; holding times; blank contamination; surrogate spike recoveries; and duplicate results are just some of the items that chemists audit in order to validate the data packages submitted. If discrepancies or deviations are found in the data package, the Laboratory will be contacted to clarify items that are unclear. The Laboratory will be given 10 days to respond to all inquiries. Once the validation process is completed, data usability is then determined.

C. Data usability - A Data Usability Summary Report (DUSR) will be submitted to NYSDEC and the Town, and will describe the samples and the analytical parameters. Data deficiencies, analytical protocol deviations, and quality control problems are identified and their effect on the data will be discussed. The DUSR will also include recommendations on resampling/reanalysis.

B2.1 Quality Control Samples

Data validation can be envisioned as a systematic procedure of reviewing a body of data against a set of established criteria to provide a specified level of assurance of its validity prior to its intended use. The process of data validation involves the use of such techniques as performance audits (Section B3.0), instrument calibrations (Section B5.0), and the analysis of quality control samples. QC samples are especially useful for detecting cross-contamination from sources foreign

to the sample, but present in the laboratory or field. These QC samples also allow a direct check on the variability in the methods of analysis and sampling, and in the sample material itself. QC samples will be analyzed from the field and the laboratory and include blank samples and matrix spike samples.

B2.1.1 Field Quality Control Samples

A. Trip Blanks - The primary purpose of the trip blank is to detect additional sources of contamination that might potentially influence contaminant values reported in actual samples. Possible sources of contamination may be laboratory reagent water, sample containers, or sample handling procedures in the field and at the laboratory. Trip blanks will be defined as two 40 ml VOA (Volatile Organics Analysis) vials filled with laboratory-demonstrated analyte-free water. This water must originate from one common source within the laboratory and must be the same water used by the laboratory performing the analysis. Trip blanks should be handled and transported in the same manner as the samples acquired that day, except that trip blanks are not opened in the field. Instead, they travel with the samples in coolers. Trip blanks must return to the laboratory with the same set of bottles they accompanied to the field, and are analyzed for volatile organics only.

B2.1.2 Laboratory Quality Control Samples

A. Method Blanks - Method blank is defined as laboratory-demonstrated analyte-free water that is carried through the entire analytical procedure. The method blank is used to determine the level of laboratory background contamination. Per the NYSDEC ASP, methylene chloride, acetone and 2-butanone are common laboratory contaminants. These three compounds may be present in the method blanks up to five times the contract required quantitation limit (CRQL). Blank contamination is not to exceed the criteria stipulated by the ASP document, or corrective action is to be used before samples are analyzed. Method blanks are analyzed at a frequency defined by the ASP document.

B. Matrix Duplicate Samples - An aliquot of a matrix (water) is subjected to the entire analytical procedure in order to indicate precision of the method for the matrix by measuring the

relative percent difference (RPD) of the two samples. The duplicate and original sample are used to assess the matrix interferences within the sample, as well as to evaluate the reproducibility of analytical results. Matrix duplicates are analyzed for inorganic parameters only (i.e., metals and water quality parameters).

C. Matrix Spike Samples - An aliquot of a matrix (water) is fortified (spiked) with known concentration of specific compounds, as stipulated in the ASP document. The matrix spike and matrix spike duplicate are subjected to the same analytical procedure as the samples. Both accuracy and precision of the method are determined by measuring the percent recovery and RPD of the two spiked samples. These samples are used to assess matrix interference, as well as to evaluate instrument performance.

B3.0 LABORATORY PERFORMANCE AUDITS

All laboratories must have successfully completed the analysis of "proficiency samples" in order to receive New York State Department of Health ELAP Certification. This certification is a requirement in order to participate in the NYSDEC ASP Program. The laboratory, as per Volume 8 of the NYSDEC ASP, will receive a performance evaluation sample set from NYSDOH on a semi-annual basis to verify the laboratory's continuing ability to produce acceptable analytical results. The selected Laboratory must maintain this certification throughout the duration of this project, or another certified laboratory will be used.

B4.0 SAMPLE CUSTODY AND SHIPPING

Proper documentation of sample collection and the methods used to control these documents are referred to as chain-of-custody procedures. Chain-of-custody procedures are essential for presentation of sample analytical results as evidence in litigation or at administrative hearings held by regulatory agencies. Chain-of-custody procedures also serve to minimize loss or misidentification of samples and to ensure that unauthorized persons do not tamper with collected samples.

The procedures used in this Long Term Monitoring Program follow the chain-of-custody guidelines of NEIC Policies and Procedures, prepared by the National Enforcement Investigations Center (NEIC) of the U.S. Environmental Protection Agency Office of Enforcement.

B4.1 Custody Definitions

- Chain-of-Custody Officer - The person responsible for oversight of all associated chain-of-custody activities is the Quality Assurance Officer.
- Under Custody - A sample is "Under Custody" if:
 1. It is in your possession, or
 2. It is in your view, after being in your possession, or
 3. It was in your possession and you locked it up, or
 4. It is in a designated secure area.

B4.2 Responsibilities

The Chain-of-Custody Officer shall be responsible for monitoring all chain-of-custody activities and for collecting legally admissible copies of chain-of-custody documentation for the permanent project file. The Chain-of-Custody Officer shall be responsible for:

- (1) An initial review of sample labels or tags, closure tapes, and chain-of-custody record provided by the laboratory.
- (2) Training of all field sampling personnel in the methodologies for carrying out chain-of-custody and the proper use of all chain-of-custody forms and record documents.
- (3) Monitor implementation of chain-of-custody procedures.

B4.3 Chain-of-Custody

The chain-of-custody is actually initiated in the laboratory when the sample bottles are cleaned, packed, and shipped for use in the field. When the bottles are received they will be checked for any breach of chain-of-custody seals or any evidence of tampering.

The sample bottles will be carried into the field by a field technician, where they will be used to collect samples. When the samples are collected, bottle labels shall be filled out by the field technician. Each label will include the following information:

- Site name
- Sample identification (see Section B4.4)
- Project number
- Date/time
- Samplers' initials
- Sample preservation (if any)
- Analysis required

At the time of sampling, the field technician will also record sample information in a logbook and on a chain-of-custody form (Figure B4-1), noting on each any difficulties encountered in sampling. All label, logbook, and chain-of-custody form entries shall be made in waterproof ink. The sample information recorded in the logbooks should be at least as detailed as that recorded on

labels, and should indicate the type of sample (e.g., groundwater and surface water), preservation technique, and sampling location, in sufficient detail to allow resampling at the same location.

After containers are filled, the field technician will place the filled containers in coolers or ice chests. The field technician will maintain custody of all samples during sample processing. After samples are processed in the field (e.g. taking field measurements, and adding preservatives as necessary) they will be prepared for shipping to the laboratory.

B4.4 Sample Identification Code

Each sample will be assigned a unique identification alpha-numeric code. An example of this code and a description of its components is presented below:

Examples

1. MW-1S

MW-1	=	Monitoring Well 1
S	=	Shallow Well

List of Abbreviations

Monitoring Well Type/Location

S	=	Shallow
I	=	Intermediate
D	=	Deep
B	=	Bedrock
SW	=	Surface Water
SED	=	Sediment

Sample Type

WG	=	Groundwater
WS	=	Surface Water
SD	=	Sediment
TB	=	Trip Blank
MS	=	Matrix Spike
SD	=	Matrix Spike Duplicate
MD	=	Matrix Duplicate

B4.4.1 Paperwork/Labels

All paperwork and labels will be according to methods outlined in the FSP. It is the responsibility of the field technician, on-site coordinator and the chain-of-custody officer to assure strict compliance with these procedures.

B4.4.2 Shipping of Samples

All samples to be collected will be categorized as environmental samples. The environmental samples will consist of potentially contaminated groundwater, sediment and surface water samples. It is therefore anticipated that all environmental samples that will be collected are likely to have low concentrations of contaminants and shall be handled as such for shipping purposes.

B5.0 MAINTENANCE AND CALIBRATION OF EQUIPMENT

B5.1 Analytical Equipment

All instruments used to perform ASP analyses are calibrated according to the procedures presented in the NYSDEC ASP 10/95 Edition (or latest publication). All non-ASP analyses will be calibrated according to the procedures presented in the EPA-approved analytical method.

All laboratory equipment is maintained according to the manufacturer's recommendations, including preventive maintenance.

B5.2 Field Sampling Equipment

Field equipment to be used during the collection of environmental samples includes a disposable bailer, turbidimeter, HNu meter, dissolved oxygen meter, pH meter, conductivity meter, and photoionization detector. The disposable bailer will require no maintenance. Calibration procedures for each electronic instrument, as well as any applicable special maintenance procedures, are discussed in the manufacturer's operating manual. Copies of the manufacturer's operating manual for each instrument will be kept at the field office.

B6.0 CORRECTIVE ACTIONS

If the validity of the data should become suspect during performance of the QA/QC procedures found in the preceding sections of the QAPP, then corrective actions will be initiated. The actual trigger, as well as the form of the appropriate corrective action, is dependent on the specific method/procedures, time at which the error was detected, and the type of error that has occurred.

For example, if the data had been collected from an instrument, the general corrective actions would be as follows:

1. Recalibration or standardization of instruments.
2. Acquiring new standards (if applicable).
3. Replacing equipment.
4. Repairing equipment.
5. Reanalyzing samples or redoing sections of work.

System audits and calibration procedures defined in this document, along with data review, will be conducted at a frequency ensuring that errors and problems are detected early, thus avoiding the prospect of redoing large segments of work.

TABLE B1-1
SAMPLE BOTTLE, PRESERVATION AND HOLDING TIME REQUIREMENTS

Parameters	Holding Time ^(a)	Containers/ Sample ^(b)	Size ^(b)	Type*	Cap**	Preservation
Volatile Organic Compounds	7 days	2	40 ml.	2 (VOA)	2(Septum)	Cool 4°C
Metals (Total)	6 mo. except mercury -26 days	1	1000 ml.	1	1	HNO ₃ to pH <2, Cool 4°C
Cyanide	12 days	1	1000 ml.	1	1	Cool 4°C, NaOH to pH >12, 0.6g Ascorbic Acid
BOD ₅	24 hours	2	1000 ml.	1	1	Cool 4°C
Sulfate	26 days					
Total Dissolved Solids	5 days					
Alkalinity	12 days					
Chloride	26 days					
Turbidity	24 hours					
Color	24 hours					
Hexavalent Chromium	24 hours					
Bromide	26 days					
COD	26 days	2	1000 ml.	1	1	Cool 4°C, H ₂ SO ₄ to pH <2
TOC	26 days					
Ammonia-Nitrogen	26 days					
TKN	26 days					
Nitrate-Nitrogen	26 days					
Total Phenols	26 days					
Hardness	6 months	1	1000 ml.	1	1	Cool 4°C, HNO ₃ to pH <2

NOTES:

- * Bottle type - 1 = Polyethylene -2 = Glass
- ** Cap liner - 1 = Polyethylene -2 = Teflon
- a - Holding times are from validated time of sample receipt (VTSR) at the laboratory
- b - Containers/sample and size may change based on the needs of the laboratory

TABLE B1-2 (Continued)

Common Name ²	Schedule A Baseline ¹ Parameters	Schedule B Routine Parameters	Suggested Method
Inorganic Parameters			7020 6010, 7040 or 7041 7060 or 7061
Aluminum	x		
Antimony	x		
Arsenic	x		
Barium	x		6010 or 7080 6010, 7090 or 7091
Beryllium	x		6010
Boron	x	x	6010, 7130 or 7131
Cadmium	x		
Calcium	x	x	7140 6010, 7190 or 7191
Chromium	x		7195, 7196, 7197 or 7198
Chromium (Hexavalent) ⁶	x		
Cobalt	x		6010, 7200 or 7201 6010, 7210 or 7211
Copper	x		9010
Cyanide	x		
Iron	x	x	7380 or 7381
Lead	x	x	6010, 7420 or 7421
Magnesium	x	x	7450
Manganese	x	x	7460 or 7461 7470
Mercury	x		6010 or 7520
Nickel	x		
Potassium	x	x	7610 6010, 7740 or 7741
Selenium	x		6010, 7760 or 7761
Silver	x		
Sodium	x	x	7770 6010, 7840 or 7841
Thallium	x		6010, 7910 or 7911
Vanadium	x	x	6010, 7950 or 7951
Zinc	x		
VOCs (47 compounds)	x	x ⁸	8260, 8010, 8020, 8021, and/or 8030

NOTES:

- ¹ This list contains: volatile organics for which possible analytical procedures provided in EPA SW-846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Final Update III, June 1997 (or latest publication) includes Method 8260B; metals for which SW-846 provides either Method 6010B or a method from the 7000A series of methods; and additional parameters for which possible procedures are provided in Methods for Chemical Analysis of Water and Wastes, USEPA-600/4-79-020, March, 1983. The regulatory requirements pertain only to the list of parameters; the right hand column Methods is given for informational purposes only.
- ² Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.
- ³ Any floaters or sinkers found must be analyzed separately for baseline parameters.
- ⁴ Surface water only.
- ⁵ Any unusual conditions (colors, odors, surface sheens, etc.) noticed during well development, purging, or sampling must be reported.

TABLE B1-2 (Continued)

- ⁶ The department may waive the requirement to analyze Hexavalent Chromium provided that Total and Hexavalent and Trivalent Chromium values do not exceed 0.05 mg/l.
- ⁷ These parameters will not be performed on sediment samples.
- ⁸ VOCs will not be performed on surface water and sediment samples for routine parameters.

**TABLE B1-3
SITE SPECIFIC PARAMETER LIST**

Common Name ²	SCHEDULE C Groundwater	SCHEDULE C Surface Water/Sediments	Suggested Method(s)
Field Parameter			
Static Water Level (in wells and sumps)	x	x	
Specific Conductance (field)	x	x	9050
Temperature (field)	x	x	
Floater or Sinkers ³	x	x	
pH (field)	x	x	9040 or 9041
Redox Potential (field) Eh	x	x	
Dissolved Oxygen (field) ⁴	x	x	
Field Observations ⁵	x	x	
Turbidity	x	x	180.1
Leachate Indicators			
Total Kjeldahl Nitrogen	x	x	351.1, 351.2, 351.3 or 351.4
Ammonia	x	x	350.1, 350.2 or 350.3
Nitrate	x	x	9200
Chemical Oxygen Demand ⁷	x	x	410.1, 410.2, 410.3 or 410.4
Biochemical Oxygen Demand (BOD ₅) ⁷	x	x	405.1
Total Organic Carbon	x	x	9060
Total Dissolved Solids ⁷	x	x	160.1
Sulfate	x	x	9035, 9036 or 9038
Alkalinity	x	x	310.1 or 310.2
Phenols	x	x	9065, 9066, 9067, or 8040
Chloride	x	x	9250, 9251 or 9252
Total hardness as CaCO ₃ ⁷	x	x	130.1 or 130.2
Color ⁷	x	x	110.1, 110.2 or 110.3
Bromide	x	x	320.1
Inorganic Parameters			
Aluminum	x		7020
Antimony	x		6010, 7040 or 7041
Arsenic	x		7060 or 7061
Barium	x		6010 or 7080
Beryllium	x		6010, 7090 or 7091
Cadmium	x	x	6010, 7130 or 7131
Calcium	x	x	7140
Chromium	x		6010, 7190 or 7191
Chromium (Hexavalent) ⁶	x		7195, 7196, 7197 or 7198
Cobalt	x		6010, 7200 or 7201
Copper	x		6010, 7210 or 7211
Cyanide	x		9010
Iron	x	x	7380 or 7381
Lead	x	x	6010, 7420 or 7421
Magnesium	x	x	7450
Manganese	x	x	7460 or 7461
Mercury	x		7470
Nickel	x		6010 or 7520

TABLE B1-3 (Continued)

Common Name ²	SCHEDULE C	SCHEDULE C	Suggested Method(s)
	Groundwater	Surface Water/Sediments	
Potassium	x	x	7610
Selenium	x		6010, 7740 or 7741
Silver	x		6010, 7760 or 7761
Sodium	x	x	7770
Thallium	x		6010, 7840 or 7841
Vanadium	x		6010, 7910 or 7911
Zinc	x	x	6010, 7950 or 7951
VOCs	x	x	8260, 8010, 8020, 8021, and/or 8030

NOTES:

- ¹ This list contains: volatile organics for which possible analytical procedures provided in EPA SW-846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Final Update III, June 1997 (or latest publication) includes Method 8260B; metals for which SW-846 provides either Method 6010B or a method from the 7000A series of methods; and additional parameters for which possible procedures are provided in Methods for Chemical Analysis of Water and Wastes, USEPA-600/4-79-020, March, 1983. The regulatory requirements pertain only to the list of parameters; the right hand column Methods is given for informational purposes only.
- ² Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.
- ³ Any floaters or sinkers found must be analyzed separately for baseline parameters.
- ⁴ Surface water only.
- ⁵ Any unusual conditions (colors, odors, surface sheens, etc.) noticed during well development, purging, or sampling must be reported.
- ⁶ The department may waive the requirement to analyze Hexavalent Chromium provided that Total and Hexavalent and Trivalent Chromium values do not exceed 0.05 mg/l.
- ⁷ These parameters will not be performed on sediment samples.

**TABLE B1-4
SAMPLES AND REQUIRED ANALYSIS***

Sample ID	First Event	Second Event	Third Event	Fourth Event	Fifth Event
MW-01	A	B	B	B	C
MW-02	A	B	B	B	C
MW-2S	A	B	B	B	C
MW-2I	A	B	B	B	--
MW-2B	A	B	B	B	C
MW-3S	A	B	B	B	C
MW-3B	A	B	B	B	C
MW-4S	A	B	B	B	C
MW-4I	A	B	B	B	--
MW-4B	A	B	B	B	C
SW-1	A	B	B	B	C
SED-1	A	B	B	B	C
SW-2	A	B	B	B	C
SED-2	A	B	B	B	C

Abbreviations:

MW - Monitoring Well SED- Sediment
 SW - Surface Water S- Shallow Well
 I - Intermediate Well R- Bedrock Well
 A - Schedule A - Baseline Parameters (see Table B1-2)
 B - Schedule B - Routine Parameters (see Table B1-2)
 C - Schedule C - Site Specific Parameter List (see Table B1-3)

NOTES:

- * A matrix spike/matrix spike duplicate or a matrix duplicate will be performed on Schedule A samples at a rate of one MS, and one MSD or MD for every 20 samples. QC for Schedules B and C will be laboratory batch QC which may or may not include Northeast Landfill samples.

APPENDIX B-1

NYSDEC REPORTING FORMS

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

[illegible]

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOLATILE (VOA)
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY

[illegible]

APPENDIX C

FIELD SAMPLING PLAN

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C1.0 INTRODUCTION

The Field Sampling Plan (FSP) is designed to provide detailed step-by-step procedures for the field activities outlined in the Work Plan for the Long Term Monitoring Program of the Town of North East Landfill. This Section (C) will serve as the field procedure manual which will be strictly followed by all personnel. Adherence to these procedures will ensure the quality and defensibility of the field data collected. In addition to the field procedures outlined in this document, all personnel performing field activities must do so in compliance with: (1) a site specific and approved health and safety plan; (2) the quality assurance/quality control measures outlined in Appendix B of the Long Term Monitoring Plan; and (3) the scope of work outlined in the Long Term Monitoring Plan.

C2.0 GROUNDWATER WELL PURGING/SAMPLING

Summary: To collect representative groundwater samples, groundwater monitoring wells must be adequately purged prior to sampling. Purging will require the removal of three to five volumes of standing water in rapidly recharging wells and at least one volume from wells with slow recharge rates. Shallow wells in which the screen intersects the water table should require a minimum amount of purging since the groundwater would flow through the screen and not be entrapped in the casing. Deeper wells should be purged more thoroughly since they may be located in confined aquifers and water may rise up into the casing. A thorough purging would require the removal of several volumes of this trapped water to ensure that representative groundwater is brought into the casing for sampling. Sampling should commence as soon as adequate recharge has occurred to prevent the loss of volatile organic compounds.

Groundwater sampling locations and frequency of sampling are defined in Section 3 of the Environmental Monitoring Plan. The wells will be sampled following procedures found in Section C2.2 of this FSP. The samples will be labeled and shipped following procedures outlined in Section C8.0 and C9.0, respectively, and analyzed according to the program outlined in the Quality Assurance Project Plan.

C2.1 Well Purging Procedures

(1) The well cover will be unlocked and carefully removed to avoid having any foreign material enter the well. The interior of the riser pipe will be monitored for organic vapors using a photoionization detector (PID). If a reading of greater than 5 ppm is recorded, the well will be vented until levels are below 5 ppm before pumping continues.

(2) Using an electronic water level detector, the water level below the top of the casing will be measured. Knowing the total depth of the well, it will be possible to determine the volume of water in the well. The end of the probe will be soap-and-water-washed and deionized-water-rinsed between wells.

(3) On wells with water levels that remain 25 feet or less below the top of casing, a peristaltic pump will be used to remove three to five times the well volume, measured into a calibrated pail. (A well volume will be defined as the volume of water standing inside the casing measured prior to evacuation.) Dedicated new polyethylene discharge and intake tubing (3/8" I.D. low-density polyethylene) will be used for each well.

During this evacuation of the well, the intake opening of the pump tubing will be positioned just below the surface of the well water. If the water level drops, then the tubing will be lowered as needed to maintain flow. Pumping from the top of the water column will ensure proper flushing of the well. Pumping will continue until the required volumes are removed.

If the well purges to dryness and recharges rapidly (within 15 minutes), water will continue to be removed as it recharges until the required volumes are removed. If the well purges to dryness and is slow to recharge (greater than 15 minutes), evacuation will be terminated.

(4) If the water level of a well is initially below 25 feet, or draws down to this level because of a slow recharge rate, then a hydrolift pump, will be used to evacuate the well. Dedicated new polyethylene tubing will be used for each well. It will be discarded after use. Prior to use in the field, the dedicated purging bailer will be cleaned (Section C7.0).

(5) Purging will continue until a predetermined volume of water has been removed. The discharge volume will be established on a well-by-well basis following the procedure described in Groundwater Monitoring Review, Spring, 1986. Measurements for pH, conductivity, temperature, and turbidity will be recorded during purging. The stability of these measurements with time will be used to guide the decision to discontinue purging.

(6) All well purgings will be discharged onto the ground downgradient of the monitoring well.

(7) Well purging data are to be recorded in the field notebook and on the Well Development/Purging Log (Figure C2-1).

C2.2 Groundwater Sampling Procedures

(1) Well sampling may be performed on the same date as purging at any time after the well has recovered sufficiently to sample, or within 24 hours after evacuation, if the well recharges slowly. If a well does not contain or yield sufficient volume for all required laboratory analytical testing (including quality control), then a decision will be made to prioritize analyses. If a well takes longer than 24 hours to recharge, then a decision will be made after consultation with NYSDEC whether or not the sample will be considered valid.

(2) After well purging is completed and the well has recharged sufficiently per the previous item, a sample will be collected into appropriate containers using a disposable, certified clean HDPE bailer. The bailer will have a 5-foot monofilament polypropylene "leader" which will be attached to a clean, dedicated 1/4-inch nylon line. The bailer will be lowered below the surface of the water so as to allow the water to touch only the "leader" and not the nylon rope.

(3) All sample bottles will be labeled in the field using a waterproof permanent marker. Procedures outlined in Sections C8.0 and C9.0 will be followed. Labels will include:

- Site name
- Sample identification code
- Project number
- Date/time
- Sampler's initials
- Preservatives added (if any)
- Analysis to be performed

(4) Samples will be collected into pre-cleaned bottles (containing required preservatives) and placed on ice in coolers for processing (preservation and packing) prior to shipment to the Laboratory. Chain-of-custody will be initiated.

(5) A separate sample of approximately 60 mls will be collected into a 16-ounce plastic bottle to measure pH, conductivity, temperature, and turbidity of the well in the field.

(6) Well sampling data are to be recorded in the field notebook and on the Well Development/Purging Log (Figure C2-1).

(7) The wells to be sampled are MW-01, -02, -2S, -2I, -2B, -3S, -3B, -4S, -4I and 4B. The location of these wells can be found on Figure C2-2.

C3.0 WATER LEVEL MONITORING

Summary: Determination of groundwater surface elevations throughout a monitoring well network makes possible the construction of the water surface contour map and determination of groundwater flow patterns.

Water levels in all monitoring wells will be measured using a Brainard Kilman Model 2220 water level indicator or equivalent. Water levels will be measured prior to the groundwater sampling. Water level measurement procedures are presented below.

- Procedure:
- 1) Clean water level probe and lower portion of cable following standard decontamination procedures (Section C7.0) and test water level meter to ensure that the batteries are charged.
 - 2) Lower probe slowly into the monitor until audible alarm indicates water.
 - 3) Read depth, to the nearest 100th of a foot from the graduated cable using the highest point on the monitoring pipe as a reference.
 - 4) Repeat the measurement for confirmation and record the water level.
 - 5) Remove the probe from the monitor slowly, drying the cable and probe with a clean "Chem Wipe" or tissue.
 - 6) Replace monitor cap and lock protective cap in place.
 - 7) Return water level meter for decontamination (Section C7.0) if additional measurements are to be taken.

C4.0 SURFACE WATER SAMPLING

Summary: The surface water on the site may be sampled by direct submersion of the sample container. If however, the sample location does not lend itself to easy access then an extendable pond sampler (Figure C4-1) may be used to collect samples by attaching the sample container or precleaned sampling beaker made of appropriate material (glass, stainless steel, or teflon) to the pond sampler. Volatile samples, if required, should be collected by submerging the VOA vial and capping underwater if possible, otherwise care must be taken when using a separate container for collection so as not to agitate the water during collection or transfer into the VOA vials. Samples will be collected during the Long Term Monitoring Program and analyzed for appropriate indicator parameters. The locations of surface water sampling points are shown on Figure C2-2. The following procedure will be used as referenced from "Characterization of Hazardous Waste Sites Manual, Volume 2, Available Sampling Methods", 3rd Ed., USEPA, Nov. 1986.

- Procedure:
- 1) Assemble the pond sampler. Make sure that the sampling beaker and the bolts and nuts that secure the clamp to the pole are tightened properly.
 - 2) With proper protective garment and gear, take grab samples by slowly submerging the precleaned beaker with minimal surface disturbance.
 - 3) Retrieve the pond sampler from the surface water with minimal disturbance.
 - 4) Remove the cap from the sample bottles and slightly tilt the mouth of the bottle below the dipper/device edge.
 - 5) Empty the sampler slowly, allowing the sample stream to flow gently down the side of the bottle with minimal entry turbulence.
 - 6) Continue delivery of the sample until the bottle is almost completely filled.
 - 7) In the same manner, fill all required sample bottles and preserve the sample as required.
 - 8) Secure the appropriately lined (teflon or polyethylene) cap tightly.

- 9) Attach another precleaned beaker prior to sampling at the next location.
- 10) Record all field data in the field notebook.

C5.0 SEDIMENT SAMPLING

Summary: Collection of a sediment sample typically is performed with a stainless-steel scoop. Stainless steel is preferred over chrome-plated scoops or trowels which should be avoided where chromium contamination is suspected. This method is most appropriate for shallow samples to a depth of 1 foot or less. If a subsurface sample is desired, a garden shovel may be used to remove the upper sediments to the desired depth and the sample then can be collected with a stainless-steel lab spoon or equivalent. Sediment samples taken from streams will be collected sequentially from suspected less contaminated to more contaminated areas. Typically, from the source, samples are collected in a downstream to upstream sequence.

For lake sediments, a hand piston sampler may be used to collect undisturbed samples. In heavily compacted sediments or when sediments contain rocks, gravel and woody debris the petite ponar dredge sampler can be used. In addition, because of its larger size and weight, it can also be used in stronger stream currents and enable deeper penetration into the sediment.

C5.1 Procedures For Sediment Sampling With A Scoop

- 1) Using a pre-cleaned stainless-steel scoop, collect a sediment sample (to desired depth) and place into required jars.
- 2) If a subsurface sample is desired, remove sediment to the desired depth with a garden shovel. Then use a pre-cleaned stainless-steel lab spoon or equivalent to collect the required samples.
- 3) Secure a Teflon-lined cap onto the container and place the sample on ice in a cooler for shipment to the laboratory.
- 4) Label the sample bottle with the appropriate sample label (Section C8.0). Be sure to label carefully and clearly, addressing all the categories or parameters. Complete all chain of custody documents and record in the field log book.

- 5) Decontaminate equipment after use and between sample locations using the procedure in Section C7.0.
- 6) Record all field data in the field logbook.

C5.2 Procedures For Sediment Sampling With a Hand Piston Sampler

- 1) Pre-clean the sampler as described in Section C7.0
- 2) Set the sampler to the desired elevation and force the sampler hammer or hand thrust to the desired depth.
- 3) Lock the sampler and twist the apparatus to shear the core and withdraw the sampler.
- 4) Extract the sample into a stainless-steel tray.
- 5) Transfer the sample into an appropriate sample bottle with a stainless-steel laboratory spoon, scoop, or spatula.
- 6) Label the sample bottle with the appropriate sample tag. Complete all chain of custody documents and record in the field logbook.
- 7) Place the properly labeled sample bottle on ice in a cooler for shipment to the laboratory.
- 8) Decontaminate equipment as described in Section C7.0.
- 9) Record field data in the field notebook.

C5.3 Procedures For Sediment Sampling With A Petite Ponar Dredge

- 1) Attach the necessary length of rope (a bowline knot is best) to the Petite Ponar Dredge. Attach the rope to the boat.
- 2) Set the trip mechanism on the dredge. Be careful not to place fingers or hands on or into any pinch points.
- 3) Lower dredge to the sediment gently lowering through the final 1 to 2 feet of water. Trip the dredge by allowing the line to slacken.
- 4) Lift the dredge to the surface with a smooth, even motion.
- 5) Tilt the Ponar to pour off water. Take care to distinguish between water and sediment.
- 6) Empty the contents of the Ponar into a clean stainless-steel bowl.
- 7) Sediment for volatile organic analyses should be placed directly into the bottle to minimize disturbance. Sediment for other analyses are homogenized in a clean stainless-steel bowl with a clean stainless-steel spoon or equivalent. When necessary, protect the samples from wind blown dust, rain, etc., and from warming, especially samples for organic analyses. Cover the pan with aluminum foil for protection, but avoid contact with the sample, especially samples to be analyzed for metals.
- 8) Complete the bottle label before filling it with sediment. Bottles for volatile organic analysis should be filled to the very top. Exclude air pockets by tamping or gently compacting the soil as the bottle is filled. Do not agitate the sediment or expose to aeration by the wind.

- 9) Clean the threads and lip of the bottle with a paper towel (Soft Cote or Chem Wipe). Do not touch the sample with the paper towel or gloves. Check the liner in the bottle cap before tightening the cap onto the bottle.
- 10) Clean the outside of the bottle with water and/or a paper towel. Attach sample tags when needed.
- 11) Place the sample on ice as soon as possible after filling the sample bottles. Some samples for organic analysis need to be protected from light by using amber bottles and/or by putting in the cooler.
- 12) Chain of custody forms must be completed by the samplers before leaving the site.
- 13) Samples must be packaged and shipped according to USDOT and IATA regulations when applicable. At a minimum, samples must be packaged to prevent breakage.
- 14) Sampling equipment must be decontaminated (Section C7.0) between sample locations and before leaving the site. Dunk the dredge in the water to wash off some of the sediment.

C6.0 EXPLOSIVE GAS SCREENING PROCEDURES

Summary: Soil gas may be screened for explosive gases using a combustible gas monitor.

Procedure:

- 1) At each sample location a 3/8" diameter hollow steel slam bar with a slotted tip will be advanced into the subsurface to a depth of 6 to 12 inches. The annulus around the ground surface will be sealed with soil to prevent ambient air from entering the borehole.
- 2) Insert the Teflon intake hose from the combustible gas monitor into the hole to within one inch of the bottom and record the highest reading.
- 3) The slam bar rod will then be removed from the hole and decontaminated as specified in Section C7.0.
- 4) Backfill the slam bar hole with bentonite pellets.
- 5) Mark sampling location with permanent stake and identification (subsequent readings to be obtained within 10 feet of the marked post).

C7.0 EQUIPMENT CLEANING PROCEDURES

Summary: To assure that no outside contamination will be introduced into the sample/data, thereby invalidating the sample/data. The following cleaning protocols will apply for all equipment used to collect samples/data during the field investigations.

- Procedure:
- 1) Thoroughly clean equipment with soap (alconox or equivalent) and water, until all visible contamination is gone.
 - 2) Rinse with tap water, until all visible evidence of soap is gone.
 - 3) Rinse several times with deionized water.
 - 4) Air dry before using.

C8.0 SAMPLE LABELING

Summary: In order to prevent misidentification and to aid in the handling of environmental samples collected during the field investigation, the following procedure will be followed:

Procedure: Affixed to each sample container will be non-removable (when wet) label. The sample bottle will be wrapped with 2-inch cellophane tape. Apply label and wrap with tape to cover label. The following information will be written with permanent marker:

- Site name
- Sample identification
- Project number
- Date/time
- Sampler's initials
- Sample preservation
- Analysis required

Each sample of each matrix will be assigned a unique identification alpha-numeric code. An example of this code and a description of its components is presented below:

Examples

MW-1S

MW-1 = Monitoring Well 1

S = Shallow Well

List of Abbreviations

Monitoring Well Type/Location

S = Shallow

I = Intermediate

D = Deep

B = Bedrock

SW = Surface Water
SED = Sediment

Sample Type

WG = Groundwater
WS = Surface Water
SD = Sediment
TB = Trip Blank
MS = Matrix Spike
SD = Matrix Spike Duplicate
MD = Matrix Duplicate

C9.0 SAMPLE SHIPPING

Summary: Proper documentation of sample collection and the methods used to control these documents are referred to as chain-of-custody procedures. Chain-of-custody procedures are essential for presentation of sample analytical results as evidence in litigation or at administrative hearings held by regulatory agencies. Chain-of-custody procedures also serve to minimize loss or misidentification of samples and to ensure that unauthorized persons do not tamper with collected samples.

The procedures used in the Long Term Monitoring Program follow the chain-of-custody guidelines outlined in NEIC Policies and Procedures, prepared by the National Enforcement Investigations Center (NEIC) of the U.S. Environmental Protection Agency Office of Enforcement.

- Procedure:
- 1) The chain-of-custody record should be completely filled out, with all relevant information as in the example (Figure C9-1).
 - 2) The white original goes with the samples. It should be placed in a ziplock bag and taped inside the sample cooler.
 - 3) Mark volume level on bottle with grease pencil.
 - 4) Place about 3 inches of inert cushioning material such as vermiculite or zonolite in bottom of cooler.
 - 5) Place bottles in cooler in such a way that they do not touch (use cardboard dividers).
 - 6) Put VOA vials in ziplock bag and place them in the center of the cooler.
 - 7) Pack bottles, especially VOA vials, in ice in plastic bags.
 - 8) Pack cooler with water ice in ziplock plastic bags.
 - 9) Pack cooler with cushioning material.
 - 10) Put paperwork in plastic bags and tape with masking tape to inside lid of cooler.
 - 11) Tape drain shut.

12) Wrap cooler completely with strapping tape at two locations. Secure lid by taping. Do not cover any labels.

13) Place lab address on top of cooler.

For out-of-town laboratory, add the following:

- Put "This side up" labels on all four sides and "Fragile" labels on at least two sides.
- Affix numbered custody seals on front right and left of cooler. Cover seals with wide, clear tape.



WELL DEVELOPMENT/PURGING LOG

PROJECT TITLE: _____

PROJECT NO.: _____

STAFF: _____

DATE: _____

WELL NO.: _____

① TOTAL CASING AND SCREEN LENGTH (FT.): _____

② CASING INTERNAL DIAMETER (in.): _____

③ WATER LEVEL BELOW TOP OF CASING (FT.) _____

④ VOLUME OF WATER IN CASING (GAL.) _____

WELL I.D.

VOL.
GAL./FT.

1"

0.04

2"

0.17

3"

0.38

4"

0.66

5"

1.04

6"

1.50

8"

2.60

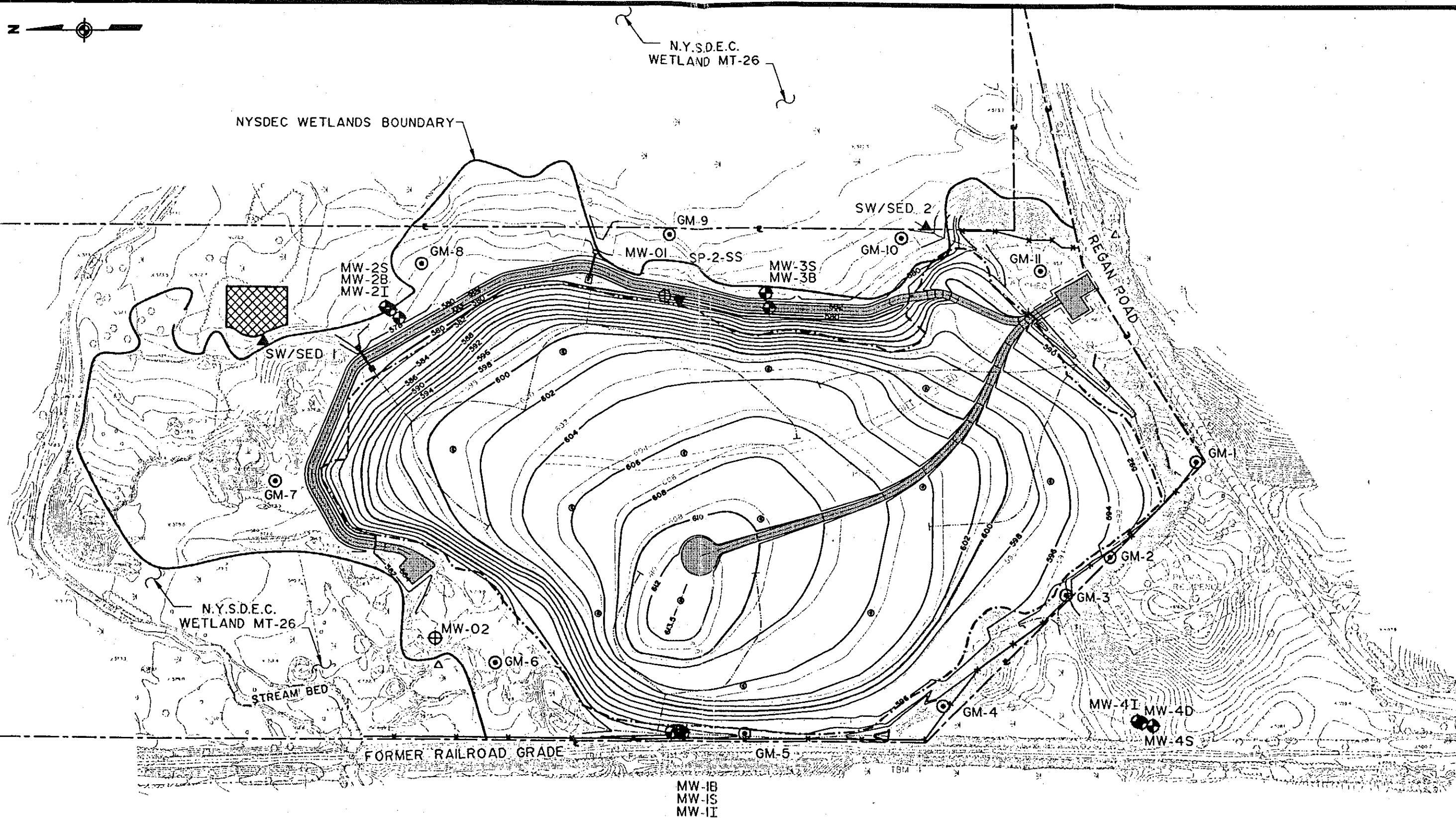
$$V = 0.0408 (2)^2 \times (1 - 3) = \text{_____ GAL.}$$

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)											

COMMENTS:

A-2347

FIGURE C2-1

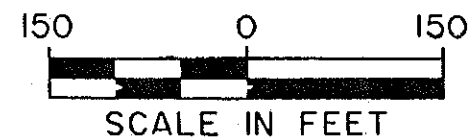


NOTES

1. BASE MAPPING WAS PREPARED BY AIR SURVEY CORP., RESTON, VA. USING AERIAL PHOTOGRAPHY TAKEN APRIL 14, 1993. GROUND CONTROL WAS BY URS.
2. PROJECT VERTICAL CONTROL IS BASED UPON NATIONAL GEODETIC VERTICAL DATUM OF 1929 AS ESTABLISHED ON USGS MONUMENT "ALBANY 573" ELEV. 575.540.

LEGEND

- ⊙ GAS MONITORING POINT
- ⊕ RI MONITORING WELL (1993)
- ⊕ NYSDEC PHASE II MONITORING WELL (1984)
- ▲ SURFACE WATER/SEDIMENT SAMPLE POINT



CONTOUR INTERVAL = 2 FEET

MONITORING POINT LOCATION PLAN

URS
CONSULTANTS, INC.

FIGURE C2-2

EXTENDABLE POND SAMPLER

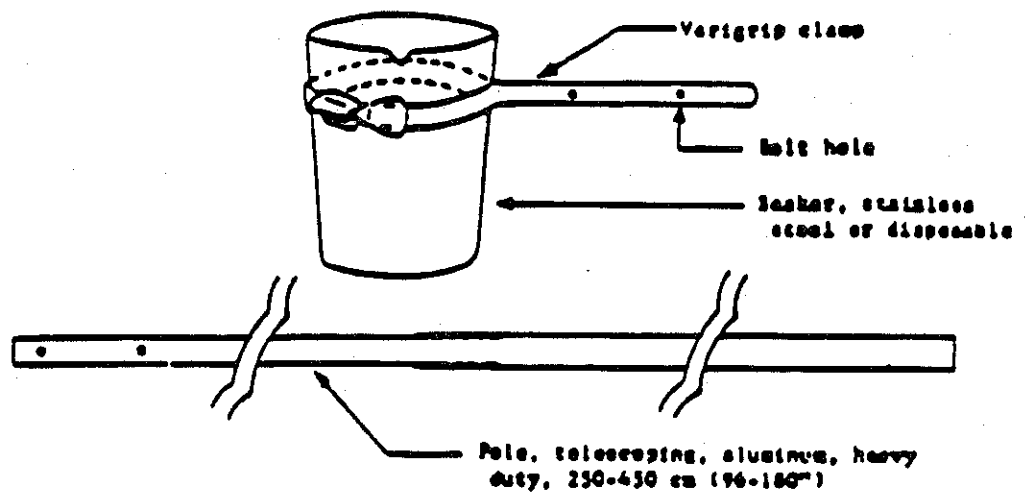


FIGURE C4-1

APPENDIX H

SITE-WIDE INSPECTION FORM

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
REGION 3/SOLID WASTE PROGRAM
ANNUAL POST-CLOSURE MONITORING & MAINTENANCE REPORT FOR LANDFILLS

This report form provides a standard format for owners of closed municipal solid waste landfills to report to the Department regarding post-closure monitoring and maintenance activities which have occurred during the past year. Use of this form will ensure that information needed by the operator and Department staff is readily available. Reporting of non-essential information is avoided. By completing and submitting this form on an annual basis, all reporting requirements connected with the closed landfill are satisfied and there is no need to submit any additional reports or paperwork. This form should be submitted once per year on a schedule which coincides with completion of the annual or fourth quarter groundwater monitoring event.

SECTION A - FACILITY DATA

1. REPORTING PERIOD (mm/dd/yy to mm/dd/yy): _____
2. OWNER OF LANDFILL: _____
3. ADDRESS OF LANDFILL: _____

4. LOCATION OF LANDFILL: County: _____ Municipality: _____
5. CONTACT PERSON: Name: _____ Address: _____
Phone: _____
6. SIZE OF LANDFILL (Acres): _____
7. PERIOD OF OPERATION (Yr to Yr): _____
8. DATE OF COMPLETION OF CLOSURE CONSTRUCTION (mm/yy): _____
9. TYPE OF LANDFILL CAP (check one): ☐ Geomembrane ☐ Clay ☐ Composite
☐ Other - Specify _____
10. LANDFILL GAS MANAGEMENT (Check all that apply): ☐ Passive Venting ☐ Flares
☐ Gas Filter ☐ Gas Collection ☐ Power Generation ☐ Other- Specify _____
11. LEACHATE MANAGEMENT: Does the landfill have a leachate collection system? ☐ Y ☐ N
12. DATE OF CLOSURE CERTIFICATION (mm/dd/yy): _____
13. NAME OF CERTIFYING ENGINEER: _____

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14. GRANTED REGULATORY RELIEF VARIANCES (Check all that apply): ☐ Topsoil Layer
☐ Barrier Layer ☐ Barrier Protection Layer ☐ Gas Vent Layer I ☐ Gas Vent Layer II ☐ Post
Closure Monitoring I ☐ Post Closure Monitoring II

15. DATE OF LAST MOWING OF VEGETATIVE COVER: _____

SECTION B - LANDFILL INSPECTION

1. DATE OF LAST INSPECTION (mm/dd/yy): _____

2. NAME(S) OF INSPECTOR(S): _____

3. Was entire landfill surface and entire landfill perimeter inspected? ☐ Y ☐ N; If no, describe extent of inspection:

4. Was the entire landfill surface covered with suitable vegetation (e.g. shallow rooting) and free of soil erosion? ☐ Y ☐ N; If no, identify problems identified and corrective actions taken or planned:

5. Were active leachate discharges, iron-stained surface soils or other signs of leachate breakouts noted? ☐ Y ☐ N; If yes, describe the nature of the problem and corrective actions taken or planned:

6. Were areas of surface water ponding observed on the landfill surface? ☐ Y ☐ N; If yes, describe the nature of the problem and corrective actions taken or planned:

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ANNUAL POST-CLOSURE MONITORING & MAINTENANCE REPORT FOR LANDFILLS

7. Were odors detected on or in the vicinity of the landfill? ☐ Y ☐ N; If yes, describe the nature of the problem and corrective actions taken or planned:

8. Were vectors or evidence of vectors observed? ☐ Y ☐ N; If yes, describe the nature of the problem and corrective actions taken or planned:

9. Was damage to the landfill cover system, gas vents, monitoring wells, leachate collection system or other landfill components observed? ☐ Y ☐ N; If yes, describe the nature of the problem and corrective actions taken or planned:

10. Were there signs of dumping, ruts caused by vehicle tires, camp fires, or other signs of unauthorized public access or encroachment? ☐ Y ☐ N; If yes, describe the nature of the problem and corrective actions taken or planned:

11. Were any other problems noted in addition to those identified in items 4 through 10, above? ☐ Y ☐ N; If yes, describe the nature of the problem and corrective actions taken or planned:

1. CURRENT WATER QUALITY MONITORING PROGRAM (Check One):

2. DATE OF MOST RECENT WATER QUALITY SAMPLING EVENT (mm/dd/yy): _____

____ 1st Quarter ____ 2nd Quarter ____ 3rd Quarter ____ 4th Quarter

[illegible]

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
REGION 3/SOLID WASTE PROGRAM
ANNUAL POST-CLOSURE MONITORING & MAINTENANCE REPORT FOR LANDFILLS

5. Using the following table, summarize each parameter detected during the reporting period, at a downgradient monitoring point, at a concentration exceeding the applicable water quality standard. (Include parameters which are undetected, if detection limit exceeds the standard.)

Sample Date	Sampling Point	Parameter	Units	Sample Result	Applicable Standard	Upgradient Results

6. Do results of the most recent water quality monitoring event indicate an improvement or a worsening in water quality when compared with those of previous water quality monitoring events? ___ Y ___ N; If yes, describe change, attach graphs or tables if appropriate.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
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SECTION D - IMPACTED OR POTENTIALLY IMPACTED RESIDENTIAL WATER SUPPLY WELLS

1. Are there residences served by private water supply wells located less than one mile from the landfill in the downgradient direction and not separated from the landfill by an intervening perennial stream or other groundwater discharge zone? Y N;

If yes, provide the information requested in items 2 through 5, below.

2. Indicate the distance between the downgradient edge of the landfill and the nearest residential water supply well, in feet:

3. Have residential wells been sampled to determine whether there has been landfill-water quality impact? Y N; If yes, provide the following information:

Date of most recent sampling event (mm/dd/yy): Number of wells tested:

Samples collected by: Was the County Health Department notified Y N

Parameters tested:

4. Using the following table, summarize each parameter detected during the reporting period, at a downgradient monitoring point, at a concentration exceeding the applicable drinking water standard. (Include parameters which are undetected, if detection limit exceeds the standard.)

Sample Date	Homeowner Name or Well ID	Parameter	Units	Sample Result	Applicable Standard

5. Explain cause of parameters exceeding standards, and if due to landfill-derived contamination, indicate what actions have been taken or are planned to mitigate water quality impact.

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SECTION E - GAS MONITORING

1. Is landfill gas monitoring carried out at the landfill ? Y N ; If yes, provide the following information:

Type of monitoring (Check all that are applicable):

- Landfill perimeter survey using temporary boreholes
- Landfill perimeter survey using permanent gas monitoring wells
- Landfill gas vents within waste mass (as well as inspection for blockage)
- Interior survey of on-site and nearby structures
- Landfill final cover areas where stressed vegetation and/or fissures are evident
- Continuous automatic monitoring devices installed in buildings
- Other - Specify: _____

Frequency of Monitoring: Quarterly Semi-annual Annual Other- Specify _____

Date of Most Recent Monitoring Event (mm/dd.yy): _____ (Attach data sheet and site plan showing sampling locations)

2. Have any explosive gas readings exceeding 25% of the lower explosive limit been detected during sampling events carried out during the past year ? Y N ; If yes, indicate whether the readings indicate a potential threat to public safety, what actions have been taken or are planned to mitigate potential safety concerns or the rationale for why corrective action is not needed.

SECTION F - CERTIFICATION OF ACCURACY

I certify that the information provided in this form is accurate and complete, to the best of my knowledge. I understand, that knowingly providing false information, may be grounds for enforcement action.

Name

Title

Signature

Date

APPENDIX I

AIR MONITORING – VAPOR INTRUSION STUDY

Ecosystems Strategies, Inc.

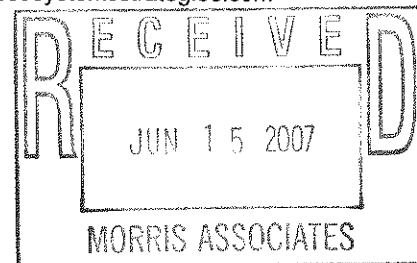
24 Davis Avenue, Poughkeepsie, New York 12603-2332

Environmental Services and Solutions

TEL: 845-452-1658 • FAX: 845-485-7083 •

EMAIL: mail@ecosystemsstrategies.com

June 14, 2007



Mr. Jim Schreyer, Construction Inspector
NYSDEC - Division of Environmental Remediation, Region 3
21 South Putt Corners Road
New Paltz, NY 12561-1620

Re: Letter Report of Air Quality Sampling for the Town of North East Landfill and the property
at 23 Reagan Road, Town of North East, Dutchess County, New York
ESI File: MN06187.21

Dear Mr. Schreyer:

This Letter Report of Air Quality Sampling (Letter Report) summarizes air quality sampling performed by Ecosystems Strategies, Inc. (ESI) at the above referenced property. Air quality sampling was conducted in accordance with the approved March 2007 Air Quality Sampling Plan.

1.0 Introduction

1.1 Site Location and Description

The "Site" as defined in this Letter Report consists of the Town of North East Landfill, located on the northern side of Reagan Road, and an adjoining residential property to the southwest at 23 Reagan Road. The residential property contains a multi level residence (with a basement) and a barn. The barn is currently being used as a coffee roasting and packaging facility. The Site is located in a rural area consisting predominantly of agricultural land and scattered residential properties. A Site Location Map and Fieldwork Maps are provided in Appendix A.

1.2 Purpose of Investigation

Perimeter landfill-gas monitoring is currently conducted on a quarterly basis. Previous monitoring data (collected in accordance with landfill operation requirements specified in 6 NYCRR Part 360-2.17) indicate that elevated methane levels have been detected at various times at multiple gas-monitoring points (GM-2, GM-3, GM-3B, GM-3C, GM-4, GM-5, GM-5A and GM-6), located at the western and southwestern portions of the landfill. In some instances levels equal to or greater than 100% of the lower explosive limit (LEL) have been observed. The potential exists that vapors from volatile organic compounds (VOCs) and methane gas, released from the landfill into ambient air and/or soil gasses in surrounding soils, may migrate off-site and impact adjoining and nearby residential properties (e.g., 23 Reagan Road). The purpose of this investigation is to determine the presence or absence of air quality issues associated with the landfill, and to suggest, if appropriate, further investigative and/or remedial actions at the Site.

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2.0 Air Quality Investigation

Air quality sampling was conducted in accordance with applicable air sampling protocols, as detailed in the New York State Department of Health's (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH Guidance), dated October 2006.

2.1 Pre-Sampling Site Inspection

An Indoor Air Quality Questionnaire and Building Inventory was completed at both the residence at 23 Reagan Road and the barn using suggested forms provided in the NYSDOH Guidance on April 11, 2007 in the presence of a NYSDOH onsite representative. A photo-ionization detector (PID) capable of reading in parts per billion (ppb) and a lower explosive limit (LEL) meter were used to screen the building for potential air sampling interferences. Substantial amounts of painting supplies and cleaning products were noted in the residence basement. None of the observed materials were judged by this office, or the NYSDOH representative, to be significant sources of sampling interference. No PID readings above 0.0 ppb were recorded during the inspection. Copies of the completed forms are provided in Appendix B.

2.2 Sample Collection and Observations

ESI personnel collected a total of twelve air samples from the Site on April 11 through April 12, 2007. Air samples were collected into six tedlar bags and one Summa canister at the landfill and five Summa canisters from the property at 23 Reagan Road. [Note: During building inventory activities, the location of the Summa Canister placement was discussed with the owner and NYSDOH representative. Locations were selected based upon slab characteristics (cracks, distance from foundation walls, etc) as well as areas that would encounter less human interference.] All canisters were laboratory certified, stainless steel, six-liter canisters equipped with 24-hour flow regulators. Tedlar bag samples were collected using clean dedicated tubing and a Gilair® pump. ESI personnel maintained independent field logs documenting Site characteristics, PID readings, weather conditions, and any other information pertinent to the investigation.

Summa canister sampling was conducted between the hours of 12:00 PM on April 11 and 12:00 PM on April 12. Weather was noted to be snowy and raining, and approximately 35°F at the beginning of the investigation, changing to breezy with a slight drizzle and approximately 40°F at the end of the sample period. Upon set up of the canisters within the barn, PID readings were observed at 535 ppb in the ambient air. A bag of the coffee beans was also screened and indicated 5,000 to 6,000 ppb. The NYSDOH representative was immediately notified of this elevated reading by phone. The ambient air PID readings are likely the result of coffee roasting activities and off gassing of the coffee beans.

Within the landfill, gas monitoring points GM-1A, GM-3, GM3A, GM-3B, GM-3C, GM-4 and GM-5, as well as landfill vent pipes were screened using the PID and the LEL. At the gas monitoring points, PID readings ranged from 31 ppb at GM-3C to 13,700 ppb at GM-3A. The gas monitoring point with the highest PID reading (GM-3A) was selected as the Summa canister sampling location. All other gas-monitoring points were sampled using tedlar bags. GM-2 appeared to be destroyed by mowing activities. Table 1 below, is a summary of the PID/LEL readings from the gas monitoring points.

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Table 1: Gas Monitoring Point Field Screening

	Location Identification							
	GM-1A	*GM-2	GM-3	*GM-3A	GM-3B	GM-3C	GM-4	GM-5
Methane (% LEL)	0.0	No Data	71.0	0.0	0.0	94	0.0	0.0
PID (ppb)	991	No Data	6.2	13,700	953	31	1,311	193

Notes:
 *GM-2 was destroyed.
 *GM-3A was selected as the Summa canister sampling location.

2.3 Laboratory Analysis

Samples were transported via courier to Severn Trent Laboratories, Inc., a New York State Department of Health-certified laboratory (ELAP Certification Number 10602) for chemical analyses of VOCs using USEPA Method TO-15 and methane using USEPA Method 3C. Appropriate chain-of-custody procedures were followed.

2.3.1 Terminology

Guidance Levels

The term "guidance level," as defined in this Report, refers to the concentration of a particular contaminant above which remediation or mitigation is considered more likely. The overall objective of setting guidance levels is to assess the integrity of on-site air quality relative to conditions which are likely to present a threat to public health or the environment, given the existing and probable future uses of the site. On-site indoor air with contaminant levels exceeding these guidance levels is likely to suggest a need for remediation or mitigation. No independent risk assessment was performed as part of this investigation.

Few official guidance levels currently exist for VOCs in indoor air or sub-slab vapor. The guidance levels presented in this Letter Report for tetrachloroethylene (PCE) and methylene chloride are based on guidance levels presented in the NYSDOH Guidance.

Table 2 below, is a summary of the guidance levels obtained from the NYSDOH Guidance.

Table 2: Air guideline values derived by the NYSDOH

Chemical	Air Guideline Value ($\mu\text{g}/\text{m}^3$)
Methylene chloride	60
Tetrachloroethylene (PCE)	100

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There are no official guidance levels on methane in soil gas at landfill sites. However, NYSDEC Regulations Sub Part 360 (f)(1) indicates, "the concentration of methane and other explosive gasses generated by the facility must not exceed the lower explosive limit for the gasses at or beyond the landfill boundary".

Background Levels

The term "background level", as defined in this Letter Report, is the concentration of a particular contaminant that is likely to naturally occur in the indoor air of homes that are heated with fuel oil. The overall objective of comparing data to background levels is to assess the concentrations of contaminants in on-site air relative to those that are likely to be naturally occurring; on-site air with contaminant concentrations exceeding these background levels is likely to indicate potential issues with indoor air quality, and may suggest a need for further investigation, mitigation, and/or remediation.

The NYSDOH uses air quality data (background levels) collected by the NYSDOH between 1997 and 2003 when assessing indoor air quality in residential homes heated with fuel oil. In the absence of true guidance levels, the upper fence contaminant concentrations contained in Table C1 of the NYSDOH Guidance (Study of Volatile Organic Chemicals in Air of Fuel Oil Heated Homes) may be used as initial benchmarks when evaluating air quality data. The background levels identified in this Letter Report are based on the Upper Fence values, as presented in the NYSDOH Guidance.

2.4 Results and Discussion

Laboratory results are presented in Tables 3 through 6 located in Appendix C and are discussed below. A copy of the complete Laboratory Report is included as Appendix D.

Landfill

VOCs

VOC concentrations from landfill gas monitoring points are presented in Table 3. VOCs were detected at all locations. The highest levels of VOCs were observed at GM-3C, and to a lesser extent, GM-4, both of which are located north of the 23 Reagan Road property. At GM-3C, dichlorodifluoromethane was detected at 54,000 $\mu\text{g}/\text{m}^3$ and 1,3-dichlorobenzene at 1,600 $\mu\text{g}/\text{m}^3$. These concentrations indicate that VOCs are within the soil vapor adjacent to the landfill. The gas monitoring point located in closest proximity to the residence (GM-1A) exhibited very low levels of VOCs.

Jim Schreyer
June 14, 2007
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Methane

Methane percentages from landfill gas monitoring points are presented in Table 5. Methane was detected at GM-3 (average of 6.05% methane by volume of air, LEL 5%) at GM-3C (average of 9.5% methane by volume of air) and at GM-4 (average of 0.435% methane by volume of air). The detection of methane at landfills is common as it is produced as a byproduct of anaerobic decomposition of landfill material. However, methane produced is typically released via the landfill vent pipes so that there is not an accumulation of gasses in the soil gas.

There appears to be no correlation between the PID readings and the LEL readings obtained during field screening.

23 Reagan Road Property

VOCs

VOC concentrations from the 23 Reagan Road property are presented in Table 4. All analyzed compounds were below established indoor background levels. Methylene chloride, a common laboratory contaminant, was detected at the Basement Ambient sample location (29.0 $\mu\text{g}/\text{m}^3$, background level 16 $\mu\text{g}/\text{m}^3$). This detection is only slightly above background levels but below the established air guideline value of 60 $\mu\text{g}/\text{m}^3$ presented in the NYSDOH Guidance. Several other VOCs were detected in all samples at concentrations below background levels.

Methane

Methane percentages from the 23 Reagan Road property are presented in Table 6. Methane was not detected at any sampling location.

Jim Schreyer
June 14, 2007
ESI File: MN06187.21
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3.0 Conclusions and Recommendations

1. VOCs and methane were detected in landfill gas monitoring points and observed in landfill vent pipes during screening and sampling activities. Methane was observed at gas monitoring points GM-3 and GM-3C in excess of the LEL.

It is recommended that landfill gas monitoring be conducted on a regular basis coincident with the annual groundwater and surface water monitoring event.

2. No methane or significant VOC concentrations were detected at the 23 Reagan Road property. These findings support the conclusion that landfill gasses have not impacted air quality at the 23 Reagan Road property.

No further investigation or remedial action is recommended at the 23 Reagan Road property or any other offsite location.

Please review this document and call me at (845) 452-1658 should you have any questions or comments.

Sincerely,

ECOSYSTEMS STRATEGIES, INC.



Paul H. Ciminello
President

Appendices:

- A – Maps
- B – Indoor Air Quality Questionnaires and Building Inventories
- C – Data Summary Tables
- D – Laboratory Results – Data Summary Package and CD (Complete Lab Report)

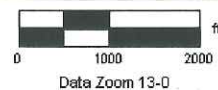
cc: Nathan Walz (NYSDOH)
Joseph P. Dennis, P.E. (Morris Assoc.)
Dave Sherman (Town of North East)
File

APPENDIX A

Maps



Data use subject to license.
 © 2004 DeLorme, Street Atlas USA © 2005.
 www.delorme.com



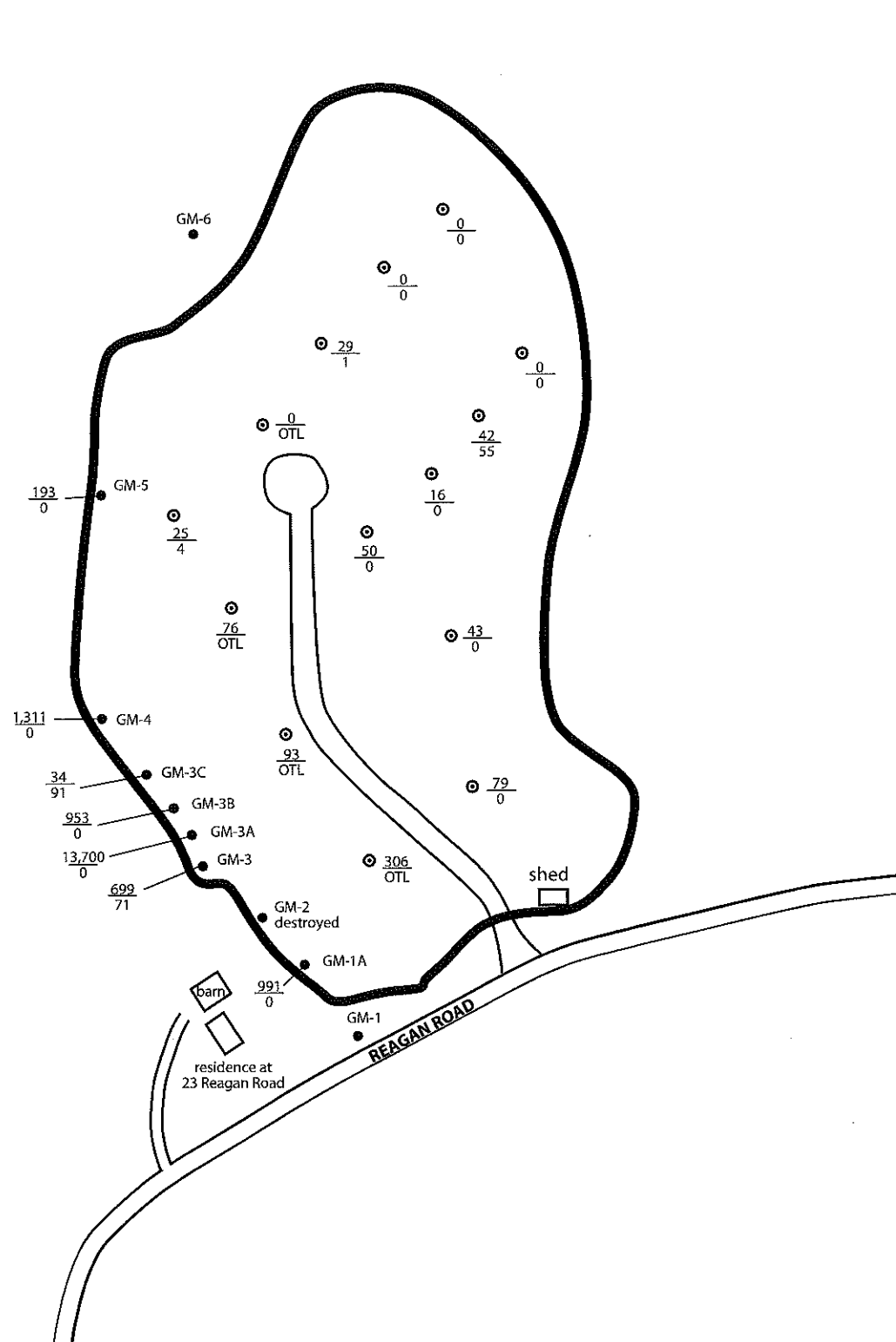
Site Location Map
 Town of North East Landfill
 Reagan Road
 Town of North East
 Dutchess County, New York



ESI File: MN06187.21

June 2007

Appendix A



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Fieldwork Map - Landfill

Town of North East Landfill
Reagan Road
Town of North East
Dutchess County, New York

Legend:

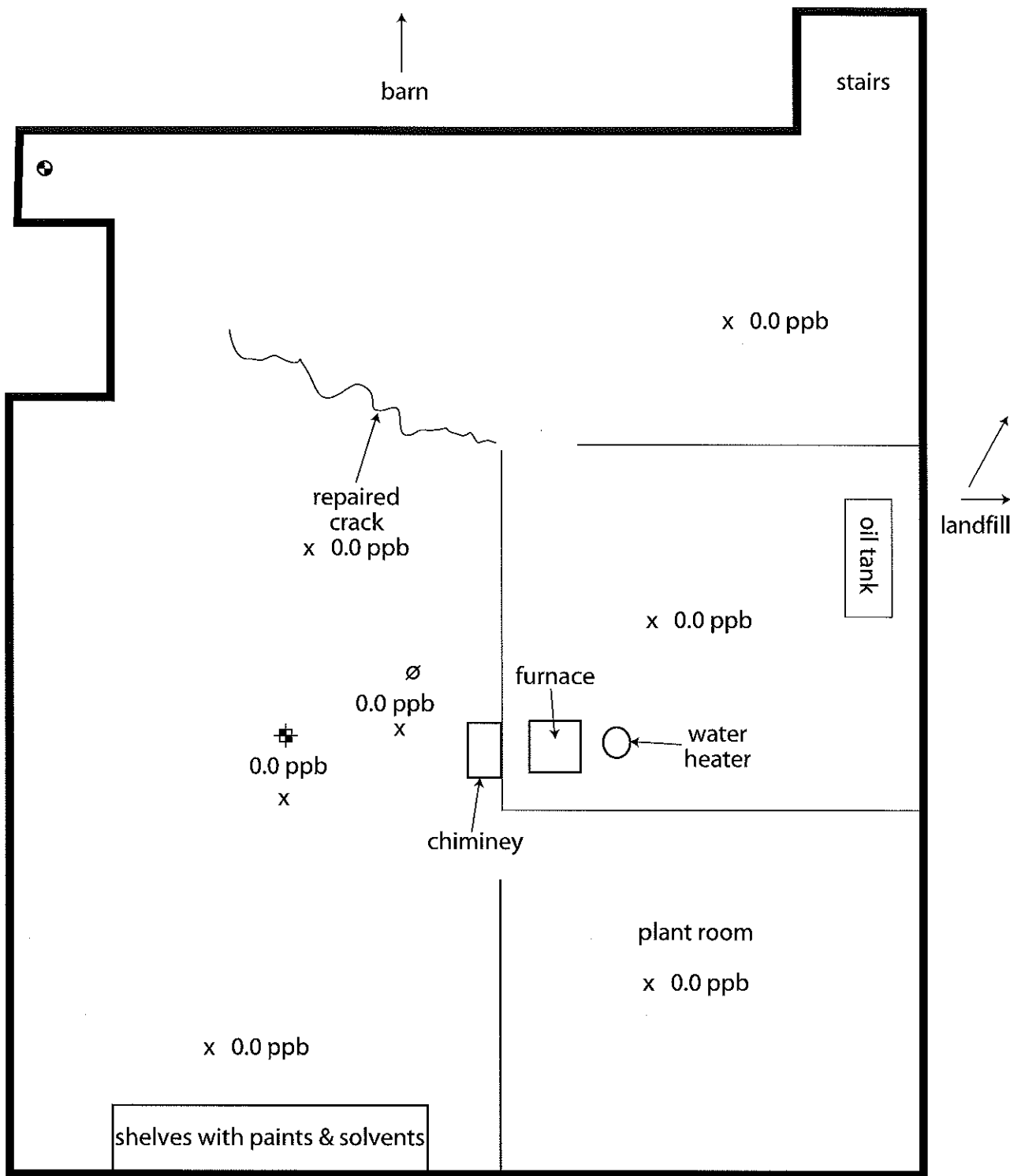
- edge of landfill
- gas monitoring points
- landfill vents
- $\frac{PID (ppb)}{\%LEL}$ OTL = over the limit

ESI File: MN06187.21

June 2007

Not to Scale

Appendix A



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Fieldwork Map - Basement

23 Reagan Road
Town of North East
Dutchess County, New York

Legend:

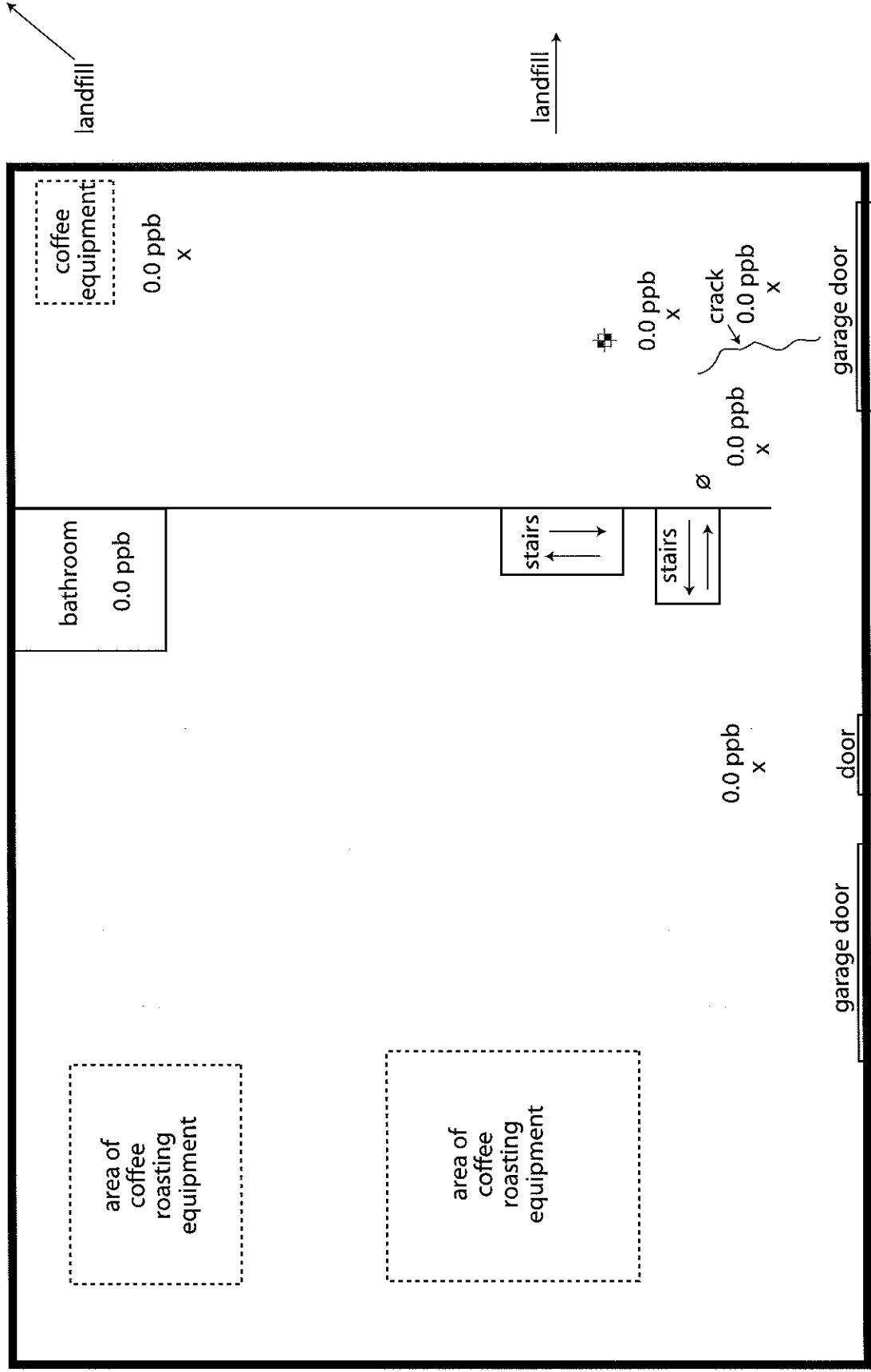
- structure outline
- well
- basement ambient air sample location
- sub-slab sample location
- ambient air screening (parts per billion) ppb

ESI File: MN06187.21

June 2007

Scale: 1" = 5' approximately

Appendix A



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Fieldwork Map - Barn Layout

23 Reagan Road
Town of North East
Dutchess County, New York

Legend: — structure outline

✦ barn ambient air sample location

Ø sub-slab sample location

x ambient air screening parts per billion (ppb)

ESI File: MN06187.21

June 2007

Scale: 1" = 10' approximately

Appendix A

APPENDIX B

***Indoor Air Quality Questionnaires
And
Building Inventories***

**NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH**

This form must be completed for each residence involved in indoor air testing.

Preparer's Name John Petronella Date/Time Prepared 4/11/07
 Preparer's Affiliation Env Consultant Phone No. 845-452-1658
Ecosystems Strategies, Inc
 Purpose of Investigation Pre-Sampling Inventory

1. OCCUPANT:

Interviewed: Y / N

Last Name: Leven First Name: Stephen

Address: 41 Union Square West, Suite 1125 NY, NY 1003

County: _____

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location 2 Age of Occupants 7

2. OWNER OR LANDLORD: (Check if same as occupant ☒)

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS (~~3~~) (House)

Type of Building: (Circle appropriate response)

Residential
Industrial

School
Church

Commercial/Multi-use
Other: _____

calibrate PID
zero & span

10.0 ppm

Outdoor ambient 1-2 ppb

If the property is residential, type? (Circle appropriate response)

Ranch
Raised Ranch
Cape Cod
Duplex
Modular

2-Family
Split Level
Contemporary
Apartment House
Log Home

3-Family
Colonial
Mobile Home
Townhouses/Condos
Other: _____

If multiple units, how many? _____

If the property is commercial, type?

Business Type(s) _____

Does it include residences (i.e., multi-use)? Y / N _____ If yes, how many? _____

Other characteristics:

Number of floors 3

Building age 7

Is the building insulated? Y/N

How air tight? Tight / Average / Not Tight

4. AIRFLOW

Did not conduct per NYSDOH

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

Airflow near source

Outdoor air infiltration

Infiltration into air ducts

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

- a. Above grade construction: wood frame concrete stone brick
- b. Basement type: full crawlspace slab other _____
- c. Basement floor: concrete dirt stone other _____
- d. Basement floor: uncovered covered covered with concrete
- e. Concrete floor: unsealed sealed sealed with _____
- f. Foundation walls: poured block stone other _____
- g. Foundation walls: unsealed sealed sealed with concrete
- h. The basement is: wet damp dry moldy
- i. The basement is: finished unfinished partially finished
- j. Sump present? Y / N
- k. Water in sump? Y / N / not applicable

Basement/Lowest level depth below grade: 6 (feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

* Need to Seal Crack in Floor prior to sampling
 Urethane caulk (Used ready mix concrete repair)
 Indoor PID in basement 0.0 ppb

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation
 Space Heaters
 Electric baseboard

Heat pump
 Stream radiation
 Wood stove

Hot water baseboard
 Radiant floor
 Outdoor wood boiler

Other Steam

The primary type of fuel used is:

Natural Gas
 Electric
 Wood

Fuel Oil
Propane
 Coal

Kerosene
 Solar

Domestic hot water tank fueled by: Fuel oil

Boiler/furnace located in: Basement Outdoors Main Floor Other _____

Air conditioning: Central Air Window units Open Windows None

Are there air distribution ducts present?

Y/N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)

Basement

Storage, Heating etc

1st Floor

living

2nd Floor

"

3rd Floor

~~---~~

4th Floor

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage?

Y N

b. Does the garage have a separate heating unit?

Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car)

Y / N / NA

Please specify _____

d. Has the building ever had a fire?

Y N

When? _____

e. Is a kerosene or unvented gas space heater present?

Y N

Where? _____

f. Is there a workshop or hobby/craft area?

Y N

Where & Type? NO SOLVENTS

g. Is there smoking in the building?

Y N

How frequently? _____

h. Have cleaning products been used recently?

Y N

When & Type? _____

i. Have cosmetic products been used recently?

Y N

When & Type? _____

- j. Has painting/staining been done in the last 6 months? Y ☒ N Where & When? _____
- k. Is there new carpet, drapes or other textiles? Y ☒ N Where & When? _____
- l. Have air fresheners been used recently? Y ☒ N When & Type? _____
- m. Is there a kitchen exhaust fan? ☒ Y ☒ N If yes, where vented? outside
- n. Is there a bathroom exhaust fan? Y ☒ N If yes, where vented? _____
- o. Is there a clothes dryer? ☒ Y ☒ N If yes, is it vented outside? ☒ Y ☒ N
- p. Has there been a pesticide application? Y ☒ N When & Type? _____

Are there odors in the building?

Y ☒ N

If yes, please describe: _____

Do any of the building occupants use solvents at work?

Y ☒ N

(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work?

Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly)

Yes, use dry-cleaning infrequently (monthly or less)

Yes, work at a dry-cleaning service

☒ No
☐ Unknown

Is there a radon mitigation system for the building/structure? ☒ Y ☒ N Date of Installation: _____

Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply: Public Water ☒ Drilled Well Driven Well Dug Well Other: _____

Sewage Disposal: Public Sewer Septic Tank Leach Field Dry Well Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency) N/A

a. Provide reasons why relocation is recommended: _____

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

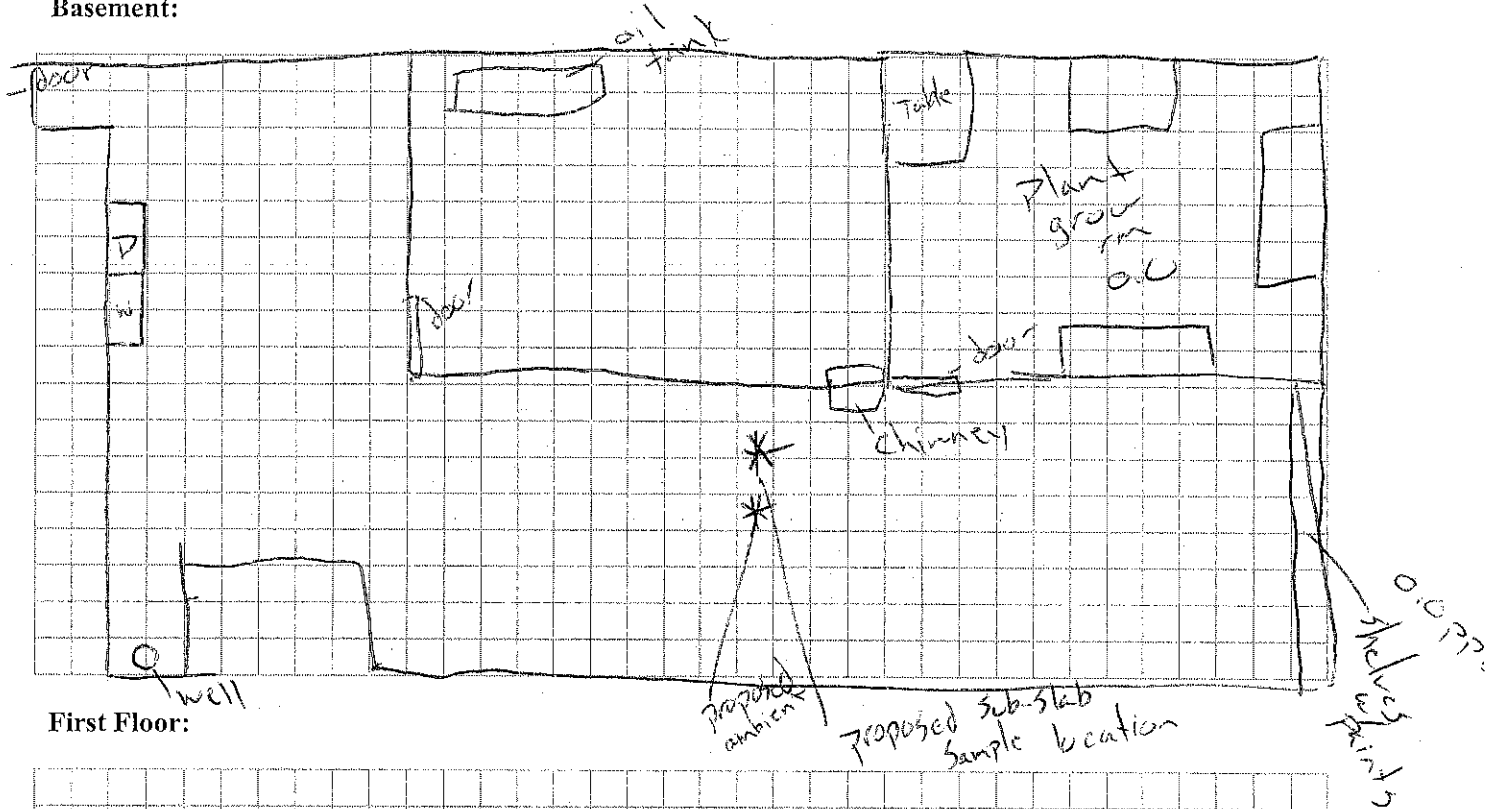
c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

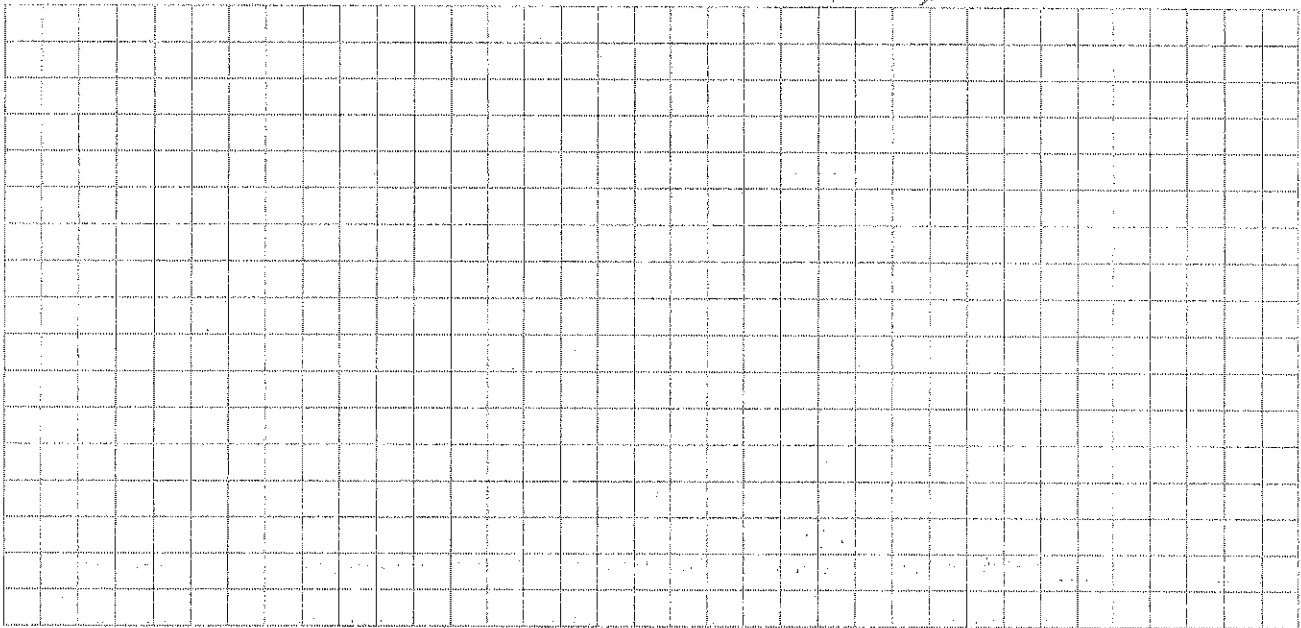
11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



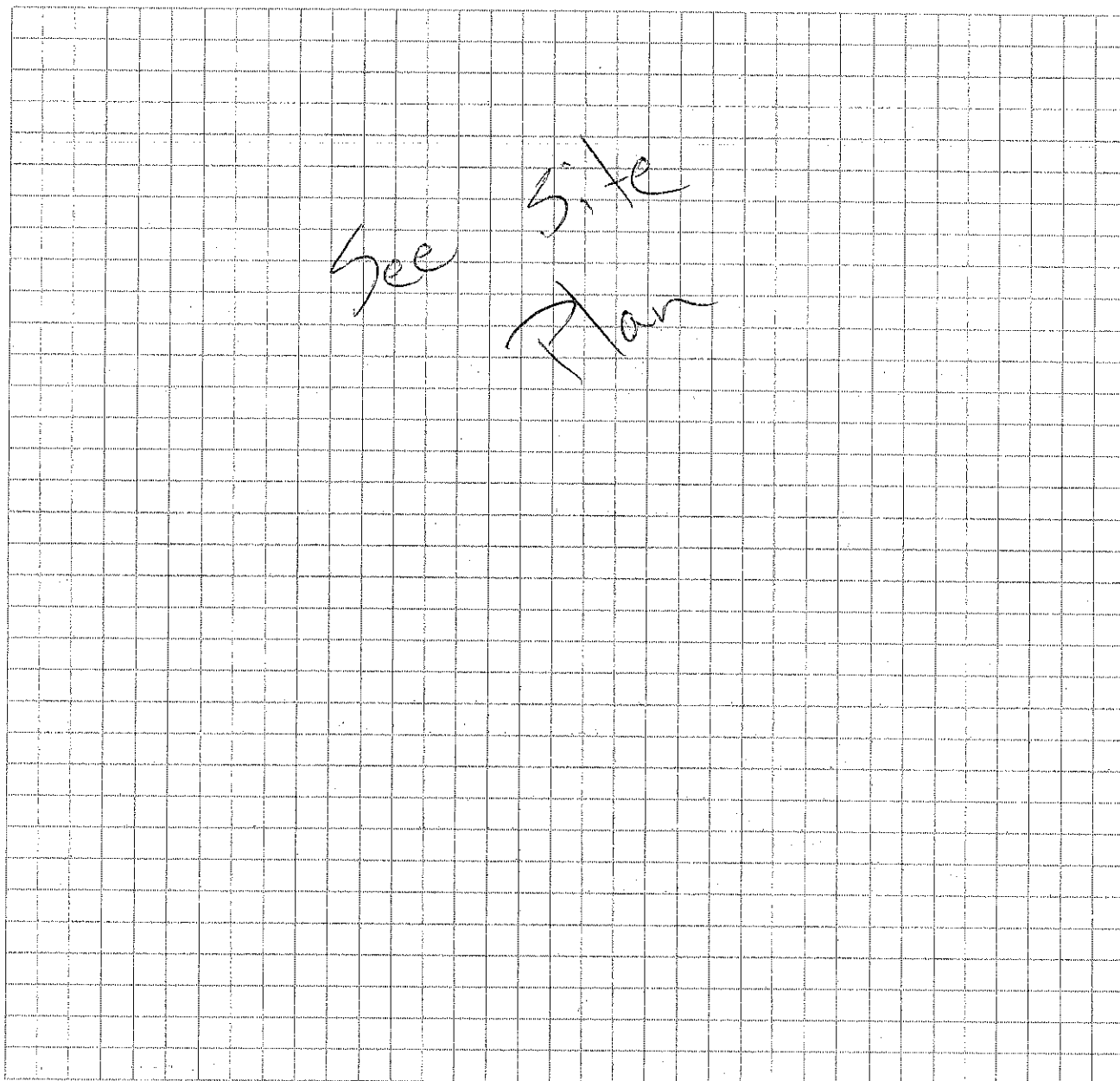
First Floor:



12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



13. PRODUCT INVENTORY FORM

Make & Model of field instrument used:

PPB Rae Plus

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo** Y/N
basement	1 gal Paint cans	14	good/opened	latex	0.0	Y
"	Spray Paint	10	"		0.0	Y
	1 gal wood stain	2	"	urethane	0.0	Y
	DAP Glazing	3	"	?	0.0	Y
	quart stain stop	1	"	?	0.0	Y
	Go Go 402	1	"	?	0.0	Y
	2 gal paint remover	1	"	?	0.0	Y
	4 quart varnish remover	4	"	?	0.0	Y
	1102 spray on rubber film	1	"	?	0.0	Y
	1602 PVC cement	1	"	?	0.0	Y
	402 PVC Primer	2	"	?	0.0	Y
	1 5 gal latex	1	"	?	0.0	Y
	1 gal floor lac	6		?	0.0	Y
	1 gal paint	4		latex	0.0	Y

* Describe the condition of the product containers as **Unopened (UO)**, **Used (U)**, or **Deteriorated (D)**** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name (JP) John Petronella Date/Time Prepared 4/11/07

Preparer's Affiliation Ecosystems Strategies Inc. Phone No. 845-452-1658
Env. Consultant

Purpose of Investigation Air Quality Investigation

1. OCCUPANT:

Interviewed: Y / N

Last Name: Leven First Name: Stephen

Address: 41 Union Square West, Suite 1125 NY, NY 10003

County: _____

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location 2 Age of Occupants ?

2. OWNER OR LANDLORD: (Check if same as occupant ☒)

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential
Industrial

School
Church

Commercial/Multi-use

Other: currently used for
coffee roasting

(Barn) coffee

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other: _____

If multiple units, how many? _____

If the property is commercial, type?

Business Type(s) Coffee Roasting

Does it include residences (i.e., multi-use)? Y N If yes, how many? _____

Other characteristics:

Number of floors 1

Building age 5-10 yrs

Is the building insulated? Y N

How air tight? Tight / Average / Not Tight

4. AIRFLOW Did not conduct air flow per IDH

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

Airflow near source

Outdoor air infiltration

Infiltration into air ducts

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

- a. Above grade construction: wood frame concrete stone brick
- b. Basement type: None full crawlspace slab other _____
- c. Basement floor: concrete dirt stone other _____
- d. Basement floor: uncovered covered covered with _____
- e. Concrete floor: unsealed sealed sealed with _____
- f. Foundation walls: poured block stone other _____
- g. Foundation walls: unsealed sealed sealed with _____
- h. The basement is: wet damp dry moldy
- i. The basement is: finished unfinished partially finished
- j. Sump present? Y / N
- k. Water in sump? Y / N / not applicable

Basement/Lowest level depth below grade: _____ (feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

identified crack 0.0 ppb

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply -- note primary)

<u>Hot air circulation</u>	Heat pump	Hot water baseboard
Space Heaters	Stream radiation	Radiant floor
Electric baseboard	Wood stove	Outdoor wood boiler Other _____

The primary type of fuel used is:

Natural Gas	<u>Fuel Oil</u>	Kerosene
Electric	<u>Propane</u>	Solar
Wood	Coal	

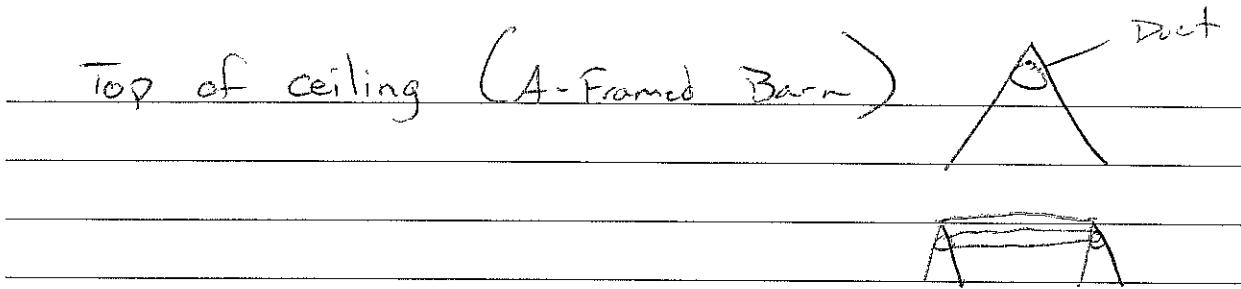
Domestic hot water tank fueled by: _____

Boiler/furnace located in: Basement Outdoors Main Floor Other upstairs

Air conditioning: Central Air Window units Open Windows None

Are there air distribution ducts present? ☒ Y ☐ N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.



7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)

Basement

1st Floor

Coffee roasting, bagging

~~2nd Floor~~

~~3rd Floor~~

~~4th Floor~~

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

- a. Is there an attached garage? Y ☒ N
- b. Does the garage have a separate heating unit? Y / N / NA
- c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA
Please specify _____
- d. Has the building ever had a fire? Y / ☒ N When? _____
- e. Is a kerosene or unvented gas space heater present? Y ☒ N Where? _____
- f. Is there a workshop or hobby/craft area? Y ☒ N Where & Type? _____
- g. Is there smoking in the building? Y ☒ N How frequently? _____
- h. Have cleaning products been used recently? Y ☒ N When & Type? _____
- i. Have cosmetic products been used recently? Y ☒ N When & Type? _____

j. Has painting/staining been done in the last 6 months? Y ☒ N Where & When? _____

k. Is there new carpet, drapes or other textiles? Y ☒ N Where & When? _____

l. Have air fresheners been used recently? Y ☒ N When & Type? _____

m. Is there a kitchen exhaust fan? NA Y / N If yes, where vented? _____

n. Is there a bathroom exhaust fan? Y ☒ N If yes, where vented? _____

o. Is there a clothes dryer? Y ☒ N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y ☒ N When & Type? _____

Are there odors in the building?

If yes, please describe: coffee Y ☒ N

Do any of the building occupants use solvents at work? Y ☒ N

(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist)

If yes, what types of solvents are used? None

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly)

Yes, use dry-cleaning infrequently (monthly or less)

Yes, work at a dry-cleaning service

☒ No

Unknown

Is there a radon mitigation system for the building/structure? Y ☒ N Date of Installation: _____

Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply: Public Water ☒ Drilled Well Driven Well Dug Well Other: _____

Sewage Disposal: Public Sewer Septic Tank Leach Field Dry Well Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: _____

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

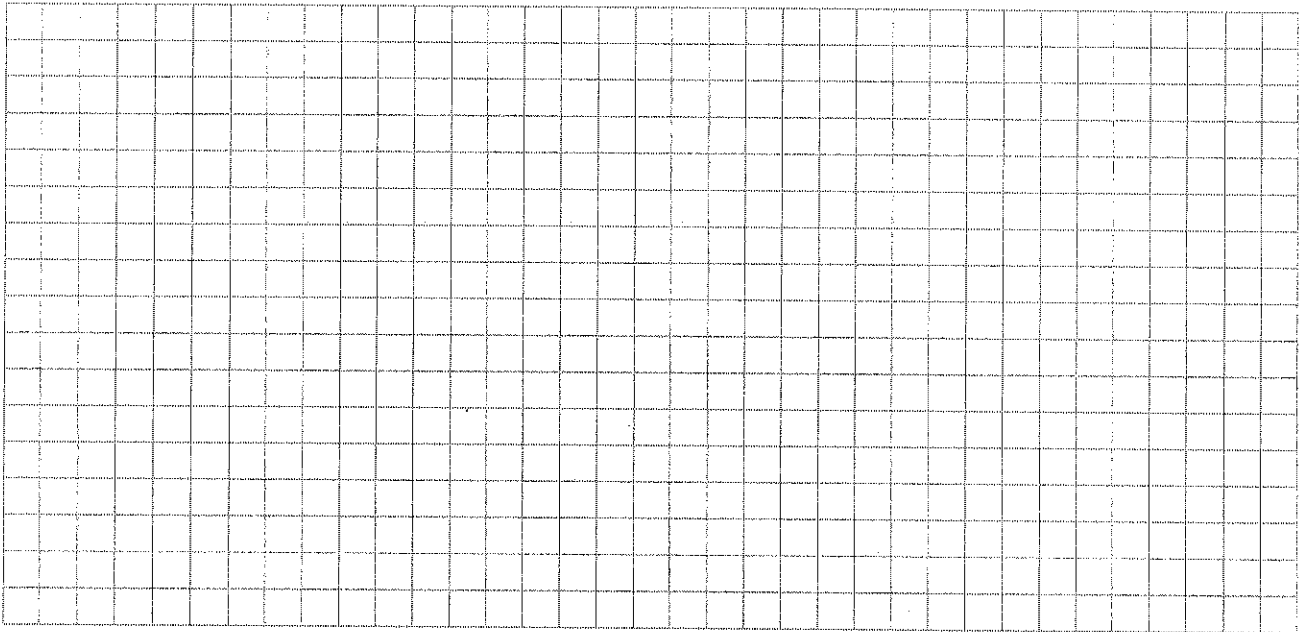
c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

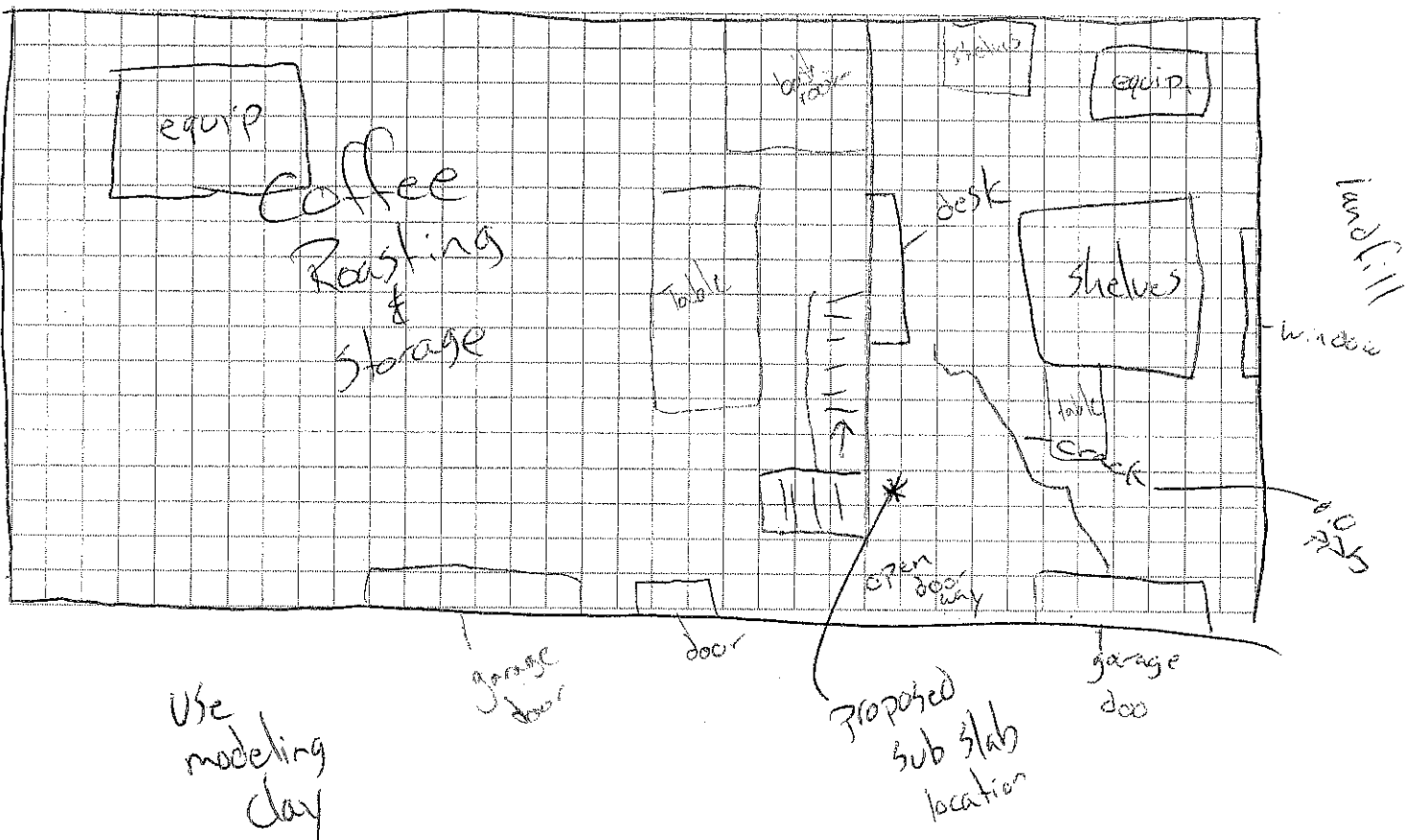
11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



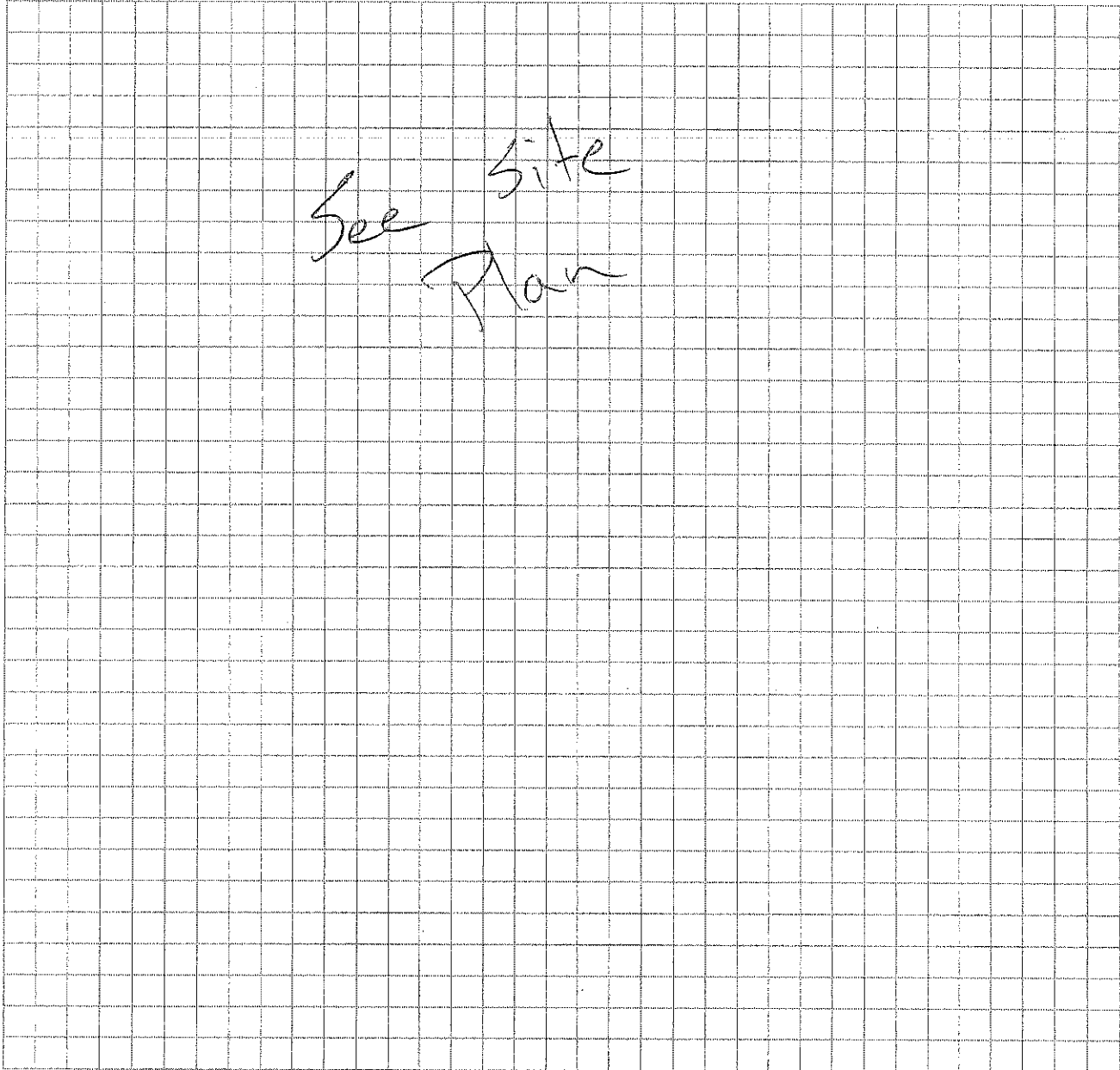
First Floor:



12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: PTB Roe Plus

List specific products found in the residence that have the potential to affect indoor air quality.

[illegible]

* Describe the condition of the product containers as **Unopened (UO)**, **Used (U)**, or **Deteriorated (D)**

** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

APPENDIX C

Data Summary Tables

Table 3: VOCs detected at Landfill Gas Monitoring Points.

Results provided in $\mu\text{g}/\text{m}^3$.

Compound	Sample ID						
	GM-1A	GM-3	*GM-3A	GM-3B	GM-3C	GM-4	GM-5
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene (total)	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ND	ND	ND	ND	ND	ND	2.0
1,2-Dibromoethane	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	1.2	ND	ND	ND	ND
1,2-Dichlorotetrafluoroethane	1.7	190	1.2	170	ND	ND	ND
1,3,5-Trimethylbenzene	ND	ND	ND	ND	ND	ND	ND
1,3-Butadiene	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	72	ND	ND	1,600	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane	ND	ND	ND	ND	ND	ND	ND
2-Chlorotoluene	ND	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	ND	110	ND	36	ND	70	28
3-Chloropropene	ND	ND	ND	ND	ND	ND	ND
4-Ethyltoluene	ND	ND	ND	ND	ND	ND	1.7
Acetone	78	880	10.0	260	ND	810	130 E
Benzene	3.5	ND	ND	3.5	ND	ND	3.2
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND	ND	ND
Bromoethene	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	9.7	ND	ND	10	ND	ND	11
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND
Chloromethane	ND	ND	1.2	ND	ND	ND	ND
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND
Cyclohexane	ND	ND	ND	5.2	ND	19	6.2
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	4.1	160	3.2	24	54,000	1,100	43
Ethylbenzene	1.5	ND	ND	ND	ND	ND	1.8
Freon-TF	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND
Isopropyl Alcohol	20	ND	ND	150	ND	190	52
Methyl Butyl ketone	ND	ND	ND	ND	ND	ND	ND
Methyl Ethyl ketone	5.9	47	ND	35	ND	50	19
Methyl Isobutyl Ketone	ND	ND	ND	ND	ND	ND	ND
Methyl tert-Butyl Ether	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	2.6	ND	ND	ND	ND	ND	ND
n-Heptane	ND	ND	ND	ND	ND	ND	2.4
n-Hexane	ND	60	ND	12	ND	24	7.4
Styrene	ND	ND	ND	ND	ND	ND	ND
tert-Butyl Alcohol	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	2.2	ND	ND	5.8	ND	ND	11
Tetrahydrofuran	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	14	ND	ND	15
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	1.7	ND	1.3	ND	ND	ND	1.7
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND
Xylene (m,p)	4.3	ND	ND	ND	ND	ND	6.1
Xylene (o)	1.2	ND	ND	ND	ND	ND	1.7
Xylene (total)	5.6	ND	ND	ND	ND	ND	7.8

Notes: Sample location GM-3A was collected into a Summa canister. A Tedlar bag was used at all other locations.

E = estimated value

Table 4: VOCs detected at 23 Reagn Road Property

Results provided in $\mu\text{g}/\text{m}^3$. Results in bold exceed background levels.

Compound	Indoor Background Levels	Outdoor Background Levels	Sample Location				
			Basement Sub-slab	Basement Ambient	Barn Sub-slab	Barn Ambient	Outdoor
1,1,1-Trichloroethane	2.5	0.6	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.4	0.4	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	0.4	0.3	ND	ND	ND	ND	ND
1,1-Dichloroethane	0.4	NC	ND	ND	ND	ND	ND
1,1-Dichloroethene	0.4	0.4	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	0.5	0.4	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	9.8	1.9	ND	4.6	ND	ND	ND
1,2-Dibromoethane	0.4	0.4	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	0.5	0.4	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.4	0.4	ND	ND	ND	ND	ND
1,2-Dichloropropane	0.4	0.4	ND	ND	ND	ND	ND
1,2-Dichlorotetrafluoroethane	0.4	0.5	ND	ND	ND	ND	ND
1,2-Dichloroethene (Total)	NA	NA	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	3.9	0.7	ND	1.2	ND	ND	ND
1,3-Butadiene	NA	NA	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	0.5	0.4	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	1.2	0.5	ND	ND	ND	ND	ND
1,4-Dioxane	NA	NA	ND	ND	ND	ND	ND
2-Chlorotoluene	NA	NA	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	NA	NA	ND	ND	ND	ND	ND
3-Chloropropene	NA	NA	ND	ND	ND	ND	ND
4-Ethyltoluene	NA	NA	1.9	4.5	ND	ND	ND
Acetone	115	30	24.0	ND	71.0	69.0	ND
Benzene	13	4.8	ND	ND	ND	ND	ND
Bromodichloromethane	NA	NA	ND	ND	ND	ND	ND
Bromoform	NA	NA	ND	ND	ND	ND	ND
Bromoethene	NA	NA	ND	ND	ND	ND	ND
Bromomethane	0.5	0.5	ND	ND	ND	ND	ND
Carbon Disulfide	NA	NA	ND	ND	ND	ND	ND
Carbon Tetrachloride	1.3	1.2	ND	ND	ND	ND	ND
Chlorobenzene	0.4	NC	ND	ND	ND	ND	ND
Chloroethane	0.4	0.4	ND	ND	ND	ND	ND
Chloroform	1.2	0.5	ND	ND	ND	ND	ND
Chloromethane	4.2	4.3	ND	ND	1.1	1.2	1.2
cis-1,2-Dichloroethene	0.4	0.4	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	0.4	0.4	ND	ND	ND	ND	ND
Cyclohexane	6.3	0.9	ND	ND	ND	ND	ND
Dibromochloromethane	NA	NA	ND	ND	ND	ND	ND
Dichlorodifluoromethane	10	10	2.6	2.3	2.9	2.8	2.9
Ethylbenzene	6.4	1.0	ND	ND	ND	ND	ND
Freon-TF	NA	NA	ND	ND	ND	ND	ND
Hexachlorobutadiene	0.5	0.5	ND	ND	ND	ND	ND
Isopropyl Alcohol	NA	NA	ND	ND	ND	ND	ND
Methyl Butyl ketone	NA	NA	ND	ND	ND	ND	ND
Methyl Ethyl ketone	16	5.3	3.5	2.2	9.4	11.0	ND
Methyl Isobutyl ketone	1.9	0.5	ND	ND	ND	ND	ND
Methyl tert-Butyl Ether	14	NA	ND	ND	ND	ND	ND
Methylene Chloride	16	1.6	8.3	29.0	ND	ND	ND
n-Heptane	18	4.5	ND	ND	ND	ND	ND
n-Hexane	14	2.2	ND	ND	ND	ND	ND
Styrene	1.4	0.5	ND	ND	ND	ND	ND
Tetrachloroethene	2.5	0.7	ND	ND	ND	ND	ND
Tetrahydrofuran	0.8	0.4	ND	ND	ND	ND	ND
tert-Butyl Alcohol	NA	NA	ND	ND	ND	ND	ND
Toluene	57	5.1	1.8	2.1	2.0	1.1	ND
trans-1,2-Dichloroethene	NA	NA	ND	ND	ND	ND	ND
trans-1,3-Dichloropropylene	NA	NA	ND	ND	ND	ND	ND
Trichloroethene	0.5	0.4	ND	ND	ND	ND	ND
Trichlorofluoromethane	12	5.1	1.2	1.2	1.3	1.3	1.3
Vinyl acetate	NA	NA	ND	ND	ND	ND	ND
Vinyl Bromide	NA	NA	ND	ND	ND	ND	ND
Vinyl Chloride	0.4	0.4	ND	ND	ND	ND	ND
Xylene (m.p)	11	1.0	ND	ND	ND	ND	ND
Xylene (o)	7.1	1.2	ND	ND	ND	ND	ND
Xylene (total)	18.1	2.2	ND	ND	ND	ND	ND

Background Levels based on NYSDOH Guidance (Table C1. NYSDOH 2003: Study of volatile organic chemicals in air of fuel oil heated homes).

Table 5: Methane detected at Landfill Gas Monitoring Points

Results provided in % methane.

Compound	Sample ID					
	GM-1A	GM-3	GM-3B	GM-3C	GM-4	GM-5
Methane	ND	5.9	ND	9.5	0.44	ND
	ND	6.2	ND	9.5	0.43	ND

Table 6: Methane detected at 23 Reagan Road Property

Results presented in % methane.

Compound	Sample ID				
	Barn Ambient	Barn Sub-Slab	Basement Ambient	Basement Sub-Slab	Outdoor
Methane	ND	ND	ND	ND	ND
	ND	ND	ND	ND	ND

Notes:

USEPA Method 3C requires duplicate analysis.

ND = Not detected above laboratory detection limits.

APPENDIX D

***Laboratory Results
Data Summary Package
And
CD (Complete Lab Report)***

STL Burlington Colchester, Vermont

Sample Data Summary Package

SDG: NY119584

**STL**

April 26, 2007

Mr. John Petronella
Ecosystems Strategies, Inc.
24 Davis Ave
Poughkeepsie, NY 12603

STL Burlington
30 Community Drive, Suite 11
South Burlington, VT 05403

Tel: 802 660 1990 Fax: 802 660 1919
www.stl-inc.com

Re: Laboratory Project No. 27000
Case: 27000; SDG: NY119584

Dear Mr. Petronella:

Enclosed are the analytical results for the samples that were received by STL Burlington on April 17th, 2007. Laboratory identification numbers were assigned, and designated as follows:

<u>Lab ID</u>	<u>Client Sample ID</u>	<u>Sample Date</u>	<u>Sample Matrix</u>
Received: 04/17/07 ETR No: 119584			
707249	GM-1A	04/12/07	AIR
707250	GM-3	04/12/07	AIR
707251	GM-3B	04/12/07	AIR
707252	GM-3C	04/12/07	AIR
707253	GM-4	04/12/07	AIR
707254	GM-5	04/12/07	AIR

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this submittal. Please note that the samples in this delivery group were submitted in Tedlar bags, and the routine holding time of three days from collection had expired before they were received at the laboratory.

The volatile organic analyses by method TO-15 of all samples in this delivery group with the exception of GM-1A were accomplished at dilutions based on preliminary screening that indicated target compounds would be above calibration range in full strength acquisitions.

The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

If there are any questions regarding this submittal, please contact me at 802 660-1990.

Sincerely,


Don Dawicki
Project Manager

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

GM-1A

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: 707249

Date Analyzed: 04/20/07

Date Received: 04/17/07

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Dichlorodifluoromethane	75-71-8	0.83		0.50	4.1		2.5
1,2-Dichlorotetrafluoroethane	76-14-2	0.25		0.20	1.7		1.4
Chloromethane	74-87-3	0.50	U	0.50	1.0	U	1.0
Vinyl Chloride	75-01-4	0.20	U	0.20	0.51	U	0.51
1,3-Butadiene	106-99-0	0.50	U	0.50	1.1	U	1.1
Bromomethane	74-83-9	0.20	U	0.20	0.78	U	0.78
Chloroethane	75-00-3	0.50	U	0.50	1.3	U	1.3
Bromoethene	593-60-2	0.20	U	0.20	0.87	U	0.87
Trichlorofluoromethane	75-69-4	0.30		0.20	1.7		1.1
Freon TF	76-13-1	0.20	U	0.20	1.5	U	1.5
1,1-Dichloroethene	75-35-4	0.20	U	0.20	0.79	U	0.79
Acetone	67-64-1	33		5.0	78		12
Isopropyl Alcohol	67-63-0	8.2		5.0	20		12
Carbon Disulfide	75-15-0	3.1		0.50	9.7		1.6
3-Chloropropene	107-05-1	0.50	U	0.50	1.6	U	1.6
Methylene Chloride	75-09-2	0.75		0.50	2.6		1.7
tert-Butyl Alcohol	75-65-0	5.0	U	5.0	15	U	15
Methyl tert-Butyl Ether	1634-04-4	0.50	U	0.50	1.8	U	1.8
trans-1,2-Dichloroethene	156-60-5	0.20	U	0.20	0.79	U	0.79
n-Hexane	110-54-3	0.50	U	0.50	1.8	U	1.8
1,1-Dichloroethane	75-34-3	0.20	U	0.20	0.81	U	0.81
1,2-Dichloroethene (total)	540-59-0	0.20	U	0.20	0.79	U	0.79
Methyl Ethyl Ketone	78-93-3	2.0		0.50	5.9		1.5
cis-1,2-Dichloroethene	156-59-2	0.20	U	0.20	0.79	U	0.79
Tetrahydrofuran	109-99-9	5.0	U	5.0	15	U	15
Chloroform	67-66-3	0.20	U	0.20	0.98	U	0.98
1,1,1-Trichloroethane	71-55-6	0.20	U	0.20	1.1	U	1.1
Cyclohexane	110-82-7	0.20	U	0.20	0.69	U	0.69
Carbon Tetrachloride	56-23-5	0.20	U	0.20	1.3	U	1.3
2,2,4-Trimethylpentane	540-84-1	0.20	U	0.20	0.93	U	0.93
Benzene	71-43-2	1.1		0.20	3.5		0.64
1,2-Dichloroethane	107-06-2	0.20	U	0.20	0.81	U	0.81
n-Heptane	142-82-5	0.20	U	0.20	0.82	U	0.82

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

GM-1A

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: 707249

Date Analyzed: 04/20/07

Date Received: 04/17/07

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Trichloroethene	79-01-6	0.20	U	0.20	1.1	U	1.1
1,2-Dichloropropane	78-87-5	0.20	U	0.20	0.92	U	0.92
1,4-Dioxane	123-91-1	5.0	U	5.0	18	U	18
Bromodichloromethane	75-27-4	0.20	U	0.20	1.3	U	1.3
cis-1,3-Dichloropropene	10061-01-5	0.20	U	0.20	0.91	U	0.91
Methyl Isobutyl Ketone	108-10-1	0.50	U	0.50	2.0	U	2.0
Toluene	108-88-3	3.5		0.20	13		0.75
trans-1,3-Dichloropropene	10061-02-6	0.20	U	0.20	0.91	U	0.91
1,1,2-Trichloroethane	79-00-5	0.20	U	0.20	1.1	U	1.1
Tetrachloroethene	127-18-4	0.33		0.20	2.2		1.4
Methyl Butyl Ketone	591-78-6	0.50	U	0.50	2.0	U	2.0
Dibromochloromethane	124-48-1	0.20	U	0.20	1.7	U	1.7
1,2-Dibromoethane	106-93-4	0.20	U	0.20	1.5	U	1.5
Chlorobenzene	108-90-7	0.20	U	0.20	0.92	U	0.92
Ethylbenzene	100-41-4	0.35		0.20	1.5		0.87
Xylene (m,p)	1330-20-7	1.0		0.50	4.3		2.2
Xylene (o)	95-47-6	0.27		0.20	1.2		0.87
Xylene (total)	1330-20-7	1.3		0.20	5.6		0.87
Styrene	100-42-5	0.20	U	0.20	0.85	U	0.85
Bromoform	75-25-2	0.20	U	0.20	2.1	U	2.1
1,1,2,2-Tetrachloroethane	79-34-5	0.20	U	0.20	1.4	U	1.4
4-Ethyltoluene	622-96-8	0.20	U	0.20	0.98	U	0.98
1,3,5-Trimethylbenzene	108-67-8	0.20	U	0.20	0.98	U	0.98
2-Chlorotoluene	95-49-8	0.20	U	0.20	1.0	U	1.0
1,2,4-Trimethylbenzene	95-63-6	0.20	U	0.20	0.98	U	0.98
1,3-Dichlorobenzene	541-73-1	0.20	U	0.20	1.2	U	1.2
1,4-Dichlorobenzene	106-46-7	0.20	U	0.20	1.2	U	1.2
1,2-Dichlorobenzene	95-50-1	0.20	U	0.20	1.2	U	1.2
1,2,4-Trichlorobenzene	120-82-1	0.50	U	0.50	3.7	U	3.7
Hexachlorobutadiene	87-68-3	0.20	U	0.20	2.1	U	2.1

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

GM-3

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: 707250

Date Analyzed: 04/20/07

Date Received: 04/17/07

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Dichlorodifluoromethane	75-71-8	33		10	160		49
1,2-Dichlorotetrafluoroethane	76-14-2	27		4.0	190		28
Chloromethane	74-87-3	10	U	10	21	U	21
Vinyl Chloride	75-01-4	4.0	U	4.0	10	U	10
1,3-Butadiene	106-99-0	10	U	10	22	U	22
Bromomethane	74-83-9	4.0	U	4.0	16	U	16
Chloroethane	75-00-3	10	U	10	26	U	26
Bromoethene	593-60-2	4.0	U	4.0	17	U	17
Trichlorofluoromethane	75-69-4	4.0	U	4.0	22	U	22
Freon TF	76-13-1	4.0	U	4.0	31	U	31
1,1-Dichloroethene	75-35-4	4.0	U	4.0	16	U	16
Acetone	67-64-1	370		100	880		240
Isopropyl Alcohol	67-63-0	100	U	100	250	U	250
Carbon Disulfide	75-15-0	10	U	10	31	U	31
3-Chloropropene	107-05-1	10	U	10	31	U	31
Methylene Chloride	75-09-2	10	U	10	35	U	35
tert-Butyl Alcohol	75-65-0	100	U	100	300	U	300
Methyl tert-Butyl Ether	1634-04-4	10	U	10	36	U	36
trans-1,2-Dichloroethene	156-60-5	4.0	U	4.0	16	U	16
n-Hexane	110-54-3	17		10	60		35
1,1-Dichloroethane	75-34-3	4.0	U	4.0	16	U	16
1,2-Dichloroethene (total)	540-59-0	4.0	U	4.0	16	U	16
Methyl Ethyl Ketone	78-93-3	16		10	47		29
cis-1,2-Dichloroethene	156-59-2	4.0	U	4.0	16	U	16
Tetrahydrofuran	109-99-9	100	U	100	290	U	290
Chloroform	67-66-3	4.0	U	4.0	20	U	20
1,1,1-Trichloroethane	71-55-6	4.0	U	4.0	22	U	22
Cyclohexane	110-82-7	4.0	U	4.0	14	U	14
Carbon Tetrachloride	56-23-5	4.0	U	4.0	25	U	25
2,2,4-Trimethylpentane	540-84-1	23		4.0	110		19
Benzene	71-43-2	4.0	U	4.0	13	U	13
1,2-Dichloroethane	107-06-2	4.0	U	4.0	16	U	16
n-Heptane	142-82-5	4.0	U	4.0	16	U	16

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

GM-3

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: 707250

Date Analyzed: 04/20/07

Date Received: 04/17/07

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Trichloroethene	79-01-6	4.0	U	4.0	21	U	21
1,2-Dichloropropane	78-87-5	4.0	U	4.0	18	U	18
1,4-Dioxane	123-91-1	100	U	100	360	U	360
Bromodichloromethane	75-27-4	4.0	U	4.0	27	U	27
cis-1,3-Dichloropropene	10061-01-5	4.0	U	4.0	18	U	18
Methyl Isobutyl Ketone	108-10-1	10	U	10	41	U	41
Toluene	108-88-3	4.0	U	4.0	15	U	15
trans-1,3-Dichloropropene	10061-02-6	4.0	U	4.0	18	U	18
1,1,2-Trichloroethane	79-00-5	4.0	U	4.0	22	U	22
Tetrachloroethene	127-18-4	4.0	U	4.0	27	U	27
Methyl Butyl Ketone	591-78-6	10	U	10	41	U	41
Dibromochloromethane	124-48-1	4.0	U	4.0	34	U	34
1,2-Dibromoethane	106-93-4	4.0	U	4.0	31	U	31
Chlorobenzene	108-90-7	4.0	U	4.0	18	U	18
Ethylbenzene	100-41-4	4.0	U	4.0	17	U	17
Xylene (m,p)	1330-20-7	10	U	10	43	U	43
Xylene (o)	95-47-6	4.0	U	4.0	17	U	17
Xylene (total)	1330-20-7	4.0	U	4.0	17	U	17
Styrene	100-42-5	4.0	U	4.0	17	U	17
Bromoform	75-25-2	4.0	U	4.0	41	U	41
1,1,2,2-Tetrachloroethane	79-34-5	4.0	U	4.0	27	U	27
4-Ethyltoluene	622-96-8	4.0	U	4.0	20	U	20
1,3,5-Trimethylbenzene	108-67-8	4.0	U	4.0	20	U	20
2-Chlorotoluene	95-49-8	4.0	U	4.0	21	U	21
1,2,4-Trimethylbenzene	95-63-6	4.0	U	4.0	20	U	20
1,3-Dichlorobenzene	541-73-1	12		4.0	72		24
1,4-Dichlorobenzene	106-46-7	4.0	U	4.0	24	U	24
1,2-Dichlorobenzene	95-50-1	4.0	U	4.0	24	U	24
1,2,4-Trichlorobenzene	120-82-1	10	U	10	74	U	74
Hexachlorobutadiene	87-68-3	4.0	U	4.0	43	U	43

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

GM-3B

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: 707251

Date Analyzed: 04/20/07

Date Received: 04/17/07

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Dichlorodifluoromethane	75-71-8	4.8		1.5	24	✓	7.4
1,2-Dichlorotetrafluoroethane	76-14-2	25		0.60	170	✓	4.2
Chloromethane	74-87-3	1.5	U	1.5	3.1	U	3.1
Vinyl Chloride	75-01-4	0.60	U	0.60	1.5	U	1.5
1,3-Butadiene	106-99-0	1.5	U	1.5	3.3	U	3.3
Bromomethane	74-83-9	0.60	U	0.60	2.3	U	2.3
Chloroethane	75-00-3	1.5	U	1.5	4.0	U	4.0
Bromoethene	593-60-2	0.60	U	0.60	2.6	U	2.6
Trichlorofluoromethane	75-69-4	0.60	U	0.60	3.4	U	3.4
Freon TF	76-13-1	0.60	U	0.60	4.6	U	4.6
1,1-Dichloroethene	75-35-4	0.60	U	0.60	2.4	U	2.4
Acetone	67-64-1	110		15	260	✓	38
Isopropyl Alcohol	67-63-0	63		15	150	✓	37
Carbon Disulfide	75-15-0	3.2		1.5	10	✓	4.7
3-Chloropropene	107-05-1	1.5	U	1.5	4.7	U	4.7
Methylene Chloride	75-09-2	1.5	U	1.5	5.2	U	5.2
tert-Butyl Alcohol	75-65-0	15	U	15	45	U	45
Methyl tert-Butyl Ether	1634-04-4	1.5	U	1.5	5.4	U	5.4
trans-1,2-Dichloroethene	156-60-5	0.60	U	0.60	2.4	U	2.4
n-Hexane	110-54-3	3.3		1.5	12	✓	5.3
1,1-Dichloroethane	75-34-3	0.60	U	0.60	2.4	U	2.4
1,2-Dichloroethene (total)	540-59-0	0.60	U	0.60	2.4	U	2.4
Methyl Ethyl Ketone	78-93-3	12		1.5	35	✓	4.4
cis-1,2-Dichloroethene	156-59-2	0.60	U	0.60	2.4	U	2.4
Tetrahydrofuran	109-99-9	15	U	15	44	U	44
Chloroform	67-66-3	0.60	U	0.60	2.9	U	2.9
1,1,1-Trichloroethane	71-55-6	0.60	U	0.60	3.3	U	3.3
Cyclohexane	110-82-7	1.5		0.60	5.2	✓	2.1
Carbon Tetrachloride	56-23-5	0.60	U	0.60	3.8	U	3.8
2,2,4-Trimethylpentane	540-84-1	7.7		0.60	36	✓	2.8
Benzene	71-43-2	1.1		0.60	3.5	✓	1.9
1,2-Dichloroethane	107-06-2	0.60	U	0.60	2.4	U	2.4
n-Heptane	142-82-5	0.60	U	0.60	2.5	U	2.5

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

GM-3B

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: 707251

Date Analyzed: 04/20/07

Date Received: 04/17/07

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Trichloroethene	79-01-6	0.60	U	0.60	3.2	U	3.2
1,2-Dichloropropane	78-87-5	0.60	U	0.60	2.8	U	2.8
1,4-Dioxane	123-91-1	15	U	15	54	U	54
Bromodichloromethane	75-27-4	0.60	U	0.60	4.0	U	4.0
cis-1,3-Dichloropropene	10061-01-5	0.60	U	0.60	2.7	U	2.7
Methyl Isobutyl Ketone	108-10-1	1.5	U	1.5	6.1	U	6.1
Toluene	108-88-3	3.8		0.60	14		2.3
trans-1,3-Dichloropropene	10061-02-6	0.60	U	0.60	2.7	U	2.7
1,1,2-Trichloroethane	79-00-5	0.60	U	0.60	3.3	U	3.3
Tetrachloroethene	127-18-4	0.86		0.60	5.8		4.1
Methyl Butyl Ketone	591-78-6	1.5	U	1.5	6.1	U	6.1
Dibromochloromethane	124-48-1	0.60	U	0.60	5.1	U	5.1
1,2-Dibromoethane	106-93-4	0.60	U	0.60	4.6	U	4.6
Chlorobenzene	108-90-7	0.60	U	0.60	2.8	U	2.8
Ethylbenzene	100-41-4	0.60	U	0.60	2.6	U	2.6
Xylene (m,p)	1330-20-7	1.5	U	1.5	6.5	U	6.5
Xylene (o)	95-47-6	0.60	U	0.60	2.6	U	2.6
Xylene (total)	1330-20-7	0.60	U	0.60	2.6	U	2.6
Styrene	100-42-5	0.60	U	0.60	2.6	U	2.6
Bromoform	75-25-2	0.60	U	0.60	6.2	U	6.2
1,1,2,2-Tetrachloroethane	79-34-5	0.60	U	0.60	4.1	U	4.1
4-Ethyltoluene	622-96-8	0.60	U	0.60	2.9	U	2.9
1,3,5-Trimethylbenzene	108-67-8	0.60	U	0.60	2.9	U	2.9
2-Chlorotoluene	95-49-8	0.60	U	0.60	3.1	U	3.1
1,2,4-Trimethylbenzene	95-63-6	0.60	U	0.60	2.9	U	2.9
1,3-Dichlorobenzene	541-73-1	0.60	U	0.60	3.6	U	3.6
1,4-Dichlorobenzene	106-46-7	0.60	U	0.60	3.6	U	3.6
1,2-Dichlorobenzene	95-50-1	0.60	U	0.60	3.6	U	3.6
1,2,4-Trichlorobenzene	120-82-1	1.5	U	1.5	11	U	11
Hexachlorobutadiene	87-68-3	0.60	U	0.60	6.4	U	6.4

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

GM-3C

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: 707252

Date Analyzed: 04/20/07

Date Received: 04/17/07

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Dichlorodifluoromethane	75-71-8	11000		200	54000		990
1,2-Dichlorotetrafluoroethane	76-14-2	80	U	80	560	U	560
Chloromethane	74-87-3	200	U	200	410	U	410
Vinyl Chloride	75-01-4	80	U	80	200	U	200
1,3-Butadiene	106-99-0	200	U	200	440	U	440
Bromomethane	74-83-9	80	U	80	310	U	310
Chloroethane	75-00-3	200	U	200	530	U	530
Bromoethene	593-60-2	80	U	80	350	U	350
Trichlorofluoromethane	75-69-4	80	U	80	450	U	450
Freon TF	76-13-1	80	U	80	610	U	610
1,1-Dichloroethene	75-35-4	80	U	80	320	U	320
Acetone	67-64-1	2000	U	2000	4800	U	4800
Isopropyl Alcohol	67-63-0	2000	U	2000	4900	U	4900
Carbon Disulfide	75-15-0	200	U	200	620	U	620
3-Chloropropene	107-05-1	200	U	200	630	U	630
Methylene Chloride	75-09-2	200	U	200	690	U	690
tert-Butyl Alcohol	75-65-0	2000	U	2000	6100	U	6100
Methyl tert-Butyl Ether	1634-04-4	200	U	200	720	U	720
trans-1,2-Dichloroethene	156-60-5	80	U	80	320	U	320
n-Hexane	110-54-3	200	U	200	700	U	700
1,1-Dichloroethane	75-34-3	80	U	80	320	U	320
1,2-Dichloroethene (total)	540-59-0	80	U	80	320	U	320
Methyl Ethyl Ketone	78-93-3	200	U	200	590	U	590
cis-1,2-Dichloroethene	156-59-2	80	U	80	320	U	320
Tetrahydrofuran	109-99-9	2000	U	2000	5900	U	5900
Chloroform	67-66-3	80	U	80	390	U	390
1,1,1-Trichloroethane	71-55-6	80	U	80	440	U	440
Cyclohexane	110-82-7	80	U	80	280	U	280
Carbon Tetrachloride	56-23-5	80	U	80	500	U	500
2,2,4-Trimethylpentane	540-84-1	80	U	80	370	U	370
Benzene	71-43-2	80	U	80	260	U	260
1,2-Dichloroethane	107-06-2	80	U	80	320	U	320
n-Heptane	142-82-5	80	U	80	330	U	330

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

GM-3C

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: 707252

Date Analyzed: 04/20/07

Date Received: 04/17/07

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Trichloroethene	79-01-6	80	U	80	430	U	430
1,2-Dichloropropane	78-87-5	80	U	80	370	U	370
1,4-Dioxane	123-91-1	2000	U	2000	7200	U	7200
Bromodichloromethane	75-27-4	80	U	80	540	U	540
cis-1,3-Dichloropropene	10061-01-5	80	U	80	360	U	360
Methyl Isobutyl Ketone	108-10-1	200	U	200	820	U	820
Toluene	108-88-3	80	U	80	300	U	300
trans-1,3-Dichloropropene	10061-02-6	80	U	80	360	U	360
1,1,2-Trichloroethane	79-00-5	80	U	80	440	U	440
Tetrachloroethene	127-18-4	80	U	80	540	U	540
Methyl Butyl Ketone	591-78-6	200	U	200	820	U	820
Dibromochloromethane	124-48-1	80	U	80	680	U	680
1,2-Dibromoethane	106-93-4	80	U	80	610	U	610
Chlorobenzene	108-90-7	80	U	80	370	U	370
Ethylbenzene	100-41-4	80	U	80	350	U	350
Xylene (m,p)	1330-20-7	200	U	200	870	U	870
Xylene (o)	95-47-6	80	U	80	350	U	350
Xylene (total)	1330-20-7	80	U	80	350	U	350
Styrene	100-42-5	80	U	80	340	U	340
Bromoform	75-25-2	80	U	80	830	U	830
1,1,2,2-Tetrachloroethane	79-34-5	80	U	80	550	U	550
4-Ethyltoluene	622-96-8	80	U	80	390	U	390
1,3,5-Trimethylbenzene	108-67-8	80	U	80	390	U	390
2-Chlorotoluene	95-49-8	80	U	80	410	U	410
1,2,4-Trimethylbenzene	95-63-6	80	U	80	390	U	390
1,3-Dichlorobenzene	541-73-1	260		80	1600		480
1,4-Dichlorobenzene	106-46-7	80	U	80	480	U	480
1,2-Dichlorobenzene	95-50-1	80	U	80	480	U	480
1,2,4-Trichlorobenzene	120-82-1	200	U	200	1500	U	1500
Hexachlorobutadiene	87-68-3	80	U	80	850	U	850

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

GM-4

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: 707253

Date Analyzed: 04/20/07

Date Received: 04/17/07

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Dichlorodifluoromethane	75-71-8	230		6.7	1100		33
1,2-Dichlorotetrafluoroethane	76-14-2	2.7	U	2.7	19	U	19
Chloromethane	74-87-3	6.7	U	6.7	14	U	14
Vinyl Chloride	75-01-4	2.7	U	2.7	6.9	U	6.9
1,3-Butadiene	106-99-0	6.7	U	6.7	15	U	15
Bromomethane	74-83-9	2.7	U	2.7	10	U	10
Chloroethane	75-00-3	6.7	U	6.7	18	U	18
Bromoethene	593-60-2	2.7	U	2.7	12	U	12
Trichlorofluoromethane	75-69-4	2.7	U	2.7	15	U	15
Freon TF	76-13-1	2.7	U	2.7	21	U	21
1,1-Dichloroethene	75-35-4	2.7	U	2.7	11	U	11
Acetone	67-64-1	340		67	810		160
Isopropyl Alcohol	67-63-0	78		67	190		160
Carbon Disulfide	75-15-0	6.7	U	6.7	21	U	21
3-Chloropropene	107-05-1	6.7	U	6.7	21	U	21
Methylene Chloride	75-09-2	6.7	U	6.7	23	U	23
tert-Butyl Alcohol	75-65-0	67	U	67	200	U	200
Methyl tert-Butyl Ether	1634-04-4	6.7	U	6.7	24	U	24
trans-1,2-Dichloroethene	156-60-5	2.7	U	2.7	11	U	11
n-Hexane	110-54-3	6.9		6.7	24		24
1,1-Dichloroethane	75-34-3	2.7	U	2.7	11	U	11
1,2-Dichloroethene (total)	540-59-0	2.7	U	2.7	11	U	11
Methyl Ethyl Ketone	78-93-3	17		6.7	50		20
cis-1,2-Dichloroethene	156-59-2	2.7	U	2.7	11	U	11
Tetrahydrofuran	109-99-9	67	U	67	200	U	200
Chloroform	67-66-3	2.7	U	2.7	13	U	13
1,1,1-Trichloroethane	71-55-6	2.7	U	2.7	15	U	15
Cyclohexane	110-82-7	5.5		2.7	19		9.3
Carbon Tetrachloride	56-23-5	2.7	U	2.7	17	U	17
2,2,4-Trimethylpentane	540-84-1	15		2.7	70		13
Benzene	71-43-2	2.7	U	2.7	8.6	U	8.6
1,2-Dichloroethane	107-06-2	2.7	U	2.7	11	U	11
n-Heptane	142-82-5	2.7	U	2.7	11	U	11

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

GM-4

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: 707253

Date Analyzed: 04/20/07

Date Received: 04/17/07

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Trichloroethene	79-01-6	2.7	U	2.7	15	U	15
1,2-Dichloropropane	78-87-5	2.7	U	2.7	12	U	12
1,4-Dioxane	123-91-1	67	U	67	240	U	240
Bromodichloromethane	75-27-4	2.7	U	2.7	18	U	18
cis-1,3-Dichloropropene	10061-01-5	2.7	U	2.7	12	U	12
Methyl Isobutyl Ketone	108-10-1	6.7	U	6.7	27	U	27
Toluene	108-88-3	2.7	U	2.7	10	U	10
trans-1,3-Dichloropropene	10061-02-6	2.7	U	2.7	12	U	12
1,1,2-Trichloroethane	79-00-5	2.7	U	2.7	15	U	15
Tetrachloroethene	127-18-4	2.7	U	2.7	18	U	18
Methyl Butyl Ketone	591-78-6	6.7	U	6.7	27	U	27
Dibromochloromethane	124-48-1	2.7	U	2.7	23	U	23
1,2-Dibromoethane	106-93-4	2.7	U	2.7	21	U	21
Chlorobenzene	108-90-7	2.7	U	2.7	12	U	12
Ethylbenzene	100-41-4	2.7	U	2.7	12	U	12
Xylene (m,p)	1330-20-7	6.7	U	6.7	29	U	29
Xylene (o)	95-47-6	2.7	U	2.7	12	U	12
Xylene (total)	1330-20-7	2.7	U	2.7	12	U	12
Styrene	100-42-5	2.7	U	2.7	12	U	12
Bromoform	75-25-2	2.7	U	2.7	28	U	28
1,1,2,2-Tetrachloroethane	79-34-5	2.7	U	2.7	19	U	19
4-Ethyltoluene	622-96-8	2.7	U	2.7	13	U	13
1,3,5-Trimethylbenzene	108-67-8	2.7	U	2.7	13	U	13
2-Chlorotoluene	95-49-8	2.7	U	2.7	14	U	14
1,2,4-Trimethylbenzene	95-63-6	2.7	U	2.7	13	U	13
1,3-Dichlorobenzene	541-73-1	2.7	U	2.7	16	U	16
1,4-Dichlorobenzene	106-46-7	2.7	U	2.7	16	U	16
1,2-Dichlorobenzene	95-50-1	2.7	U	2.7	16	U	16
1,2,4-Trichlorobenzene	120-82-1	6.7	U	6.7	50	U	50
Hexachlorobutadiene	87-68-3	2.7	U	2.7	29	U	29

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

GM-5

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: 707254

Date Analyzed: 04/23/07

Date Received: 04/17/07

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Dichlorodifluoromethane	75-71-8	8.6		0.63	43		3.1
1,2-Dichlorotetrafluoroethane	76-14-2	0.25	U	0.25	1.7	U	1.7
Chloromethane	74-87-3	0.63	U	0.63	1.3	U	1.3
Vinyl Chloride	75-01-4	0.25	U	0.25	0.64	U	0.64
1,3-Butadiene	106-99-0	0.63	U	0.63	1.4	U	1.4
Bromomethane	74-83-9	0.25	U	0.25	0.97	U	0.97
Chloroethane	75-00-3	0.63	U	0.63	1.7	U	1.7
Bromoethene	593-60-2	0.25	U	0.25	1.1	U	1.1
Trichlorofluoromethane	75-69-4	0.31		0.25	1.7		1.4
Freon TF	76-13-1	0.25	U	0.25	1.9	U	1.9
1,1-Dichloroethene	75-35-4	0.25	U	0.25	0.99	U	0.99
Acetone	67-64-1	54	E	6.3	130	E	15
Isopropyl Alcohol	67-63-0	21		6.3	52		15
Carbon Disulfide	75-15-0	3.6		0.63	11		2.0
3-Chloropropene	107-05-1	0.63	U	0.63	2.0	U	2.0
Methylene Chloride	75-09-2	0.63	U	0.63	2.2	U	2.2
tert-Butyl Alcohol	75-65-0	6.3	U	6.3	19	U	19
Methyl tert-Butyl Ether	1634-04-4	0.63	U	0.63	2.3	U	2.3
trans-1,2-Dichloroethene	156-60-5	0.25	U	0.25	0.99	U	0.99
n-Hexane	110-54-3	2.1		0.63	7.4		2.2
1,1-Dichloroethane	75-34-3	0.25	U	0.25	1.0	U	1.0
1,2-Dichloroethene (total)	540-59-0	0.25	U	0.25	0.99	U	0.99
Methyl Ethyl Ketone	78-93-3	6.4		0.63	19		1.9
cis-1,2-Dichloroethene	156-59-2	0.25	U	0.25	0.99	U	0.99
Tetrahydrofuran	109-99-9	6.3	U	6.3	19	U	19
Chloroform	67-66-3	0.25	U	0.25	1.2	U	1.2
1,1,1-Trichloroethane	71-55-6	0.25	U	0.25	1.4	U	1.4
Cyclohexane	110-82-7	1.8		0.25	6.2		0.86
Carbon Tetrachloride	56-23-5	0.25	U	0.25	1.6	U	1.6
2,2,4-Trimethylpentane	540-84-1	5.9		0.25	28		1.2
Benzene	71-43-2	1.0		0.25	3.2		0.80
1,2-Dichloroethane	107-06-2	0.25	U	0.25	1.0	U	1.0
n-Heptane	142-82-5	0.59		0.25	2.4		1.0

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

GM-5

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: 707254

Date Analyzed: 04/23/07

Date Received: 04/17/07

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Trichloroethene	79-01-6	0.25	U	0.25	1.3	U	1.3
1,2-Dichloropropane	78-87-5	0.25	U	0.25	1.2	U	1.2
1,4-Dioxane	123-91-1	6.3	U	6.3	23	U	23
Bromodichloromethane	75-27-4	0.25	U	0.25	1.7	U	1.7
cis-1,3-Dichloropropene	10061-01-5	0.25	U	0.25	1.1	U	1.1
Methyl Isobutyl Ketone	108-10-1	0.63	U	0.63	2.6	U	2.6
Toluene	108-88-3	4.0		0.25	15		0.94
trans-1,3-Dichloropropene	10061-02-6	0.25	U	0.25	1.1	U	1.1
1,1,2-Trichloroethane	79-00-5	0.25	U	0.25	1.4	U	1.4
Tetrachloroethene	127-18-4	1.6		0.25	11		1.7
Methyl Butyl Ketone	591-78-6	0.63	U	0.63	2.6	U	2.6
Dibromochloromethane	124-48-1	0.25	U	0.25	2.1	U	2.1
1,2-Dibromoethane	106-93-4	0.25	U	0.25	1.9	U	1.9
Chlorobenzene	108-90-7	0.25	U	0.25	1.2	U	1.2
Ethylbenzene	100-41-4	0.42		0.25	1.8		1.1
Xylene (m,p)	1330-20-7	1.4		0.63	6.1		2.7
Xylene (o)	95-47-6	0.39		0.25	1.7		1.1
Xylene (total)	1330-20-7	1.8		0.25	7.8		1.1
Styrene	100-42-5	0.25	U	0.25	1.1	U	1.1
Bromoform	75-25-2	0.25	U	0.25	2.6	U	2.6
1,1,2,2-Tetrachloroethane	79-34-5	0.25	U	0.25	1.7	U	1.7
4-Ethyltoluene	622-96-8	0.34		0.25	1.7		1.2
1,3,5-Trimethylbenzene	108-67-8	0.25	U	0.25	1.2	U	1.2
2-Chlorotoluene	95-49-8	0.25	U	0.25	1.3	U	1.3
1,2,4-Trimethylbenzene	95-63-6	0.41		0.25	2.0		1.2
1,3-Dichlorobenzene	541-73-1	0.25	U	0.25	1.5	U	1.5
1,4-Dichlorobenzene	106-46-7	0.25	U	0.25	1.5	U	1.5
1,2-Dichlorobenzene	95-50-1	0.25	U	0.25	1.5	U	1.5
1,2,4-Trichlorobenzene	120-82-1	0.63	U	0.63	4.7	U	4.7
Hexachlorobutadiene	87-68-3	0.25	U	0.25	2.7	U	2.7

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

GM-5DL

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: 707254D1

Date Analyzed: 04/23/07

Date Received: 04/17/07

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Dichlorodifluoromethane	75-71-8	9.0	D	2.0	45	D	9.9
1,2-Dichlorotetrafluoroethane	76-14-2	0.80	U	0.80	5.6	U	5.6
Chloromethane	74-87-3	2.0	U	2.0	4.1	U	4.1
Vinyl Chloride	75-01-4	0.80	U	0.80	2.0	U	2.0
1,3-Butadiene	106-99-0	2.0	U	2.0	4.4	U	4.4
Bromomethane	74-83-9	0.80	U	0.80	3.1	U	3.1
Chloroethane	75-00-3	2.0	U	2.0	5.3	U	5.3
Bromoethene	593-60-2	0.80	U	0.80	3.5	U	3.5
Trichlorofluoromethane	75-69-4	0.80	U	0.80	4.5	U	4.5
Freon TF	76-13-1	0.80	U	0.80	6.1	U	6.1
1,1-Dichloroethene	75-35-4	0.80	U	0.80	3.2	U	3.2
Acetone	67-64-1	37	D	20	88	D	48
Isopropyl Alcohol	67-63-0	20	U	20	49	U	49
Carbon Disulfide	75-15-0	3.7	D	2.0	12	D	6.2
3-Chloropropene	107-05-1	2.0	U	2.0	6.3	U	6.3
Methylene Chloride	75-09-2	2.0	U	2.0	6.9	U	6.9
tert-Butyl Alcohol	75-65-0	20	U	20	61	U	61
Methyl tert-Butyl Ether	1634-04-4	2.0	U	2.0	7.2	U	7.2
trans-1,2-Dichloroethene	156-60-5	0.80	U	0.80	3.2	U	3.2
n-Hexane	110-54-3	2.1	D	2.0	7.4	D	7.0
1,1-Dichloroethane	75-34-3	0.80	U	0.80	3.2	U	3.2
1,2-Dichloroethene (total)	540-59-0	0.80	U	0.80	3.2	U	3.2
Methyl Ethyl Ketone	78-93-3	4.7	D	2.0	14	D	5.9
cis-1,2-Dichloroethene	156-59-2	0.80	U	0.80	3.2	U	3.2
Tetrahydrofuran	109-99-9	20	U	20	59	U	59
Chloroform	67-66-3	0.80	U	0.80	3.9	U	3.9
1,1,1-Trichloroethane	71-55-6	0.80	U	0.80	4.4	U	4.4
Cyclohexane	110-82-7	1.8	D	0.80	6.2	D	2.8
Carbon Tetrachloride	56-23-5	0.80	U	0.80	5.0	U	5.0
2,2,4-Trimethylpentane	540-84-1	5.3	D	0.80	25	D	3.7
Benzene	71-43-2	0.89	D	0.80	2.8	D	2.6
1,2-Dichloroethane	107-06-2	0.80	U	0.80	3.2	U	3.2
n-Heptane	142-82-5	0.80	U	0.80	3.3	U	3.3

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

GM-5DL

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: 707254D1

Date Analyzed: 04/23/07

Date Received: 04/17/07

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Trichloroethene	79-01-6	0.80	U	0.80	4.3	U	4.3
1,2-Dichloropropane	78-87-5	0.80	U	0.80	3.7	U	3.7
1,4-Dioxane	123-91-1	20	U	20	72	U	72
Bromodichloromethane	75-27-4	0.80	U	0.80	5.4	U	5.4
cis-1,3-Dichloropropene	10061-01-5	0.80	U	0.80	3.6	U	3.6
Methyl Isobutyl Ketone	108-10-1	2.0	U	2.0	8.2	U	8.2
Toluene	108-88-3	2.5	D	0.80	9.4	D	3.0
trans-1,3-Dichloropropene	10061-02-6	0.80	U	0.80	3.6	U	3.6
1,1,2-Trichloroethane	79-00-5	0.80	U	0.80	4.4	U	4.4
Tetrachloroethene	127-18-4	1.3	D	0.80	8.8	D	5.4
Methyl Butyl Ketone	591-78-6	2.0	U	2.0	8.2	U	8.2
Dibromochloromethane	124-48-1	0.80	U	0.80	6.8	U	6.8
1,2-Dibromoethane	106-93-4	0.80	U	0.80	6.1	U	6.1
Chlorobenzene	108-90-7	0.80	U	0.80	3.7	U	3.7
Ethylbenzene	100-41-4	0.80	U	0.80	3.5	U	3.5
Xylene (m,p)	1330-20-7	2.0	U	2.0	8.7	U	8.7
Xylene (o)	95-47-6	0.80	U	0.80	3.5	U	3.5
Xylene (total)	1330-20-7	0.80	U	0.80	3.5	U	3.5
Styrene	100-42-5	0.80	U	0.80	3.4	U	3.4
Bromoform	75-25-2	0.80	U	0.80	8.3	U	8.3
1,1,2,2-Tetrachloroethane	79-34-5	0.80	U	0.80	5.5	U	5.5
4-Ethyltoluene	622-96-8	0.80	U	0.80	3.9	U	3.9
1,3,5-Trimethylbenzene	108-67-8	0.80	U	0.80	3.9	U	3.9
2-Chlorotoluene	95-49-8	0.80	U	0.80	4.1	U	4.1
1,2,4-Trimethylbenzene	95-63-6	0.80	U	0.80	3.9	U	3.9
1,3-Dichlorobenzene	541-73-1	0.80	U	0.80	4.8	U	4.8
1,4-Dichlorobenzene	106-46-7	0.80	U	0.80	4.8	U	4.8
1,2-Dichlorobenzene	95-50-1	0.80	U	0.80	4.8	U	4.8
1,2,4-Trichlorobenzene	120-82-1	2.0	U	2.0	15	U	15
Hexachlorobutadiene	87-68-3	0.80	U	0.80	8.5	U	8.5

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

BA042207LCS

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: BA042207

Date Analyzed: 04/23/07

Date Received: / /

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Dichlorodifluoromethane	75-71-8	11		0.50	54		2.5
1,2-Dichlorotetrafluoroethane	76-14-2	11		0.20	77		1.4
Chloromethane	74-87-3	11		0.50	23		1.0
Vinyl Chloride	75-01-4	11		0.20	28		0.51
1,3-Butadiene	106-99-0	12		0.50	27		1.1
Bromomethane	74-83-9	10		0.20	39		0.78
Chloroethane	75-00-3	11		0.50	29		1.3
Bromoethene	593-60-2	11		0.20	48		0.87
Trichlorofluoromethane	75-69-4	11		0.20	62		1.1
Freon TF	76-13-1	11		0.20	84		1.5
1,1-Dichloroethene	75-35-4	11		0.20	44		0.79
Acetone	67-64-1	10		5.0	24		12
Isopropyl Alcohol	67-63-0	9.8		5.0	24		12
Carbon Disulfide	75-15-0	11		0.50	34		1.6
3-Chloropropene	107-05-1	10		0.50	31		1.6
Methylene Chloride	75-09-2	11		0.50	38		1.7
tert-Butyl Alcohol	75-65-0	9.5		5.0	29		15
Methyl tert-Butyl Ether	1634-04-4	10		0.50	36		1.8
trans-1,2-Dichloroethene	156-60-5	10		0.20	40		0.79
n-Hexane	110-54-3	10		0.50	35		1.8
1,1-Dichloroethane	75-34-3	10		0.20	40		0.81
1,2-Dichloroethene (total)	540-59-0	21		0.20	83		0.79
Methyl Ethyl Ketone	78-93-3	11		0.50	32		1.5
cis-1,2-Dichloroethene	156-59-2	11		0.20	44		0.79
Tetrahydrofuran	109-99-9	11		5.0	32		15
Chloroform	67-66-3	10		0.20	49		0.98
1,1,1-Trichloroethane	71-55-6	10		0.20	55		1.1
Cyclohexane	110-82-7	9.9		0.20	34		0.69
Carbon Tetrachloride	56-23-5	9.6		0.20	60		1.3
2,2,4-Trimethylpentane	540-84-1	9.7		0.20	45		0.93
Benzene	71-43-2	9.6		0.20	31		0.64
1,2-Dichloroethane	107-06-2	9.6		0.20	39		0.81
n-Heptane	142-82-5	9.8		0.20	40		0.82

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

BA042207LCS

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: BA042207

Date Analyzed: 04/23/07

Date Received: / /

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Trichloroethene	79-01-6	9.7		0.20	52		1.1
1,2-Dichloropropane	78-87-5	9.5		0.20	44		0.92
1,4-Dioxane	123-91-1	8.7		5.0	31		18
Bromodichloromethane	75-27-4	10		0.20	67		1.3
cis-1,3-Dichloropropene	10061-01-5	9.5		0.20	43		0.91
Methyl Isobutyl Ketone	108-10-1	9.8		0.50	40		2.0
Toluene	108-88-3	9.3		0.20	35		0.75
trans-1,3-Dichloropropene	10061-02-6	9.6		0.20	44		0.91
1,1,2-Trichloroethane	79-00-5	9.0		0.20	49		1.1
Tetrachloroethene	127-18-4	8.9		0.20	60		1.4
Methyl Butyl Ketone	591-78-6	9.8		0.50	40		2.0
Dibromochloromethane	124-48-1	9.7		0.20	83		1.7
1,2-Dibromoethane	106-93-4	9.2		0.20	71		1.5
Chlorobenzene	108-90-7	9.1		0.20	42		0.92
Ethylbenzene	100-41-4	9.4		0.20	41		0.87
Xylene (m,p)	1330-20-7	19		0.50	83		2.2
Xylene (o)	95-47-6	9.2		0.20	40		0.87
Xylene (total)	1330-20-7	28		0.20	120		0.87
Styrene	100-42-5	9.7		0.20	41		0.85
Bromoform	75-25-2	10		0.20	100		2.1
1,1,2,2-Tetrachloroethane	79-34-5	9.3		0.20	64		1.4
4-Ethyltoluene	622-96-8	10		0.20	49		0.98
1,3,5-Trimethylbenzene	108-67-8	9.2		0.20	45		0.98
2-Chlorotoluene	95-49-8	9.7		0.20	50		1.0
1,2,4-Trimethylbenzene	95-63-6	9.7		0.20	48		0.98
1,3-Dichlorobenzene	541-73-1	9.1		0.20	55		1.2
1,4-Dichlorobenzene	106-46-7	9.2		0.20	55		1.2
1,2-Dichlorobenzene	95-50-1	9.0		0.20	54		1.2
1,2,4-Trichlorobenzene	120-82-1	7.2		0.50	53		3.7
Hexachlorobutadiene	87-68-3	8.6		0.20	92		2.1

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

BA042207LCSD

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: BA042207

Date Analyzed: 04/23/07

Date Received: / /

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Dichlorodifluoromethane	75-71-8	11		0.50	54		2.5
1,2-Dichlorotetrafluoroethane	76-14-2	11		0.20	77		1.4
Chloromethane	74-87-3	11		0.50	23		1.0
Vinyl Chloride	75-01-4	11		0.20	28		0.51
1,3-Butadiene	106-99-0	11		0.50	24		1.1
Bromomethane	74-83-9	10		0.20	39		0.78
Chloroethane	75-00-3	10		0.50	26		1.3
Bromoethene	593-60-2	11		0.20	48		0.87
Trichlorofluoromethane	75-69-4	11		0.20	62		1.1
Freon TF	76-13-1	11		0.20	84		1.5
1,1-Dichloroethene	75-35-4	11		0.20	44		0.79
Acetone	67-64-1	11		5.0	26		12
Isopropyl Alcohol	67-63-0	10		5.0	25		12
Carbon Disulfide	75-15-0	11		0.50	34		1.6
3-Chloropropene	107-05-1	11		0.50	34		1.6
Methylene Chloride	75-09-2	11		0.50	38		1.7
tert-Butyl Alcohol	75-65-0	9.9		5.0	30		15
Methyl tert-Butyl Ether	1634-04-4	11		0.50	40		1.8
trans-1,2-Dichloroethene	156-60-5	10		0.20	40		0.79
n-Hexane	110-54-3	10		0.50	35		1.8
1,1-Dichloroethane	75-34-3	11		0.20	45		0.81
1,2-Dichloroethene (total)	540-59-0	21		0.20	83		0.79
Methyl Ethyl Ketone	78-93-3	11		0.50	32		1.5
cis-1,2-Dichloroethene	156-59-2	11		0.20	44		0.79
Tetrahydrofuran	109-99-9	11		5.0	32		15
Chloroform	67-66-3	11		0.20	54		0.98
1,1,1-Trichloroethane	71-55-6	11		0.20	60		1.1
Cyclohexane	110-82-7	10		0.20	34		0.69
Carbon Tetrachloride	56-23-5	10		0.20	63		1.3
2,2,4-Trimethylpentane	540-84-1	10		0.20	47		0.93
Benzene	71-43-2	10		0.20	32		0.64
1,2-Dichloroethane	107-06-2	10		0.20	40		0.81
n-Heptane	142-82-5	10		0.20	41		0.82

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

BA042207LCSD

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: BA042207

Date Analyzed: 04/23/07

Date Received: / /

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Trichloroethene	79-01-6	10		0.20	54		1.1
1,2-Dichloropropane	78-87-5	9.9		0.20	46		0.92
1,4-Dioxane	123-91-1	9.5		5.0	34		18
Bromodichloromethane	75-27-4	10		0.20	67		1.3
cis-1,3-Dichloropropene	10061-01-5	9.9		0.20	45		0.91
Methyl Isobutyl Ketone	108-10-1	10		0.50	41		2.0
Toluene	108-88-3	9.8		0.20	37		0.75
trans-1,3-Dichloropropene	10061-02-6	10		0.20	45		0.91
1,1,2-Trichloroethane	79-00-5	9.4		0.20	51		1.1
Tetrachloroethene	127-18-4	9.4		0.20	64		1.4
Methyl Butyl Ketone	591-78-6	10		0.50	41		2.0
Dibromochloromethane	124-48-1	10		0.20	85		1.7
1,2-Dibromoethane	106-93-4	9.7		0.20	75		1.5
Chlorobenzene	108-90-7	9.6		0.20	44		0.92
Ethylbenzene	100-41-4	9.9		0.20	43		0.87
Xylene (m,p)	1330-20-7	20		0.50	87		2.2
Xylene (o)	95-47-6	9.7		0.20	42		0.87
Xylene (total)	1330-20-7	30		0.20	130		0.87
Styrene	100-42-5	10		0.20	43		0.85
Bromoform	75-25-2	11		0.20	110		2.1
1,1,2,2-Tetrachloroethane	79-34-5	9.7		0.20	67		1.4
4-Ethyltoluene	622-96-8	11		0.20	54		0.98
1,3,5-Trimethylbenzene	108-67-8	9.7		0.20	48		0.98
2-Chlorotoluene	95-49-8	10		0.20	52		1.0
1,2,4-Trimethylbenzene	95-63-6	10		0.20	49		0.98
1,3-Dichlorobenzene	541-73-1	9.6		0.20	58		1.2
1,4-Dichlorobenzene	106-46-7	9.6		0.20	58		1.2
1,2-Dichlorobenzene	95-50-1	9.5		0.20	57		1.2
1,2,4-Trichlorobenzene	120-82-1	7.5		0.50	56		3.7
Hexachlorobutadiene	87-68-3	9.1		0.20	97		2.1

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

CA041907LCS

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: CA041907

Date Analyzed: 04/19/07

Date Received: / /

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Dichlorodifluoromethane	75-71-8	16		0.50	79		2.5
1,2-Dichlorotetrafluoroethane	76-14-2	13		0.20	91		1.4
Chloromethane	74-87-3	10		0.50	21		1.0
Vinyl Chloride	75-01-4	10		0.20	26		0.51
1,3-Butadiene	106-99-0	11		0.50	24		1.1
Bromomethane	74-83-9	11		0.20	43		0.78
Chloroethane	75-00-3	11		0.50	29		1.3
Bromoethene	593-60-2	11		0.20	48		0.87
Trichlorofluoromethane	75-69-4	12		0.20	67		1.1
Freon TF	76-13-1	12		0.20	92		1.5
1,1-Dichloroethene	75-35-4	12		0.20	48		0.79
Acetone	67-64-1	13		5.0	31		12
Isopropyl Alcohol	67-63-0	13		5.0	32		12
Carbon Disulfide	75-15-0	12		0.50	37		1.6
3-Chloropropene	107-05-1	13		0.50	41		1.6
Methylene Chloride	75-09-2	14		0.50	49		1.7
tert-Butyl Alcohol	75-65-0	12		5.0	36		15
Methyl tert-Butyl Ether	1634-04-4	13		0.50	47		1.8
trans-1,2-Dichloroethene	156-60-5	13		0.20	52		0.79
n-Hexane	110-54-3	13		0.50	46		1.8
1,1-Dichloroethane	75-34-3	13		0.20	53		0.81
1,2-Dichloroethene (total)	540-59-0	24		0.20	95		0.79
Methyl Ethyl Ketone	78-93-3	13		0.50	38		1.5
cis-1,2-Dichloroethene	156-59-2	11		0.20	44		0.79
Tetrahydrofuran	109-99-9	12		5.0	35		15
Chloroform	67-66-3	12		0.20	59		0.98
1,1,1-Trichloroethane	71-55-6	11		0.20	60		1.1
Cyclohexane	110-82-7	11		0.20	38		0.69
Carbon Tetrachloride	56-23-5	11		0.20	69		1.3
2,2,4-Trimethylpentane	540-84-1	12		0.20	56		0.93
Benzene	71-43-2	11		0.20	35		0.64
1,2-Dichloroethane	107-06-2	12		0.20	49		0.81
n-Heptane	142-82-5	12		0.20	49		0.82

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

CA041907LCS

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: CA041907

Date Analyzed: 04/19/07

Date Received: / /

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Trichloroethene	79-01-6	11		0.20	59		1.1
1,2-Dichloropropane	78-87-5	11		0.20	51		0.92
1,4-Dioxane	123-91-1	9.7		5.0	35		18
Bromodichloromethane	75-27-4	12		0.20	80		1.3
cis-1,3-Dichloropropene	10061-01-5	11		0.20	50		0.91
Methyl Isobutyl Ketone	108-10-1	13		0.50	53		2.0
Toluene	108-88-3	10		0.20	38		0.75
trans-1,3-Dichloropropene	10061-02-6	11		0.20	50		0.91
1,1,2-Trichloroethane	79-00-5	10		0.20	55		1.1
Tetrachloroethene	127-18-4	8.1		0.20	55		1.4
Methyl Butyl Ketone	591-78-6	13		0.50	53		2.0
Dibromochloromethane	124-48-1	11		0.20	94		1.7
1,2-Dibromoethane	106-93-4	9.9		0.20	76		1.5
Chlorobenzene	108-90-7	9.1		0.20	42		0.92
Ethylbenzene	100-41-4	11		0.20	48		0.87
Xylene (m,p)	1330-20-7	19		0.50	83		2.2
Xylene (o)	95-47-6	9.3		0.20	40		0.87
Xylene (total)	1330-20-7	28		0.20	120		0.87
Styrene	100-42-5	10		0.20	43		0.85
Bromoform	75-25-2	10		0.20	100		2.1
1,1,2,2-Tetrachloroethane	79-34-5	10		0.20	69		1.4
4-Ethyltoluene	622-96-8	11		0.20	54		0.98
1,3,5-Trimethylbenzene	108-67-8	10		0.20	49		0.98
2-Chlorotoluene	95-49-8	11		0.20	57		1.0
1,2,4-Trimethylbenzene	95-63-6	10		0.20	49		0.98
1,3-Dichlorobenzene	541-73-1	8.5		0.20	51		1.2
1,4-Dichlorobenzene	106-46-7	8.4		0.20	51		1.2
1,2-Dichlorobenzene	95-50-1	8.1		0.20	49		1.2
1,2,4-Trichlorobenzene	120-82-1	6.8		0.50	50		3.7
Hexachlorobutadiene	87-68-3	8.2		0.20	87		2.1

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

CA041907LCSD

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: CA041907

Date Analyzed: 04/19/07

Date Received: / /

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Dichlorodifluoromethane	75-71-8	16		0.50	79		2.5
1,2-Dichlorotetrafluoroethane	76-14-2	13		0.20	91		1.4
Chloromethane	74-87-3	10		0.50	21		1.0
Vinyl Chloride	75-01-4	10		0.20	26		0.51
1,3-Butadiene	106-99-0	10		0.50	22		1.1
Bromomethane	74-83-9	10		0.20	39		0.78
Chloroethane	75-00-3	11		0.50	29		1.3
Bromoethene	593-60-2	11		0.20	48		0.87
Trichlorofluoromethane	75-69-4	12		0.20	67		1.1
Freon TF	76-13-1	12		0.20	92		1.5
1,1-Dichloroethene	75-35-4	12		0.20	48		0.79
Acetone	67-64-1	13		5.0	31		12
Isopropyl Alcohol	67-63-0	12		5.0	29		12
Carbon Disulfide	75-15-0	12		0.50	37		1.6
3-Chloropropene	107-05-1	13		0.50	41		1.6
Methylene Chloride	75-09-2	14		0.50	49		1.7
tert-Butyl Alcohol	75-65-0	12		5.0	36		15
Methyl tert-Butyl Ether	1634-04-4	13		0.50	47		1.8
trans-1,2-Dichloroethene	156-60-5	13		0.20	52		0.79
n-Hexane	110-54-3	13		0.50	46		1.8
1,1-Dichloroethane	75-34-3	13		0.20	53		0.81
1,2-Dichloroethene (total)	540-59-0	24		0.20	95		0.79
Methyl Ethyl Ketone	78-93-3	13		0.50	38		1.5
cis-1,2-Dichloroethene	156-59-2	11		0.20	44		0.79
Tetrahydrofuran	109-99-9	12		5.0	35		15
Chloroform	67-66-3	12		0.20	59		0.98
1,1,1-Trichloroethane	71-55-6	11		0.20	60		1.1
Cyclohexane	110-82-7	11		0.20	38		0.69
Carbon Tetrachloride	56-23-5	11		0.20	69		1.3
2,2,4-Trimethylpentane	540-84-1	12		0.20	56		0.93
Benzene	71-43-2	11		0.20	35		0.64
1,2-Dichloroethane	107-06-2	12		0.20	49		0.81
n-Heptane	142-82-5	12		0.20	49		0.82

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

CA041907LCSD

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: CA041907

Date Analyzed: 04/19/07

Date Received: / /

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Trichloroethene	79-01-6	10		0.20	54		1.1
1,2-Dichloropropane	78-87-5	11		0.20	51		0.92
1,4-Dioxane	123-91-1	9.6		5.0	35		18
Bromodichloromethane	75-27-4	12		0.20	80		1.3
cis-1,3-Dichloropropene	10061-01-5	11		0.20	50		0.91
Methyl Isobutyl Ketone	108-10-1	12		0.50	49		2.0
Toluene	108-88-3	10		0.20	38		0.75
trans-1,3-Dichloropropene	10061-02-6	11		0.20	50		0.91
1,1,2-Trichloroethane	79-00-5	10		0.20	55		1.1
Tetrachloroethene	127-18-4	7.9		0.20	54		1.4
Methyl Butyl Ketone	591-78-6	13		0.50	53		2.0
Dibromochloromethane	124-48-1	10		0.20	85		1.7
1,2-Dibromoethane	106-93-4	9.7		0.20	75		1.5
Chlorobenzene	108-90-7	8.9		0.20	41		0.92
Ethylbenzene	100-41-4	11		0.20	48		0.87
Xylene (m,p)	1330-20-7	19		0.50	83		2.2
Xylene (o)	95-47-6	9.2		0.20	40		0.87
Xylene (total)	1330-20-7	28		0.20	120		0.87
Styrene	100-42-5	9.7		0.20	41		0.85
Bromoform	75-25-2	10		0.20	100		2.1
1,1,2,2-Tetrachloroethane	79-34-5	10		0.20	69		1.4
4-Ethyltoluene	622-96-8	11		0.20	54		0.98
1,3,5-Trimethylbenzene	108-67-8	9.8		0.20	48		0.98
2-Chlorotoluene	95-49-8	11		0.20	57		1.0
1,2,4-Trimethylbenzene	95-63-6	10		0.20	49		0.98
1,3-Dichlorobenzene	541-73-1	8.3		0.20	50		1.2
1,4-Dichlorobenzene	106-46-7	8.2		0.20	49		1.2
1,2-Dichlorobenzene	95-50-1	8.0		0.20	48		1.2
1,2,4-Trichlorobenzene	120-82-1	6.5		0.50	48		3.7
Hexachlorobutadiene	87-68-3	7.8		0.20	83		2.1

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

MBLK041907CA

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: MBLK0419

Date Analyzed: 04/19/07

Date Received: / /

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Dichlorodifluoromethane	75-71-8	0.50	U	0.50	2.5	U	2.5
1,2-Dichlorotetrafluoroethane	76-14-2	0.20	U	0.20	1.4	U	1.4
Chloromethane	74-87-3	0.50	U	0.50	1.0	U	1.0
Vinyl Chloride	75-01-4	0.20	U	0.20	0.51	U	0.51
1,3-Butadiene	106-99-0	0.50	U	0.50	1.1	U	1.1
Bromomethane	74-83-9	0.20	U	0.20	0.78	U	0.78
Chloroethane	75-00-3	0.50	U	0.50	1.3	U	1.3
Bromoethene	593-60-2	0.20	U	0.20	0.87	U	0.87
Trichlorofluoromethane	75-69-4	0.20	U	0.20	1.1	U	1.1
Freon TF	76-13-1	0.20	U	0.20	1.5	U	1.5
1,1-Dichloroethene	75-35-4	0.20	U	0.20	0.79	U	0.79
Acetone	67-64-1	5.0	U	5.0	12	U	12
Isopropyl Alcohol	67-63-0	5.0	U	5.0	12	U	12
Carbon Disulfide	75-15-0	0.50	U	0.50	1.6	U	1.6
3-Chloropropene	107-05-1	0.50	U	0.50	1.6	U	1.6
Methylene Chloride	75-09-2	0.50	U	0.50	1.7	U	1.7
tert-Butyl Alcohol	75-65-0	5.0	U	5.0	15	U	15
Methyl tert-Butyl Ether	1634-04-4	0.50	U	0.50	1.8	U	1.8
trans-1,2-Dichloroethene	156-60-5	0.20	U	0.20	0.79	U	0.79
n-Hexane	110-54-3	0.50	U	0.50	1.8	U	1.8
1,1-Dichloroethane	75-34-3	0.20	U	0.20	0.81	U	0.81
1,2-Dichloroethene (total)	540-59-0	0.20	U	0.20	0.79	U	0.79
Methyl Ethyl Ketone	78-93-3	0.50	U	0.50	1.5	U	1.5
cis-1,2-Dichloroethene	156-59-2	0.20	U	0.20	0.79	U	0.79
Tetrahydrofuran	109-99-9	5.0	U	5.0	15	U	15
Chloroform	67-66-3	0.20	U	0.20	0.98	U	0.98
1,1,1-Trichloroethane	71-55-6	0.20	U	0.20	1.1	U	1.1
Cyclohexane	110-82-7	0.20	U	0.20	0.69	U	0.69
Carbon Tetrachloride	56-23-5	0.20	U	0.20	1.3	U	1.3
2,2,4-Trimethylpentane	540-84-1	0.20	U	0.20	0.93	U	0.93
Benzene	71-43-2	0.20	U	0.20	0.64	U	0.64
1,2-Dichloroethane	107-06-2	0.20	U	0.20	0.81	U	0.81
n-Heptane	142-82-5	0.20	U	0.20	0.82	U	0.82

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

MBLK041907CA

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: MBLK0419

Date Analyzed: 04/19/07

Date Received: / /

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Trichloroethene	79-01-6	0.20	U	0.20	1.1	U	1.1
1,2-Dichloropropane	78-87-5	0.20	U	0.20	0.92	U	0.92
1,4-Dioxane	123-91-1	5.0	U	5.0	18	U	18
Bromodichloromethane	75-27-4	0.20	U	0.20	1.3	U	1.3
cis-1,3-Dichloropropene	10061-01-5	0.20	U	0.20	0.91	U	0.91
Methyl Isobutyl Ketone	108-10-1	0.50	U	0.50	2.0	U	2.0
Toluene	108-88-3	0.20	U	0.20	0.75	U	0.75
trans-1,3-Dichloropropene	10061-02-6	0.20	U	0.20	0.91	U	0.91
1,1,2-Trichloroethane	79-00-5	0.20	U	0.20	1.1	U	1.1
Tetrachloroethene	127-18-4	0.20	U	0.20	1.4	U	1.4
Methyl Butyl Ketone	591-78-6	0.50	U	0.50	2.0	U	2.0
Dibromochloromethane	124-48-1	0.20	U	0.20	1.7	U	1.7
1,2-Dibromoethane	106-93-4	0.20	U	0.20	1.5	U	1.5
Chlorobenzene	108-90-7	0.20	U	0.20	0.92	U	0.92
Ethylbenzene	100-41-4	0.20	U	0.20	0.87	U	0.87
Xylene (m,p)	1330-20-7	0.50	U	0.50	2.2	U	2.2
Xylene (o)	95-47-6	0.20	U	0.20	0.87	U	0.87
Xylene (total)	1330-20-7	0.20	U	0.20	0.87	U	0.87
Styrene	100-42-5	0.20	U	0.20	0.85	U	0.85
Bromoform	75-25-2	0.20	U	0.20	2.1	U	2.1
1,1,2,2-Tetrachloroethane	79-34-5	0.20	U	0.20	1.4	U	1.4
4-Ethyltoluene	622-96-8	0.20	U	0.20	0.98	U	0.98
1,3,5-Trimethylbenzene	108-67-8	0.20	U	0.20	0.98	U	0.98
2-Chlorotoluene	95-49-8	0.20	U	0.20	1.0	U	1.0
1,2,4-Trimethylbenzene	95-63-6	0.20	U	0.20	0.98	U	0.98
1,3-Dichlorobenzene	541-73-1	0.20	U	0.20	1.2	U	1.2
1,4-Dichlorobenzene	106-46-7	0.20	U	0.20	1.2	U	1.2
1,2-Dichlorobenzene	95-50-1	0.20	U	0.20	1.2	U	1.2
1,2,4-Trichlorobenzene	120-82-1	0.50	U	0.50	3.7	U	3.7
Hexachlorobutadiene	87-68-3	0.20	U	0.20	2.1	U	2.1

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

MBLK042207BA

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: MBLK0422

Date Analyzed: 04/23/07

Date Received: / /

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Dichlorodifluoromethane	75-71-8	0.50	U	0.50	2.5	U	2.5
1,2-Dichlorotetrafluoroethane	76-14-2	0.20	U	0.20	1.4	U	1.4
Chloromethane	74-87-3	0.50	U	0.50	1.0	U	1.0
Vinyl Chloride	75-01-4	0.20	U	0.20	0.51	U	0.51
1,3-Butadiene	106-99-0	0.50	U	0.50	1.1	U	1.1
Bromomethane	74-83-9	0.20	U	0.20	0.78	U	0.78
Chloroethane	75-00-3	0.50	U	0.50	1.3	U	1.3
Bromoethene	593-60-2	0.20	U	0.20	0.87	U	0.87
Trichlorofluoromethane	75-69-4	0.20	U	0.20	1.1	U	1.1
Freon TF	76-13-1	0.20	U	0.20	1.5	U	1.5
1,1-Dichloroethene	75-35-4	0.20	U	0.20	0.79	U	0.79
Acetone	67-64-1	5.0	U	5.0	12	U	12
Isopropyl Alcohol	67-63-0	5.0	U	5.0	12	U	12
Carbon Disulfide	75-15-0	0.50	U	0.50	1.6	U	1.6
3-Chloropropene	107-05-1	0.50	U	0.50	1.6	U	1.6
Methylene Chloride	75-09-2	0.50	U	0.50	1.7	U	1.7
tert-Butyl Alcohol	75-65-0	5.0	U	5.0	15	U	15
Methyl tert-Butyl Ether	1634-04-4	0.50	U	0.50	1.8	U	1.8
trans-1,2-Dichloroethene	156-60-5	0.20	U	0.20	0.79	U	0.79
n-Hexane	110-54-3	0.50	U	0.50	1.8	U	1.8
1,1-Dichloroethane	75-34-3	0.20	U	0.20	0.81	U	0.81
1,2-Dichloroethene (total)	540-59-0	0.20	U	0.20	0.79	U	0.79
Methyl Ethyl Ketone	78-93-3	0.50	U	0.50	1.5	U	1.5
cis-1,2-Dichloroethene	156-59-2	0.20	U	0.20	0.79	U	0.79
Tetrahydrofuran	109-99-9	5.0	U	5.0	15	U	15
Chloroform	67-66-3	0.20	U	0.20	0.98	U	0.98
1,1,1-Trichloroethane	71-55-6	0.20	U	0.20	1.1	U	1.1
Cyclohexane	110-82-7	0.20	U	0.20	0.69	U	0.69
Carbon Tetrachloride	56-23-5	0.20	U	0.20	1.3	U	1.3
2,2,4-Trimethylpentane	540-84-1	0.20	U	0.20	0.93	U	0.93
Benzene	71-43-2	0.20	U	0.20	0.64	U	0.64
1,2-Dichloroethane	107-06-2	0.20	U	0.20	0.81	U	0.81
n-Heptane	142-82-5	0.20	U	0.20	0.82	U	0.82

**TO-14/15
Result Summary**

CLIENT SAMPLE NO.

MBLK042207BA

Lab Name: STL Burlington

SDG Number: NY119584

Case Number:

Sample Matrix: AIR

Lab Sample No.: MBLK0422

Date Analyzed: 04/23/07

Date Received: / /

Target Compound	CAS Number	Results in ppbv	Q	RL in ppbv	Results in ug/m3	Q	RL in ug/m3
Trichloroethene	79-01-6	0.20	U	0.20	1.1	U	1.1
1,2-Dichloropropane	78-87-5	0.20	U	0.20	0.92	U	0.92
1,4-Dioxane	123-91-1	5.0	U	5.0	18	U	18
Bromodichloromethane	75-27-4	0.20	U	0.20	1.3	U	1.3
cis-1,3-Dichloropropene	10061-01-5	0.20	U	0.20	0.91	U	0.91
Methyl Isobutyl Ketone	108-10-1	0.50	U	0.50	2.0	U	2.0
Toluene	108-88-3	0.20	U	0.20	0.75	U	0.75
trans-1,3-Dichloropropene	10061-02-6	0.20	U	0.20	0.91	U	0.91
1,1,2-Trichloroethane	79-00-5	0.20	U	0.20	1.1	U	1.1
Tetrachloroethene	127-18-4	0.20	U	0.20	1.4	U	1.4
Methyl Butyl Ketone	591-78-6	0.50	U	0.50	2.0	U	2.0
Dibromochloromethane	124-48-1	0.20	U	0.20	1.7	U	1.7
1,2-Dibromoethane	106-93-4	0.20	U	0.20	1.5	U	1.5
Chlorobenzene	108-90-7	0.20	U	0.20	0.92	U	0.92
Ethylbenzene	100-41-4	0.20	U	0.20	0.87	U	0.87
Xylene (m,p)	1330-20-7	0.50	U	0.50	2.2	U	2.2
Xylene (o)	95-47-6	0.20	U	0.20	0.87	U	0.87
Xylene (total)	1330-20-7	0.20	U	0.20	0.87	U	0.87
Styrene	100-42-5	0.20	U	0.20	0.85	U	0.85
Bromoform	75-25-2	0.20	U	0.20	2.1	U	2.1
1,1,2,2-Tetrachloroethane	79-34-5	0.20	U	0.20	1.4	U	1.4
4-Ethyltoluene	622-96-8	0.20	U	0.20	0.98	U	0.98
1,3,5-Trimethylbenzene	108-67-8	0.20	U	0.20	0.98	U	0.98
2-Chlorotoluene	95-49-8	0.20	U	0.20	1.0	U	1.0
1,2,4-Trimethylbenzene	95-63-6	0.20	U	0.20	0.98	U	0.98
1,3-Dichlorobenzene	541-73-1	0.20	U	0.20	1.2	U	1.2
1,4-Dichlorobenzene	106-46-7	0.20	U	0.20	1.2	U	1.2
1,2-Dichlorobenzene	95-50-1	0.20	U	0.20	1.2	U	1.2
1,2,4-Trichlorobenzene	120-82-1	0.50	U	0.50	3.7	U	3.7
Hexachlorobutadiene	87-68-3	0.20	U	0.20	2.1	U	2.1

STL Burlington Data Qualifier Definitions

Organic

- U: Compound analyzed but not detected at a concentration above the reporting limit.
- J: Estimated value.
- N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.
- P: SW-846: Greater than 40% difference for detected concentrations between two GC columns. Unless otherwise specified the higher of the two values is reported on the Form I.

CLP SOW: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified the lower of the two values is reported on the Form I.
- C: Pesticide result whose identification has been confirmed by GC/MS.
- B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.
- E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.
- D: Concentrations identified from analysis of the sample at a secondary dilution.
- A: Tentatively identified compound is a suspected aldol condensation product.
- X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

- E: Reported value is estimated due to the presence of interference.
- N: Matrix spike sample recovery is not within control limits.
- * Duplicate sample analysis is not within control limits.
- B: The result reported is less than the reporting limit but greater than the instrument detection limit.
- U: Analyte was analyzed for but not detected above the reporting limit.

Method Codes:

- P ICP-AES
MS ICP-MS
CV Cold Vapor AA
AS Semi-Automated Spectrophotometric

YORK

Analytical Laboratories, Inc.

120 RESEARCH DRIVE

STRATFORD, CT 06615

203.325.1371 FAX 203.357-0166

Page 1 of 1

Company Name

Ecosystems Strategies, Inc.

Report to:

John Petronella

Invoice to:

Brenda

Project ID/No.

MN 06187.20

Samples Collected by (signature)

John Petronella

Name (printed)

Sample No.	Location/ID	Date Sampled	Sample Matrix			Analyses Requested	Container Desc.
			Water	Soil	Air		
	GM 1A	4/12/2007			X	TO-15 + methane (USEPA 3C)	1, 1 liter tedlar bag
	GM 3	4/12/2007			X	TO-15 + methane (USEPA 3C)	1, 1 liter tedlar bag
	GM 3B	4/12/2007			X	TO-15 + methane (USEPA 3C)	1, 1 liter tedlar bag
	GM 3C	4/12/2007			X	TO-15 + methane (USEPA 3C)	1, 1 liter tedlar bag
	GM 4	4/12/2007			X	TO-15 + methane (USEPA 3C)	1, 1 liter tedlar bag
	GM 5	4/12/2007			X	TO-15 + methane (USEPA 3C)	1, 1 liter tedlar bag

Chain-of-Custody Record

Bottles Relinquished from Lab by

Date/Time

Bottles received in field by

Date/Time

Comments/Special Instructions

Samples Relinquished by

Date/Time

Samples Relinquished by

Date/Time

Samples received by

Date/Time

Samples received in LAB by

Date/Time

Turn-Around Time Requested-Specify Date Expected
if RUSH Requested: DATE DUE FOR RUSH:

X STANDARD RUSH(Define) next day

04/17/07 1000

APPENDIX J

OPERATION AND MAINTENANCE AND CONTINGENCY PLAN

**DRAFT FINAL (95%)
OPERATION AND MAINTENANCE
MANUAL & CONTINGENCY PLAN**

**FOR THE
NORTH EAST LANDFILL**

Town of North East, New York

Prepared For:

Town of North East

Prepared By:

URS Consultants, Inc.

282 Delaware Avenue

Buffalo, New York 14202

January 1997

**DRAFT FINAL (95%)
OPERATION AND MAINTENANCE
MANUAL AND CONTINGENCY PLAN
FOR THE
NORTH EAST LANDFILL SITE
NYSDEC SITE NO. 314048
NORTH EAST (T), DUTCHESS (C) NEW YORK**

**PREPARED FOR
TOWN OF NORTH EAST, NEW YORK**

**PREPARED BY:
URS CONSULTANTS, INC
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202**

JANUARY 1997

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APPENDICES

- A. Post Closure Site Inspection Checklist
- *B. Manufacturer's Maintenance/Repair Specifications

ATTACHMENTS

(Included under individual Separate Covers)

- *Record Construction Drawings
- *Construction Specifications

* To be included with the Final (100%) Submittal upon Completion of the Remedial Construction Activities.

1.0 INTRODUCTION

Development of an Operation and Maintenance Manual and Contingency Plan (O & M Manual) is a required element of the remedial action at the North East Landfill. The O & M Manual must contain a description of all components of the site remedy. Consequently, this Manual will be finalized when the remedial construction is completed to reflect the record condition of the completed work and their operation and maintenance requirements.

The O & M Manual also will be a "living" document; that is revised to reflect repairs and modifications made to the design and completed work. A ring binder format will allow revisions to be made readily with labeled revision pages and addenda.

2.0 SUMMARY OF O&M MANUAL

The components of the site remedial design are described in Section 3.0. Those components which will require a regular long-term maintenance program are the final cover, gas vents, surface water control features, and the fence. No component of the remedial action will require operation. The routine (scheduled) maintenance plans for these features are described in the Section 4.0. Regular site inspection, as described in Section 5.0, also will be performed to identify the need for additional (non-scheduled) maintenance tasks. Such tasks are identified in Section 6.0. The Contingency Plan is discussed in Section 7.0.

3.0 SITE REMEDIAL DESIGN

3.1 Description of Remedial Design

The remedial design for the North East Landfill includes the installation of a 6 NYCRR Part 360 final cover, removal of contaminated wetland sediments and placement under the landfill final cover system, wetland restoration, access restrictions, and continued environmental monitoring. This alternative satisfies state and federal criteria that require protection of human health and the environment, and is compliant with standards, criteria, and guidance values for potential future downgradient groundwater receptors, only when long-term inspection and maintenance of remedial components and

environmental monitoring are performed. Remedial components subject to long-term inspection and maintenance include access restrictions, a final cover, a gas venting system, and surface water controls.

3.2 Description of Design Components

The record construction drawings for the project will be attached upon completion of the remedial construction. Abbreviated descriptions of the design of the remedial components requiring inspection and maintenance are presented below.

3.2.1 Access Restrictions

Access restrictions to the landfill include fencing, sign posting, easements, and deed restrictions. Fencing and signs require inspection and maintenance. A 6-foot high chain-link fence will be constructed around portions of the landfill that are accessible from Regan Road and the abandoned railroad bed, to prevent unauthorized entry of people and grazing animals. Access to the landfill for inspection, monitoring, and maintenance activities will be through a double-hung gate near Regan Road. "No trespassing" signs will be posted around the perimeter of the landfill.

3.2.2 Final Cover

The final cover system for the landfill is a multi-layer cover system that will: 1) serve as an effective long-term barrier to infiltration; 2) properly vent gases generated within the landfill; 3) protect the community from physical contact with landfill waste; and 4) be stable under its own weight for the long-term. The final cover system was designed to meet the necessary requirements of the regulatory agencies.

The final cover system will be constructed over the landfill after it has been properly prepared for use as the subgrade. Details on preparation of the subgrade are provided in the design documents. From the top of prepared subgrade and proceeding upwards, the cover will consist of:

- A passive gas venting system as described in section 3.2.3 below.

- A geotextile friction fabric on top of (and bonded to) the geonet on slopes exceeding 10 percent.
- A 40-mil linear low density polyethylene (LLDPE) geomembrane with a 40-mil LLDPE textured geomembrane used on slopes exceeding 10 percent to provide sufficient frictional resistance.
- A drainage layer consisting of a geosynthetic drainage system (GDS) on top of the geomembrane on slopes exceeding 10 percent. The GDS consist of geotextile/geonet/geotextile bonded together. Slopes less than 10 percent do not require GSD, but will require geotextile for cushioning on top of the geomembrane.
- A 12-inch thick layer of barrier protection layer material on top of the GDS and on the cushion geotextile to act as a physical protection layer for the underlying geosynthetic layer.
- Six inches of topsoil established with a vegetative cover to act as a long-term deterrent to erosion.

3.2.3 Gas Venting System

The purpose of the landfill gas venting system is to discharge landfill gases passively in an environmentally-safe manner, using cost-effective design, and without damaging the effectiveness of the landfill cover system. The passive gas venting system, consisting of a gas venting layer and gas venting risers, was designed to comply with all applicable New York State Department of Environmental Conservation (NYSDEC) regulations. The gas venting risers require routine inspection and maintenance.

- Gas Venting Layer - The gas venting layer is located above the grading fill over the subgrade surface. A geosynthetic venting net (Geonet) that provides the equivalent function, as a soil layer, as defined by 6 NYCRR Part 360-2.13 (p), is used. A geotextile filter fabric bonded to the Geonet is used beneath the Geonet.
- Gas Venting Risers - Gas venting risers are installed for the purpose of venting landfill gases to the atmosphere, and are spaced on an approximate 200-foot grid over the landfill cover (i.e., one gas vent per acre of landfill cover). The vents extend through

the landfill cover at least 4 feet into the existing waste and project 3 feet above the top surface of the landfill cover. The risers are constructed of 6-inch diameter Polyethylene (PE) pipe. The lower 4-foot portion of the risers (beneath the gas venting Geonet) are slotted to allow migration of the gas into the gas risers. The geomembrane is attached to the gas venting riser using pre-fabricated boot seals to prevent channeling of surface water through the cap and gas emissions around the outside of the pipe.

3.2.4 Surface Water Controls

The surface water drainage system is designed to collect and convey stormwater run-off from the proposed cover, preventing erosion of the final cover system and surrounding area. In general, surface drainage is radiated outward, with the high point near the center of the landfill, and designed to accommodate a minimum peak discharge of a 24-hour, 25-year frequency storm. Surface drainage swales are constructed on top of the final cover to divert run-off to drainage structures which discharge into adjacent wetlands or Webatuck Creek.

4.0 SCHEDULED MAINTENANCE

The following scheduled maintenance activities should be adequate to maintain the remedial system in proper operating condition.

The Town of Northeast Department of Public Works or a contracted landscaping firm will perform the required routine maintenance which will include:

- Cutting of the vegetation on the final cover and grass-lined ditches and swales three times a year (late spring, mid-summer, and late autumn). The seed mix specified for the final cover is designed for the infrequent mowings which are necessary to prevent the invasion of weeds and brush.
- Fertilization, liming, and other vegetation-maintenance chores will be conducted annually in the spring. The level of fertilization and liming will be selected for the

grass species, soil type, and setting. The seeding requirements will be provided in the Record Construction Specifications.

- Cleaning the swales, ditches, and downchute of accumulated leaves, twigs, and other debris concurrently with mowing of the vegetation. Failure to remove debris from the drainage features could result in scour or breaching of the channel.

5.0 INSPECTION

Quarterly inspections of the remedial components will be performed immediately after scheduled maintenance tasks by a qualified civil or environmental engineer experienced in the construction and function of a multi-layered cover system. In addition, an inspection will be performed after a significant rain event. The purpose of these inspections will be to identify any potential problems with the remedial system that are not being addressed adequately by routine maintenance, and to document the current condition of the system. The Engineer will complete the site inspection checklist after each inspection and submit it to the NYSDEC as soon after the inspection as possible. The Engineer will prepare an annual report for submission to the NYSDEC which will document the current condition of the system.

The inspection will evaluate the following items and will estimate the nature and extent of corrective action required.

- Surface Water Control Features - Channel cross-sections must be inspected to ensure that sideslopes are stable. Checks will be made for scour, sediment deposition, breaches, rodent holes, and other damage. The riprap-lined downchute also will be checked for undermining and damage to geotextile.
- Leachate Seeps - Any areas of leachate seeps will be noted and monitored. The need for adding remedial controls in any such areas will be assessed.
- Landscaping - The vigor and density of the vegetative cover on the cap, ditches, and swales will be assessed. The location and extent of bare, sparse, and undernourished

areas will be noted. Areas of significant weeds, woody brush, or deep-rooted vegetation will be noted.

- Vector Control - The cap will be inspected for damage due to vectors and/or burrowing animals. Any damaged areas will be flagged and noted.
- Erosion - The presence and extent of any rills or other signs of erosion of the final cover, ditches, swales, or downchutes will be noted.
- Gas Vents - The condition of gas vents will be inspected and noted. Checks will be made for clogging of the vent opening by birds or insects.
- Settlements - Visual evidence of differential settlement of the final cover will be noted and its impact on the integrity of the final cover, swales, or required drainage patterns will be assessed.
- Fence - The fence will be inspected for signs of vandalism and other damage. No scheduled maintenance is required.
- Access Roads - Vehicular traffic across the landfill cap will be limited to the engineered access roads. These vehicles will be necessary to inspect and maintain the site, and to perform necessary services. Rutting, cracking, or other damage to the across roads across the landfill will be noted.

6.0 UNSCHEDULED MAINTENANCE

In the event that damage to any of the above items is observed during the inspection corrective action to repair the damaged area will be performed promptly in accordance with the following sections. The NYSDEC will be notified of the damage and the date of the corrective action.

6.1 Significant Bare or Sparse Areas

Any significant areas on the final cover that are bare or sparsely vegetated will be prepared, reseeded, mulched, and maintained.

6.2 Rill Erosion of the Final Cover

Rill erosion can be caused by an insufficient vegetative cover. If left unchecked, the rills will deepen and could compromise the integrity of the final cover. The eroded topsoil must be scarified, regraded, and/or replaced as necessary. The topsoil then must be seeded and mulched. The seeding and mulching requirements will be provided in the Record Construction Specifications.

6.3 Differential Settlement of the Final Cover

Areas of differential settlement of the cap will be repaired where the settlement would cause ponding of precipitation, or concentrated flows that could erode the cover. Repairs will consist of stripping the existing vegetation and topsoil, and placing earth fill to return the area to design grades and restore the original drainage patterns. The area then will be covered with topsoil, seeded, and mulched to restore the vegetative cover.

6.4 Vector and/or Burrowing Animal Damage

Any areas of the final cover which have been damaged by vectors or burrowing animals should be thoroughly inspected to verify that the integrity of the geomembrane has not been compromised. This inspection will be performed after a licensed professional rids the area of the problem. The cap will then be repaired as necessary and backfilled to the appropriate grade.

6.5 Leachate Seeps

The remedial investigation (RI) revealed that groundwater is below the level of the landfill waste material and leachate seeps from the landfill mass have not been observed. The installation of an impermeable cap to prevent infiltration of rainwater into the fill material will further mitigate the

potential of a groundwater leachate condition which could exit to the ground surface as seeps. Although the possibility of a seep is unlikely, a visual survey for seeps will be performed quarterly. If seeps are observed, then an interim collection sump will be installed and the seep water will be pumped to drums or tanks for classification. Once the seep water has been classified, an appropriate disposal method will be determined. This interim collection of seep water would continue until either the seep has stopped or more permanent engineering controls are designed and installed.

6.6 Damaged Gas Vents

Based upon the results of RI studies, methane and other landfill gas generation is expected to be minimal in the post-closure period. However, in accordance with the Record of Decision, a gas venting layer with gas vent risers is included in the remedial design. The gas vent risers will be included in the regular inspections of the facility. They will be checked for signs of vandalism and for obstruction of the outlet by birds or insects. Repairs will include clearing of any obstructions and, if necessary, replacement of the vent riser.

6.7 Fence and Access Roads

Repairs to these item will be performed as necessary by qualified fencing contractor in accordance with standard practice.

7.0 CONTINGENCY PLAN

7.1 Introduction

This Contingency Plan will provide guidance in the event that a problem occurs with the remedial program which cannot be addressed under the steps outlined in the O&M Manual. The scope of this Contingency Plan is limited by the following considerations:

- This is not an operating landfill, so there are no operational contingencies (hot loads, fires, etc.) to consider.

- There are no active gas or leachate collection systems to foul or breakdown.

To identify potential concerns, quarterly inspections of the closed landfill will be performed by a qualified civil/environmental engineer, as outlined in the O&M Manual. Concerns which would trigger this Contingency Plan to be implemented include any event which could cause an element of the remedial program to fail to operate in accordance with the remedial design for the 30-year period following successful completion of construction. As stated above, steps to address routine problems are included in the O&M Manual.

It is possible, however, that problems beyond the scope of those addressed in the O&M Manual may occur, such as:

- Incidents requiring emergency response
- Damage to geomembrane barrier layer
- Significant or repeated erosion of the drainage channels or final cover
- Slope failure of the landfill final cover

Steps required to address the emergency responses and damage to the geomembrane barrier layer are identified in the following sections. In general, problems that likely are to occur will be unique and event-specific, and are difficult to provide predetermined solutions in this format. Therefore, a qualified civil/environmental engineer must be included in the remediation design process immediately.

7.2 Emergency Contingency Plan

7.2.1 Introduction

Emergency events refer to any unforeseen or unusual event which may occur during the closure or post-closure period and may include fires, collapse, and sudden release of contaminants. If any of these events or other events which could threaten public safety or integrity of the environment occur, the proper agencies and authorities will be notified. A list of some of the potential agencies are given below:

Millerton Fire Department	789-3456 (Area code 518)
Dutchess County Sheriff Department	373-8200 (Area code 914)
NY State Police	789-3115 (Area code 518)
Sharon Hospital 50 Hospital Hill Road Sharon, Connecticut 06069	364-4141 (Area code 203) General 364-4111 (Area code 203) Emergency
NYSDEC (Guy Bobersky)	457-1708 (Area code 518)
URS Consultants, Inc (Bob Henschel or Richard Fudeman)	856-5636 (Area code 716)
Town of North East (David Sherman)	789-3659 (Area code 518)

7.2.2 Emergency Response Procedures

Whenever there is any type of incident at the landfill, the Town of North East immediately will notify any personnel at the site, identify and assess the source and extent of the emergency, and take action to control the situation.

7.2.2.1 Notification

In the event of an imminent or actual emergency occurrence, the first person on the scene shall initiate a proper response to the situation in question. Notification of the appropriate agencies identified earlier will be performed as appropriate, second only to notification of onsite personnel and/or site evacuation, depending on the emergency situation.

7.2.2.2 Identification

Whenever there is a fire and/or explosion, spill or release, or other incident presenting a potential threat to the public health and safety or the environment, the Town of North East will immediately identify the source and extent of the emergency.

7.2.2.3 Assessment

In case of an emergency situation, an assessment of the possible hazard will be made. If the Town of North East determines that the facility has had a fire and/or explosion, spill or release, or other incident that presents a possible hazard to public health and safety, and/or the environment, and initiates the contingency program, then contact with local authorities will be made informing them of situations when an evacuation of the surrounding area is necessary. The NYSDEC also will be advised of all the pertinent facts regarding the incident.

When making a report to the NYSDEC, the following information will be provided:

- Name and telephone number of person making the report
- Name and location of the facility
- Type and time of incident occurrence
- Name and quantity of material(s) involved, to the extent known
- Extent of any injuries
- Possible hazards to public health and safety, and/or the environment surrounding the facility

7.2.3 Control Procedures

The occurrence of an emergency at a sanitary landfill is unlikely, but possible. Emergencies can arise unexpectedly and may require immediate response measures.

In the event of any emergency, the Town of North East will take all reasonable measures to prevent the occurrence, recurrence, or spread of a fire or explosion or unplanned releases to other

portions of facility. These measures include, when applicable and necessary, ceasing facility closure operations, and collecting and containing any applicable materials.

The Town of North East will create a broad-based emergency response network to respond to any incidents at the facility. If an emergency occurs, fully trained response personnel will be contacted immediately.

Requests for assistance from the emergency response network are to include:

- Name, address, and telephone number of the facility
- Type and time of incident occurrence
- Extent of any injuries
- Possible hazard to public health and safety, and/or the environment surrounding the facility
- Type and quantities of materials involved, if known

Immediate action by onsite personnel will concentrate on preventing any fire/explosion, or spill/leak situation that occurs from spreading to other areas of the facility, and immediate emergency medical attention will be given to injured personnel. Any possible sources of ignition will be removed from the incident area, if this can be done without risk. Vehicular traffic will be suspended and work ceased until the fire or incident can be safely contained or controlled.

7.2.3.1 Storage and Treatment of Released Materials

Immediately after an emergency situation, the Town of North East will make arrangements for the storage or disposal of any recovered wastes, or any contaminated materials resulting from this type of incident.

7.2.3.2 Post-Emergency Equipment Maintenance

Following an emergency incident, all emergency response equipment used will be cleaned and made fit for reuse, or replaced as necessary so that the equipment will be available when facility

operations resume. An inspection of all equipment will be performed prior to resuming operations to ensure that each item is in proper working condition. Remedial activities as a result of this inspection may include recharging of fire extinguishers, replacement of personal protective gear, and restocking of disposable items.

7.2.4 Gas Migration

Overall, the lateral migration of gases from a landfill is related to gas pressures within the landfill, concentration gradients, depth of the landfill, location of water table below ground surfaces and the transmissibility of the surrounding soil.

Gas monitoring will be performed to ensure the landfill is in compliance with 6 NYCRR Part 360. In the event that gas concentrations at or above the lower explosive limit are detected by gas monitoring probes during any monitoring event, then the contingency program described below will be undertaken:

- A complete round of monitoring of all gases monitoring locations will be conducted weekly for one month.
- If gas concentrations are found to be consistently above the lower explosive limit, a field investigation will be conducted to identify the source and extent of gas migration.
- Upon completion of the field investigation, a report will be completed within four weeks evaluating the need for remedial measures. This report will be submitted to the NYSDEC.
- If a remedial system is deemed necessary, the designed system would be installed following acceptance by the NYSDEC.

The above represents a guideline schedule and may, upon discovery of new and currently unknown information, require modification to facilitate proper investigation and evaluation of the problem.

7.3 Damage to the Geomembrane Barrier Layer

In the event that damage has occurred to the geomembrane, the following tasks must be performed:

- Strip topsoil and barrier protective soil surrounding the damaged area
- Remove geosynthetic drainage system (if necessary)
- Remove damaged geomembrane and inspect the underlying gas venting layer (remove damaged gas venting layer, if necessary)
- Backfill, grade, and compact subgrade, as necessary, to form a uniform surface for the placement of new geosynthetics
- Place and seam geosynthetics underlying geomembrane, as necessary
- Place and weld geomembrane
- Place and seam geosynthetic drainage system (if necessary)
- Perform all required quality assurance/quality control (QA/QC) testing, as outlined in the Contract Documents, to provide certification that the final cover has been repaired adequately
- Replace barrier protection soil, topsoil, and restore vegetative cover

7.4 Other Problems

Significant problems other than that specified in the preceding section require an event-specific solution. A qualified civil/environmental engineer must:

- Determine the nature and extent of the problem
- Identify the cause of the problem and the steps required to prevent it from recurring
- Determine how to repair the failed area to the original operating condition

This process should begin immediately upon discovery of the problem. The NYSDEC will be notified of the nature and extent of the problem within 30 days of its discovery.

APPENDIX A

POST CLOSURE SITE INSPECTION CHECKLIST

NORTH EAST LANDFILL - POST CLOSURE

NYSDEC SITE NO. 314048

INSPECTION LOG SHEET

Date: _____

Inspector: _____

Weather: _____

Signature: _____

Temperature: _____

Company: _____

Type: Spring Summer Fall Winter

(circle one)

Item Inspected	Maintenance Needed? (Y/N)	Comments	Inspectors Initials
Leachate Seeps			
Cover			
Erosion			
Settlement			
Perimeter Swales			
Downchute and Apron			
Vegetative Cover			
Final Cover Layers			
Steep Slope Areas			
Gas Vents			
Fence			
Other Items: (specify)			

APPENDIX B

RECORD MANUFACTURER'S MAINTENANCE/REPAIR SPECIFICATIONS

(To be included with the Final (100%))

O&M Manual