

**FOURTH FIVE-YEAR REVIEW REPORT FOR  
LAUREL PARK LANDFILL SUPERFUND SITE  
BOROUGH OF NAUGATUCK, CONNECTICUT**



**Prepared by**

**U.S. Environmental Protection Agency  
Region 1  
Boston, Massachusetts**

**September 2013**

A handwritten signature in blue ink, appearing to read "James T. Owens, III", is written over a horizontal dashed line.

**James T. Owens, III, Director  
Office of Site Remediation and Restoration  
U.S. EPA, New England**

A handwritten date "9/25/13" is written in blue ink over a horizontal dashed line.

**Date**

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## LIST OF ABBREVIATIONS

1,2-DCA	1,2-Dichloroethane
ARAR	Applicable or Relevant and Appropriate Requirement
bgs	below ground surface
COC	Contaminant of Concern
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CTDEEP	Connecticut Department of Energy and Environmental Protection
EPA	Environmental Protection Agency
EW	Extraction Well
FSP	Field Sampling Plan
GES	Groundwater Extraction System
GPC	Groundwater Protection Criteria
GPM	gallons per minute
LCS	Leachate Collection System
LPC	Laurel Park Coalition
LTMP	Long-Term Monitoring Plan
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
NPL	National Priorities List
NWPCF	Naugatuck Water Pollution Control Facility
O&M	Operations and Maintenance
OSWER	Office of Solid Waste and Emergency Response
POC	Point of Compliance
ppb	parts per billion
PPL	Priority Pollutant List
RA	Remedial Action
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
TCL	Target Compound List
TDS	Total Dissolved Solids
µg/L	micrograms per liter
VC	Volatilization Criteria
VOC	Volatile Organic Compound

## EXECUTIVE SUMMARY

### Summary

This is the Fourth Five-Year Review for the Laurel Park Landfill Superfund Site (the Site) located in the Borough of Naugatuck, Connecticut. The review was conducted in accordance with EPA Office of Solid Waste and Emergency Response (OSWER) Guidance No. 9355.7-03B-P. This statutory Five-Year Review is required because hazardous contamination remains at the Site above levels that allow for unlimited use and unrestricted exposure. The triggering action for this statutory Five-Year Review is based on the completion of the last Five-Year Review in September 2008.

The remedy specified in the June 30, 1988 Record of Decision (ROD) Site included: construction of a cap over the landfill area in accordance with Resource Conservation and Recovery Act, construction of a leachate collection/groundwater extraction system, off-Site treatment of leachate and contaminated groundwater at the Naugatuck Water Pollution Control Facility, long-term monitoring, and Institutional Controls. Only Institutional Controls (e.g., deed restrictions prohibiting use of groundwater) have not been implemented.

The components of the remedy have achieved some of the Remedial Actions Objectives specified in the ROD. Site inspections performed since the completion of the last Five-Year Review indicate that the landfill components are in good condition and are generally functioning as intended in the ROD. Ongoing operations and maintenance of the landfill cap and the leachate collection/groundwater extraction system, Site fencing, plus the provision of public water to the majority of nearby residences, are helping to maintain the current protectiveness of the remedy.

However, this Five-Year Review has two issues that may bear on future protectiveness:

- Institutional controls have not yet been implemented at the Site. The Laurel Park Coalition (LPC) made progress by completing and submitting an Institutional Control plan to the United States Environmental Protection Agency (EPA), which was approved in January 2012. The LPC submitted subordination waiver requests and executed

Environmental Land Use Restriction forms for two parcels to EPA. The LPC has initiated dialog with the other property owner, Laurel Park, Inc., and progress is being made to implement all Institutional Controls at the Site.

- Elevated concentrations of 1,4-dioxane were detected in Site groundwater in August 2013. This data has not yet been fully reviewed by EPA and the CT DEEP. However, EPA's initial review of the data has revealed that elevated concentrations of 1,4-dioxane are present in monitoring wells closest to the landfill but not in wells located at the leading edge of the contaminated groundwater plume. Therefore there are no current unacceptable risks to human health. However, sampling and analysis of 1,4-dioxane in groundwater, surface water and sediment must be included in the Long-Term Monitoring Plan and an evaluation of its potential impacts to human health and the environment must be performed.

Based on the issues identified in this Fourth Five-Year Review, the remedy was determined to be protective in the short-term until all Institutional Controls are implemented.

The next Five-Year Review is scheduled for completion in September 2018.

Five-Year Review Protectiveness Statement:

The remedy at the Site currently protects human health and the environment in the short-term because: the cap is effective in preventing direct contact exposures to landfill contaminants and minimizes contaminant migration; the leachate collection and groundwater extraction systems are containing the majority of groundwater contaminants on the Site; and the waterline installed along Hunters Mountain Road helps to ensure that nearby residents are not exposed to contaminants that may remain in the groundwater. However, in order to make a long-term protectiveness determination for the Site, Institutional Controls need to be finalized and further sampling, analysis and evaluation of 1,4-dioxane must be performed.

## Five-Year Review Summary Form

SITE IDENTIFICATION		
<b>Site Name:</b> Laurel Park Landfill Superfund Site		
<b>EPA ID:</b> CTD980521165		
<b>Region:</b> 1	<b>State:</b> CT	<b>City/County:</b> Borough of Naugatuck/New Haven
SITE STATUS		
<b>NPL Status:</b> Final		
<b>Multiple OUs?</b> No	<b>Has the site achieved construction completion?</b> Yes	
REVIEW STATUS		
<b>Lead agency:</b> U.S. EPA		
<b>Author name (Federal or State Project Manager):</b> Leslie McVickar		
<b>Author affiliation:</b> Remedial Project Manager		
<b>Review period:</b> 05/2013 – 09/30/2013		
<b>Date of site inspection:</b> May 15, 2013		
<b>Type of review:</b> Post-SARA		
<b>Review number:</b> 4		
<b>Triggering action date:</b> 09/30/2008		
<b>Due date (five years after triggering action date):</b> 09/30/2018		

ISSUES/RECOMMENDATIONS
<b>There are two issue identified which need to be addressed at the Site.</b>
<b>Issues and Recommendations Identified in the Five-Year Review:</b>

<b>Site</b>	<b>Issue Category: Institutional Controls</b>			
	<b>Issue:</b> Institutional Controls to restrict land and groundwater use at the Site have not been implemented			
	<b>Recommendation:</b> Finalize Institutional Controls at the Site to establish all necessary groundwater and land use restrictions.			
<b>Affect Current Protectiveness</b>	<b>Affect Future Protectiveness</b>	<b>Implementing Party</b>	<b>Oversight Party</b>	<b>Milestone Date</b>
No	Yes	PRP	EPA/State	12/31/2015

**Five-Year Review Summary Form (cont.)**

<b>Site</b>	<b>Issue Category: 1,4-dioxane</b>			
	<b>Issue:</b> Elevated concentrations of 1,4-dioxane were detected in Site groundwater.			
	<b>Recommendation:</b> .Amend the Long-Term Monitoring Plan to include further sampling and analysis of 1,4-dioxane in groundwater, surface water and sediment and perform an evaluation of its potential impacts to human health and the environment.			
<b>Affect Current Protectiveness</b>	<b>Affect Future Protectiveness</b>	<b>Implementing Party</b>	<b>Oversight Party</b>	<b>Milestone Date</b>
No	Yes	PRP	EPA/State	12/31/2015

<b>Site wide Protectiveness Statement</b>	
<i>Protectiveness Determination:</i> Short-term Protective	<i>September 2013</i>
<i>Protectiveness Statement:</i> The remedy is currently protective of human health and the environment in the short-term because: (1) the cap is preventing direct contact exposures to landfill contaminants and minimizes contaminant migration; (2) the leachate collection and groundwater extraction system is containing the majority of groundwater contaminants on-Site; and (3) the waterline installed along Hunters Mountain Road helps to ensure that adjacent residents are not exposed to potential Site groundwater contamination. To make a long-term protectiveness determination Institutional Controls must be finalized and further sampling, analysis and evaluation of 1,4-dioxane must be performed.	

## 1.0 INTRODUCTION

The Fourth Five-Year Review was conducted of the remedial actions selected for the Laurel Park Landfill, in Naugatuck, Connecticut.

The purpose of the Five-Year Review is to determine whether the remedy being implemented at the Site remains protective of human health and the environment. The methods, findings, and conclusions of the Five-Year Review are documented in this Five-Year Review Report. In addition, this report presents issues identified during the review and provides recommendations to address them.

This Five-Year Review Report was prepared pursuant to CERCLA §121 and the National Contingency Plan. CERCLA § 121(c) states:

*“If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that the action is appropriate at such site in accordance with section [104] or [106], the president shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews and any actions taken as a result of such reviews.”*

The Agency interpreted this requirement further in the National Contingency Plan (NCP); 40 CFR § 300.430 (f)(4)(ii) states:

*“If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.”*

This is the Fourth Five-Year Review for the Site. The triggering action for this statutory review is the completion of the last Five-Year Review in 2008. The Five-Year Review is required because contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure.

## 2.0 SITE CHRONOLOGY

Table 2-1 provides a summary of Site events.

**Table 2-1  
Chronology of Site Events  
Laurel Park Landfill Superfund Site  
Borough of Naugatuck, Connecticut**

DATE	EVENT
1930s - 1987	Site operated as active landfill.
9/8/83	Site listed on the National Priorities List (NPL).
1985	Remedial Investigation/Feasibility Study initiated.
2/87	Remedial Investigation (RI) completed.
5/88	Feasibility Study (FS) completed.
6/30/88	EPA issued a Record of Decision (ROD) for the Site.
4/89	The public water supply line is completed.
1989	A locked gate, warning signs, and fencing to restrict access into the Site were installed.
12/89	Leachate transportation line to the Naugatuck Publicly Owned Treatment Works (POTW) sanitary interceptor sewer completed.
7/29/96	Remedial Design completed.
7/96	Construction of the remedial action (i.e., landfill cap, leachate collection and transfer systems, and groundwater extraction system) initiated.
9/11/98	Construction activities specified in the ROD are complete. EPA issues the First Five-Year Review Report for the Site.
9/19/03	EPA issues the Second Five-Year Review Report for the Site.
2/26/04	EPA approves revisions to the Long-Term Monitoring Plan (LTMP) that were recommended in the 2002 Annual Report and the Second Five-Year Review Report of the Site.
3/04	LPC performs evaluation of low-flow sampling methodology during the first of the triannual sampling events.
8/9/04	LPC develops and submits a Groundwater Monitoring Field Sampling Plan (FSP) to the EPA.
2/7/06	LPC completes a revision of the FSP, which is subsequently approved by the EPA.
2/26/07	EPA requests draft institutional controls for the Site associated with the development of land adjacent to the Site.
9/08	Preparation and completion of Third Five-Year Review.
2009	LPC completed a potable well survey.
10/09	LPC installed 11 overburden groundwater monitoring wells on the Site.
3/11	Chemtura Corporation becomes member of LPC again.

<b>DATE</b>	<b>EVENT</b>
9/11	LPC prepares and submits an Institutional Control Plan
1/12	EPA approves Institutional Control Plan submitted by LPC. LPC prepares draft deed restriction documentation for two parcels.
6/13	Initiation of Fourth Five-Year Review
9/13	Completion of Fourth Five-Year Review.

### **3.0 BACKGROUND**

The Laurel Park Landfill Superfund Site (the Site) is located in the Borough of Naugatuck, Connecticut, approximately 1 mile west of the Naugatuck River and Connecticut Route 8. The actual landfill area covers approximately 19 acres of a 35-acre property. A map depicting the location of the Site is presented as Figure 1 (Appendix A).

#### **3.1 Site Location and Physical Description**

A map depicting the Site features is presented in Figure 2 (Appendix A). The Laurel Park Landfill lies on the upper northern and western slopes of Huntington Hill. The Site entrance is accessed through a gate on Hunters Mountain Road. Chain-link fencing is located around the perimeter of the landfill cap area. The Groundwater Extraction System (GES), consisting of 15 active groundwater extraction wells, is located along the northern and eastern edge of the landfill cap. There are 36 (20 bedrock, 4 overburden/bedrock, and 12 overburden) monitoring wells on the Site. The landfill cap consists of a multi-barrier cover system with a vegetative grass cover as the top layer. The Leachate Collection System (LCS), consisting of perforated pipe and drainage media, surrounds the landfill cap perimeter. Most of the area immediately bordering the Site is forested. Approximately 50 homes are located within a one-half mile radius of the Site, primarily to the north, east, and southeast of the landfill; with the closest residence located approximately 1,000 feet to the north and southeast of the Site.

The Site is located within the Naugatuck River drainage area. Surface water from the landfill flows to two tributaries of the Naugatuck River, Spruce Brook and Long Meadow Pond Brook, which are located one-half mile west and one mile north of the landfill, respectively. Groundwater in the vicinity of the Site flows predominately within the shallow bedrock toward the northwest, northeast and southeast (the closest residential receptors are located downgradient of the Site to the north). The shallow bedrock is fairly weathered and was found to

vary from a depth of 0 to approximately 70 feet below the land surface around the perimeter of the landfill. Groundwater in the overburden flows generally towards the northeast (where piezometric head data are available). Figures 3, 4, and 5 depict the groundwater elevations in the bedrock, shallow overburden, and deep overburden aquifer units, respectively.

### **3.2 Land and Resource Use**

From the late 1930s until 1987, the Site was used as an active landfill. The Site is currently a closed landfill and will likely remain as such due to the need to protect the integrity of the landfill cap and because the Site is privately owned. Adjacent land use is dominated by residential development. Groundwater in the area is generally no longer used as a drinking water supply as a result of the completion of the public water supply line in the Spring of 1989. However, three residences declined to be connected to the supply line at that time. During a 2008 potable well survey, it was determined that only one property continues to use their private well water. However, this well is located over 1,000 feet upgradient of the Site. The Naugatuck River, which ultimately receives the surface water runoff from the Site, is classified as restricted recreational use water with a goal of becoming recreational use water.

### **3.3 History of Contamination**

The Site consists of a landfill that was active from the 1930s until 1987. The landfill is classified primarily as a sanitary landfill, but does contain approximately 20 percent industrial waste. Operational problems at the landfill were reported in the early 1960s. Complaints included chemical spills on roads leading to the landfill, large quantities of black acid smoke, odor, and blowing litter. The complaints culminated in a lawsuit filed in 1961 (Lanoette et al. v. Harold Murtha et al.) which alleged in part that the operation of the waste dumps created a nuisance. Judgment in the case was handed down in 1964 and the landfill owner was ordered to cease open burning of certain wastes, except at certain times, and to pay several thousand dollars in damages. However, the judgment did not require that the landfill stop accepting wastes. Consequently, Laurel Park, Inc. was incorporated in 1966 and continued to operate the Site as a landfill until 1987.

### **3.4 Initial Response**

On April 16, 1987, Laurel Park, Inc. informed the Connecticut Department of Energy and Environmental Protection (now known as the Department of Environmental Protection, hereinafter "CT DEEP") that they had ceased accepting wastes. Prior to this, the Connecticut Superior Court in Hartford issued a judgment on February 1, 1983, ordering Laurel Park, Inc. to take the following steps as conditions for allowing it to continue disposing of solid waste:

- Immediately prepare a proposal for groundwater monitoring and implement the proposal upon approval by CT DEEP.
- Install and maintain a leachate collection and treatment system, upon approval of plans by CT DEEP, by October 31, 1983.
- Submit a performance bond to CT DEEP covering the cost of installing and maintaining the leachate system for five years.
- Supply potable water (i.e., bottled water) to certain specifically identified neighboring residents.
- Provide a municipal water system to those residents if Laurel Park, Inc applies for and receives permission for horizontal expansion of the landfill.

As a result of the judgment, the Laurel Park, Inc. completed the construction of a leachate collection and treatment system in 1984 and provided bottled water to area residents whose private water supply was affected by the Site. Subsequently, in May 1987, EPA entered into an Administrative Order on Consent (AOC) with the State of Connecticut, the Borough of Naugatuck and the Uniroyal Chemical Company (the largest generator of waste at the Site) to design and install the waterline referenced in the 1983 judgment described above. The waterline was completed in the Spring of 1989 and residents whose private water supply was at risk from contamination were allowed to connect. Three residences originally declined the offer to connect to the waterline. As discussed previously, of the three residences, two subsequently connected to the waterline. One residence is still using a private water well supply.

### **3.5 Basis for Taking Action**

The Remedial Investigation/Feasibility Study (RI/FS) was conducted from 1985 to 1987. The RI/FS concluded that the existing leachate collection system was only partially effective in

capturing leachate. Leachate continued to contaminate soil, surface water, and groundwater in the vicinity of the Site.

Based on the RI sampling results, the RI included an Endangerment Assessment that was completed in 1987. EPA determined that the consumption of groundwater from monitoring wells on the property and residential wells in the vicinity of the Site represented the most significant risk to human health. Volatile organic compounds (VOCs), other organic compounds, and metals were detected in groundwater at concentrations well above levels considered to be protective. Moreover, because the landfill did not have a barrier to prevent precipitation from coming into contact with the landfill wastes, the generation of leachate would continue and the potential existed for further degradation of groundwater quality to levels that would endanger public health, if consumed. Potential exposure to contaminated landfill soil, surface water, and sediment was considered to pose relatively low risk when compared with the potable use of groundwater.

#### **4.0 REMEDIAL ACTIONS**

##### **4.1 Remedy Selection**

The Remedial Action Objectives (RAOs) specified in the 1988 ROD included measures to mitigate existing and future threats to public health and the environment and include:

##### Source Control Response Objectives

1. Preventing or minimizing the further release of contaminants in groundwater, surface water, sediments, soil and air.
2. Eliminating the threats posed to human health and the environment from the source area itself.

##### Management of Migration Response Objectives

1. Preventing or minimizing further migration of contaminants in groundwater, surface water, sediments, soil, and air.
2. Eliminating or minimizing the threats posed to human health and the environment from the current extent of contamination.

The selected remedy for the Site included the following source control and management of migration (or groundwater control) components:

- Grading and placement of a multi-layer cap consistent with RCRA Subtitle C over the entire landfill;
- Construction of a leachate collection system and a groundwater extraction system;
- Treatment of the captured leachate and the contaminated groundwater at the Naugatuck Water Pollution Control Facility (NWPCF);
- Long-term monitoring; and
- Institutional controls.

With the exception of Institutional Controls, all components of the source control and management of migration response actions have been implemented. The ROD recommended that Institutional Controls, e.g., regulations, ordinances, deed and land use restrictions, or other effective means of land use control, be implemented to prevent the use of the bedrock aquifer to supply private wells for any water purposes in the vicinity of the Site in order to protect human health. Implementation of institutional Controls is in progress.

#### **4.2 Remedy Implementation**

In a Consent Decree (CD) signed with EPA on August 13, 1992, the Responsible Parties, now known as the Laurel Park Coalition (LPC), agreed to perform the remedial design/remedial action specified in the 1988 ROD. Prior to the effective date of the CD, the LPC completed the installation of a dedicated sewer line in December 1989 to provide leachate discharge to and treatment at the NWPCF in accordance with the 1988 ROD. On July 29, 1996, EPA approved the Remedial Design for the remaining items specified in the 1988 ROD.

Remedial action activities commenced in 1996 and included the construction of the RCRA Subtitle C cap over the landfill wastes and the construction of a new leachate collection system and a groundwater extraction system. Construction of the groundwater extraction wells and leachate collection system was completed during 1996. The leachate collection system was cleaned and video-inspected and the groundwater extraction system completed (including pumps and associated appurtenances) during the 1997 construction season. Construction of

the RCRA Subtitle C cap over the entire landfill was completed in 1998 and environmental monitoring commenced.

The Site achieved construction completion status when the Preliminary Closeout Report was signed on September 11, 1998.

#### **4.3 Operation and Maintenance**

The LPC conducts routine operations and maintenance activities in accordance with the Operation and Maintenance (O&M) plan that was approved by EPA on December 7, 1998. Long-term monitoring (LTM) of groundwater is conducted in accordance with the Long-term Monitoring Plan (LTMP), approved by EPA on November 25, 1998, and the Revised Field Sampling Plan, which was approved by EPA in February 2006. The primary activities associated with O&M and long-term monitoring include:

- Monthly inspections of the landfill cap, leachate collection/groundwater extraction systems, and other components of the remedy;
- Triannual groundwater sampling events, and
- Documentation of O&M and LTM activities on a semi-annual and annual basis. In 2009, the LPC installed eleven new overburden groundwater monitoring wells. The sampling schedule for these new monitoring wells is discussed in Section 6.4.1.

#### **4.4 Institutional Controls (ICs)**

The 1988 Record of Decision (ROD) for the Site recommends, and the 1992 CD required, implementation of Institutional Controls, e.g., regulations, ordinances, land use restrictions, or other effective forms of land use control, which would serve primarily to prohibit use of groundwater in the vicinity of the Site and to protect the remedial components (cap, wells, etc.). Implementation of Institutional Controls has not been completed, but is in progress. Institutional controls are non-engineered instruments, such as administrative and/or legal controls, that help minimize the potential for exposure to contamination and protect the integrity of the remedy. Compliance with Institutional Controls is required to assure long-term protectiveness for any areas which do not allow for unlimited use or unrestricted exposure. Institutional Controls are required at the Site to ensure the protectiveness of the remedy.

The LPC has made progress in establishing the Institutional Controls. The LPC prepared and submitted an Institutional Control (IC) Plan on September 3, 2011, which was approved by EPA on January 4, 2012. For two parcels (Naugatuck lots 6W-9.5B and 6W-49.5) owned by the LPC, subordination waiver requests and executed Environmental Land Use Restriction forms were prepared and submitted to EPA. A survey of the parcels was completed during December 2011 by a licensed surveying firm. During this review period, the LPC initiated contact with Laurel Park, Inc., which owns the properties that include the Site and abutting parcels regarding the imposition of restrictions. Communications among the parties are currently ongoing.

## **5.0 PROGRESS SINCE LAST REVIEW**

This is the Fourth Five-Year Review for the Site. The last Five-Year Review was completed in September 2008, which identified several issues. Some issues identified in that review have been addressed, and the status of each issue is provided as follows:

- In the Third Five-Year Review, the proposed construction of residential developments abutting the Site was identified as a possible issue. However, within the last five years, little progress has been made with development and the developer's option to purchase the property has since expired. Previously, the LPC had discussed with the developer the provision of municipal water, implementation of groundwater use restrictions, and installation of passive foundation soil gas vent systems. These discussions were discontinued when the developer did not proceed with the residential development.
- As identified in the previous Five-Year Review, one issue was the possible bypassing of the hydraulic containment (LCS and GES) by contaminated groundwater. As a result, the LPC installed eleven additional overburden monitoring wells in October 2009 (and to support other evaluations) to further evaluate groundwater flow conditions and the nature and extent of contaminant distribution. As depicted in Figure 3, the capture zones of the extraction wells are limited, and contaminated groundwater can flow north and east downgradient beyond the limits of the LCS and GES.
  - Figure 6 depicts select VOCs and metals in bedrock wells that exceed regulatory standards including the RSR Groundwater Protection Criteria (GWPC), Volatilization Criteria (VC), and Surface Water Protection Criteria (SWPC), and the Safe Drinking

Water Act's Maximum Contaminant Levels (MCLs). A number of wells situated outside of hydraulic containment continue to exhibit exceedance of GWPC, VC, SWPC, or the MCL, indicating that contaminated groundwater capture is incomplete. However, to the north the farthest downgradient bedrock well beyond hydraulic containment (MW-14) does not show any exceedance of standards. To the east, MW-11 and MW-10 showed exceedances of arsenic and thallium in 2010, which are not persistent detections at the Site. Overall, while VOCs and metals exceeding standards were detected in bedrock wells outside of the landfill boundary, the sporadic detections of Site contaminants in the furthest downgradient wells indicate only limited migration to the north and east.

- Figure 7 depicts select VOCs and metals in overburden wells that exceed regulatory standards. Several wells situated outside of the landfill limits have VOCs or metals exceeding the GWPC, VC, SWPC, or the MCL. Overburden groundwater flow is generally from the southwest to the north-northeast (Figures 4 and 5), and MW-14S is the most downgradient overburden well. Similar to the bedrock, there were no exceedance of standards in MW-14S, one of the most downgradient overburden wells. However sporadic low detections of identified Site contaminants detected sporadically indicate some limited contaminated groundwater migration in the overburden.
- Another issue identified in the previous Five-Year Review was whether VOCs detected in shallow overburden groundwater could pose a potential vapor intrusion threat to nearby residences. Review of overburden groundwater data from 2009 through 2012, depicted in Figure 7, indicates no exceedances of the CT RSR residential Volatilization Criteria or EPA's Vapor Intrusion Screening Levels.
- As identified in the previous Five-Year Review, there was a concern that contaminated groundwater that bypassed the LCS and GES could be migrating to the Unnamed Stream, located to the north of the Site. Bedrock analytical results from 2009 through 2012, depicted in Figure 6, indicate that arsenic and cadmium exceeded the RSR SWPC in 2009 only, and no exceedance of the SWPC occurred in downgradient well MW-14. Zinc detected in MW-14S exceeded the SWPC in 2010 only (Figure 7). While exceedances of SWPC have occurred, they are sporadic and are not anticipated to

represent potential threats to off-Site surface water. Factors such as dilution are likely adding to the concentration decrease to levels below the SWPC prior to reaching surface water.

- The previous Five-Year Review identified lack of Institutional Controls as an issue. Progress has been made by the LPC in implementing the institutional controls. Section 4.4 of this report provides more details.
- The Third Five-Year Review identified three possible properties that may be using private water supply wells and were not connected to the public water system. The property owners had declined to be connected during the 1989 response action. In November 2008, a potable water survey was conducted by the LPC to determine whether private water supply wells were being used at nearby residences within an 1,000-foot radius. From this survey, it was determined that two of the properties were now connected to the public water supply. The third property appears to be using the well and refused to have their water tested. However, the well is situated over 1,000 feet upgradient of the Site and is unlikely to be impacted by the Site groundwater contamination.

Significant activities completed since the last Five-Year Review included:

- In October 2008, the LPC submitted the evaluation of the air sampling results to EPA, which was not included in the previous Five-Year Review (September 2008). While the LPC determined that the emission levels were within the allowable 15 tons per year standard, EPA's evaluation determined that the true emission of landfill gases exceeded 18 tons per year. However, further assessment of the regulations and discussion with the CT DEEP indicated that because the landfill was in operation prior to 1972, it was "grandfathered" and did not need to meet current air pollution emission requirements.
- In July 2010, sediment was removed from extraction wells EW-2 and EW-3. Using air lift technology, 11 feet of sediment was removed from EW-3, and 9 feet was removed from EW-2.

- Modifications to the groundwater monitoring program occurred due to the installation of 11 new overburden monitoring wells installed in 2009. These modifications are presented in Section 6.4.1 of this Five-Year Review Report.
- On June 29, 2011, LPC submitted a Stormwater General Permit Registration to the CT DEEP. In accordance with new regulations, a Stormwater Pollution Prevention Plan was prepared.
- A statistical analysis of groundwater data was performed by the LPC in 2012, as required in the Consent Decree. The statistical analysis evaluated chemical concentration trends and comparisons of chemical concentrations in upgradient (“background”) and downgradient monitoring wells to assess whether groundwater contamination is significantly decreasing. Results of the evaluation indicated that, while several metals and VOCs continue to be present at concentrations exceeding the ROD cleanup goals, there is a general decreasing trend in groundwater contaminant levels.
- The LPC is conducting an internal study to determine whether there are more optimal ways to sample groundwater in monitoring wells. Passive diffusion samplers (Super-sleeve and Hydra-sleeve bags) are being evaluated in the study in comparison with the standard low stress/low-flow method currently in use. Use of passive diffusion sampling can result in less effort, less energy use, and less waste generation. The samplers will be installed, allowed to equilibrate, removed from the monitoring wells, and aqueous samples will then be collected. After removal of the passive diffusion samplers, groundwater samples will be obtained from the same monitoring wells using the current low-stress/low-flow sampling technique. Groundwater samples collected using both methods will be analyzed for VOCs, metals, iron, manganese and nitrogen. Analytical results from both sampling methods will then be compared to determine whether the results are comparable. If results indicate good correlation, then use of passive diffusion samplers can be considered, upon EPA approval, for replacing low stress/low flow sampling.

## **6.0 FIVE-YEAR REVIEW PROCESS**

### **6.1 Administrative Components**

EPA, the lead agency for this Five-Year Review, notified CTDEEP and the LPC in early 2013 that the Five-Year Review would be completed. The Five-Year Review Team was led by Leslie McVickar of EPA, Remedial Project Manager for the Laurel Park Landfill Superfund Site, and included staff from Nobis Engineering, Inc., EPA's technical support contractor, and Sheila Gleason, the CT DEEP Site Manger.

From May 2013, the review team established a schedule to review components that included:

- Community Involvement;
- Document Review;
- Data Review;
- Site Inspections and Observations;
- Local Interviews; and
- Five-Year Review Report Development and Review.

The Five-Year Review was concluded in September 2013.

### **6.2 Community Involvement**

EPA issued a public release notice of the start of the Five-Year Review on December 28, 2012. There are currently no appreciable community concerns pertaining to the Site.

### **6.3 Document Review**

This Five-Year Review consisted of a review of relevant documents including decision documents and monitoring reports. The documents reviewed are listed in Appendix B.

### **6.4 Data Review**

As part of the review, the data collected by the LPC were evaluated to assess whether contaminants within the landfill are being contained by the cap and leachate collection system,

and whether the contaminant concentrations have achieved the ROD cleanup goals. A summary of the data review is provided below.

#### **6.4.1 Groundwater Monitoring Data**

Groundwater monitoring is used to assess whether contaminated leachate continues to migrate from the landfill, whether concentrations of detected constituents are increasing or decreasing, and whether hydraulic containment is being achieved. Monitoring wells are gauged to assess the leachate level and whether the water table has been lowered below the landfill materials. Groundwater is sampled and analyzed three times a year for VOCs via EPA Method 8260, for Total Priority Pollutant List (PPL) of 13 Metals via EPA Methods 6020 and 245.1 (mercury), for total iron and manganese via EPA Method 6020, and Total Kjeldahl Nitrogen (TKN) via Method 4500-N (organic)B.

In addition to the original 25 monitoring wells, 11 new overburden groundwater wells were installed at the Site in October 2009 including: B-5S, PW-1S, MW-14S, MW-15S, MW-15D, MW-16S, MW-16D, MW-17S, MW-17D, MW-18S, and MW-18D (Figure 2). These monitoring wells were sampled for VOCs, metals, iron, manganese and nitrogen. The sampling results were compared to the numerical limits established under the RSR SWPC, VC, GWPC, and the Federal SDWA MCLs.

Using the newly installed monitoring wells (described above), groundwater samples were collected and analyzed. Analytical results from 2009 through 2012 were reviewed and compared to the RSR GWPC, SWPC, VC, and the MCLs. Exceedances of these criteria are qualitatively depicted in Figures 6 and 7 for bedrock and overburden wells, respectively. While three sets of analytical data are available per year, for ease of reviewing the geographic distribution of the results, only the highest values for each chemical were used in Figures 6 and 7 to depict exceedance of standards on an annual basis.

New overburden groundwater wells are monitored according to the approved work plan, which states the following:

- “If a sample collected from a new monitoring well has detections of constituents at or above the applicable standards, then that well will be incorporated into the tri-annual groundwater monitoring program.
- If a sample collected from a new well has detections of constituents at concentrations above background, but below the applicable standards, then that well will be included in the groundwater monitoring program on a semi-annual basis.
- If a sample collected from an overburden monitoring well has no detected concentrations of constituents, then that well will be sampled a second time (during the next regular monitoring event) for verification purposes. If the data is verified, then the well will not be included in future sampling events. However, the wells will be maintained in the event future monitoring is required.”

a) Chemical Trends - Based on analytical data collected between 2008 through 2012, compliance with groundwater cleanup standards at the Point of Compliance (POC) wells has not been attained. POC wells are hydraulically downgradient from the capped landfill limits and are used to assess the effectiveness of the Leachate Collection System (LCS) and the Groundwater Extraction System (GES) in minimizing the off-Site migration of landfill-generated contaminants. The POC wells include OW-1, OW-5, PW-1, MW-3, BH-7, and BH-8. The primary contaminants of concern (COCs) continue to consist of benzene, and to a lesser degree, arsenic, chromium, chlorobenzene, and 1,2-dichloroethane (1,2-DCA). The 2012 Annual Monitoring Report indicated that benzene, and to a lesser degree chlorobenzene, total arsenic, and total chromium exceeded the criteria.

Benzene - Analytical results from POC monitoring wells situated in the vicinity of the LCS and GES indicated benzene concentrations above the MCL, GPC, SWPC, and the Proposed VC. Benzene was detected above the applicable criteria in the following wells, all of which are bedrock wells: OW-1, OW-5, PW-1, MW-3, BH-7, and BH-8. Benzene was also detected in monitoring wells OW-2, BH-2, MP-9, and MW-15D. The MCL for benzene is 5 µg/L; the highest detection in August 2010 was 950 µg/L in the OW-5 well.

Among the 11 new overburden groundwater monitoring wells installed, only MW-15D exceeded the MCL and GPC criteria for benzene. There were VC exceedances for benzene in bedrock monitoring wells OW-1, BH-7, and OW-5 at the edge of the landfill.

Arsenic: Analytical results from POC monitoring wells situated in the vicinity of the LCS and GES indicated arsenic concentrations above the MCL and SWPC. Arsenic concentrations have appeared to increase in POC monitoring well, MW-3. Arsenic concentrations have remained stable or have decreased slightly in the POC monitoring wells OW-1, BH-7, and BH-8. Arsenic was detected above the applicable criteria in the following wells, all of which are bedrock wells: OW-1, OW-5, MW-3, BH-7, and BH-8. Arsenic was also detected, at levels below the applicable criteria, in monitoring wells MW-11, MW-17S, MW-17D, MW-18D, OW-2 and B-5S. The MCL for arsenic is 0.01 mg/L.

Among the 11 new groundwater monitoring wells installed, only MW-17S exceeded the MCL and SWPC criteria for arsenic. There were SWPC exceedances for arsenic in MW-18D, MW-17D, and B-5S.

Chlorobenzene: Analytical results from POC monitoring wells situated in the vicinity of the LCS and GES indicated chlorobenzene concentrations above the MCL and the GPC criteria. Chlorobenzene was detected above the applicable criteria in the following bedrock wells: OW-1 and BH-7. The MCL for chlorobenzene is 100 µg/L.

There were no exceedance of standards by chlorobenzene among the 11 new groundwater monitoring wells installed. There were no chlorobenzene VISL exceedances in any monitoring wells.

TCE: Analytical results from POC monitoring wells situated in the vicinity of the LCS and GES indicated there were no TCE concentrations above the MCL, GPC, SWPC, and RVC criteria.

There were no standard exceedances of TCE among the 11 new groundwater monitoring wells installed.

1,2-DCA: Analytical results from POC monitoring wells situated in the vicinity the LCS and GES indicated 1,2-DCA concentrations above the MCL, GPC, and VC criteria standards. 1,2-DCA concentrations have remained stable or have decreased slightly in POC monitoring wells OW-1, PW-1, and BH-8. 1,2-DCA was detected above the applicable criteria in the following wells, all of which are bedrock wells: OW-1, PW-1, and BH-8. 1,2-DCA was also detected in monitoring wells BH-2, B-5, and MW-15D. The MCL for 1,2-DCA is 5 µg/L.

Among the 11 new groundwater monitoring wells installed, only MW-15D exceeded the GPC criteria for 1,2-DCA. There were VISL exceedances for monitoring well OW-1.

Other Chemicals: Analytical results from POC monitoring wells situated in the vicinity the LCS and GES indicated the following contaminant concentrations above the MCL, GPC, and SWPC criteria.

- Isopropylbenzene was detected at levels exceeding the GPC standards at POC monitoring well BH-7 in 2009.
- Lead was detected at a level exceeding the MLC, GPC, and SWPC standards at POC monitoring well BH-7 in 2009.
- Cadmium was detected at a level exceeding the MCL, GPC, and SWPC criteria in 2009 for POC monitoring well BH-8. Cadmium was also identified in OW-2 and MP-9 in 2009.
- Thallium was detected at a level identified to exceeding the MCL and GPC criteria in 2010 for monitoring well OW-5. Thallium was also detected in OW-4, MW-10, MW-11, and MW-13 in 2010.
- Chromium (total) was detected at levels exceeding the MCL and GPC for POC monitoring well BH-7 in 2011 and 2012 and monitoring well 17-D in 2012 . It also exceeded GPC criteria in PW-1, BH-7, in 2011 and MW-3 in 2011 and 2012. Chromium (total) was detected in OW-5, and PW-1.

- Zinc was not detected at levels exceeding the MCL, GPC, SWPC in any POC monitoring well. However, levels of zinc did exceed SWPC criteria limits in overburden monitoring wells MW-14S in 2010 and B-5S in 2011.
  - Iron and manganese are monitored as they are indicators of anaerobic degradation of landfill contents where oxidation-reduction reactions result in the mobilization of these and other metals. Statistical analysis indicates that mobile iron and manganese are still being produced at the Site. As the landfill ages, anaerobic degradation of contents will occur in different portions of the landfill resulting in continuing dissolution and mobilization of metals, some from naturally occurring soil. Therefore, the continued monitoring of these metals will provide indications of degradation of landfill materials and whether other metals may be subject to mobilization.
- b) Hydraulic Containment – In 2007, EPA requested the reevaluation of potentiometric surface interpretations for the GES wells. Based on the new assessment, the revised interpretations indicated the zone of influence attributed to the GES wells were less than previously interpreted (Figure 3). Additional assessments by EPA concluded that more groundwater is migrating beyond the capture zone of the GES. While the ROD states that “the complex hydrogeology makes it impossible to ensure complete capture of all contaminated groundwater and leachate migrating from the Site or to extract contaminated groundwater for deep bedrock”, the new evaluations indicate additional evaluation should be conducted to reassess the effectiveness of the GES. EPA’s assessment indicates that groundwater in both overburden and bedrock units are migrating downgradient of the landfill limits. However, evaluation of 2009 through 2012 analytical results does not indicate any significant off-Site migration of contaminants beyond the Site property boundary (see Figures 6 and 7).
- c) Leachate Level – In previous Five-Year Reviews, it was noted that MW-1 may not have been functioning properly. MW-1 had been replaced for the second time in 2004, and it appeared to have been damaged again by 2006, probably due to stresses caused by surrounding landfill materials as they subside. Available prior data indicated that the leachate level has been declining. However, it was unknown whether the water table has been depressed below the landfill materials. No leachate was observed in MW-1 or MW-2 during the sampling events within this Five-Year Review period. The LPC

indicated that there is a cave-in or obstruction in MW-1 of approximately 2 feet, and no leachate is observed above this point of refusal. It will remain unclear whether there is leachate in the bottom 2 feet of MW-1 until this obstruction or cave-in is fixed.

It should be noted that elevated concentrations of 1,4-dioxane were detected in Site groundwater in August 2013. This data has not yet been fully reviewed by EPA and the CT DEEP. However, EPA's initial review of the data has revealed that elevated concentrations of 1,4-dioxane are present in monitoring wells closest to the landfill but not in wells located at the leading edge of the contaminated groundwater plume. Therefore there are no current unacceptable risks to human health. However, sampling and analysis of 1,4-dioxane in groundwater, surface water and sediment will be included in the Long-Term Monitoring Plan and an evaluation of its potential impacts to human health and the environment will be performed.

#### **6.4.2 Air Sampling**

Air sampling is required every 5 years to evaluate whether air pollution control devices are required to mitigate landfill gas emissions from the gas vents. Connecticut Air Pollution Regulations (RCSA) Section 22a-174-3a(a)(1) (D and E) state that a permit is required for stationary sources that emit, or have the potential to emit, 15 tons/year or more of any individual air pollutant, and for any modification to an existing source which increases potential emissions of any individual pollutant by 15 tons/year or more. Based on Nobis mass loading calculations, approximately 18 tons/year of methane are emitted for a single gas vent (GV-3). However, because this landfill was constructed prior to 1972, it can be "grandfathered" from the permit requirement and the requirement to install pollution control devices, unless there are alterations or modifications. The 2008 data evaluation concluded that the applicable air regulations were attained.

In 2013, the LPC will collect another round of landfill gas samples. Once the 2013 data are available, they will be evaluated and compared with applicable air regulations.

#### **6.5 Site Inspection**

The LPC performs monthly landfill and perimeter site features inspections. In addition to these inspections, the LPC also performs formal annual inspections of the landfill and the landfill

components. A site-specific checklist was used to document the observations made during these inspections. During 2013, additional observations were made of the landfill and its components including the LCS and GES in conjunction with oversight of groundwater sampling activities. EPA also performed an inspection during May 2013. A Site Inspection Checklist is included as Appendix C. A summary of the key components is provided below:

- **Landfill surface** - The landfill surface was generally in good condition with healthy vegetation that appeared to be well maintained and no obvious signs of settlement, erosion, bulges, or cracks. Some vegetation was identified surrounding the gas vents. The brush will be removed when the grass is mowed. Holes created by burrowing animals on top of the vertical downchute channels were identified and repaired in August 2009. Continuous animal presence has been reported at the Site. A beaver dam was removed naturally and noted during the March 2009 inspection. EPA recommended the continued use of animal control measures and the repair of holes in the landfill cap.
- **Benches** - The benches (horizontal channels that convey precipitation runoff to the downshoots) appeared in good condition with only minor vegetation and sedimentation. Sediment in the flume has been identified and cleaned after observation. EPA recommended continued regular removal of sediments accumulated in benches, perimeter ditches, and culverts as part of O&M at the Site.
- **Letdown Channels (downchutes)** - The four vertical downchutes were observed to be in good condition. The LPC reported sediment in Downchute #3, as well as Downchute #1. The settlement feature in Downchute #3 was surveyed in September 2009, May 2010, November 2010, June 2011, and September 2011. No significant elevation changes were recorded. EPA recommended continued monitoring of the sediment source and sediment removal, as necessary.
- **Cover penetrations** - There did not appear to be any problems with the cover penetrations, which include leachate collection system manholes, passive gas vent structures and monitoring wells.
- **Cover drainage layer** - The riprap outlet for the drainage layer appeared to be in good condition.

- **Leachate collection and groundwater extraction systems** - The above ground portions of the systems were in good condition. No obvious signs of damage or cracks were observed at any of the manhole vaults, and the manholes appeared to be in good condition structurally. These manholes were inspected in 2009, June 2010, December 2010, June 2011, December 2011, June 2012, and December 2012. During these inspections, storm water was pumped out, if applicable. The one-inch groundwater extraction lines were flushed in 2009 and 2010. During July 2010, sediment buildup was observed in extraction wells EW-2 and EW-3. Using airlift technology, the sediment was removed from these wells; 9 feet of sediment was removed from EW-2 and 11 feet of sediment was removed from EW-3. Additionally, EW-3 was offline due to needed maintenance. EW-3 was repaired in August 2009.
- **Perimeter road, ditches and off-site discharge** – The perimeter roads appeared to be in good condition with no signs of erosion. The perimeter ditches appeared to be operating as designed and were in good condition.

Recommendations of corrective actions based on the past inspections included the continued monitoring of potential settlement, erosion and sediment areas and the continuation of existing O&M programs, including sediment removal, rodent control, and the regular flushing of the groundwater extraction system discharge lines. The overall conclusion based on the site inspection is that the components of the landfill cover system are in good condition, are well maintained, and are working as designed.

## **6.6 Interviews**

As part of the preparation of this Five-Year Review, interviews were conducted with local town officials and persons with knowledge of the Site. Refer to Appendix C for an Interview List of the individuals contacted.

Mr. Paul Meyer, Authorized Representative of the Laurel Park Coalition, was interviewed on June 11, 2013 to discuss and determine whether the remedy implemented is protective of public health and the environment. Mr. Meyer indicated that the Site is functioning as expected, is

stable, and the goals of the remedy are being met. Mr. Meyers additionally responded to some of the issues identified in the Third Five-Year Review.

According to Mr. Meyer, the proposed construction of a residential development had been put on hold. The residential development was to be located upgradient and would have properties abutting the Site. Mr. Meyer indicated that the developer had agreed to create a buffer zone between the development and the landfill, and use the public water made available by the LPC. The developer had also agreed to install passive vapor foundation vent systems in all basements. Mr. Meyer noted that these depressurization systems had no scientific basis for implementation, and were to be installed to be aesthetically pleasing to potential residential buyers.

Mr. Meyer was asked to discuss which residences near the Site were not connected to the public water supply. Mr. Meyer identified one upgradient parcel that was currently using their private water well. The LPC contacts the residence approximately one or two times every 5 years with an offer to connect to the public water supply. The LPC will pay to connect the residences to the public water supply, but all water charges are the responsibility of the parcel owner.

Mr. Meyer also discussed the internal study that is being performed to determine if the Field Sampling Plan can be optimized. The current Field Sampling Plan is still being used for monitoring and all sampling and monitoring is in compliance with the current plan. Mr. Meyer discussed that no changes to the Sampling Plan are made without prior approval from EPA.

Mr. Jim Stewart, Director of Public Work in the Borough of Naugatuck, was interviewed on June 12, 2013. The Borough of Naugatuck Water Pollution Control Board was originally contacted on June 5, 2013, however, the Chair, Mr. Ronald Mercenary, directed Nobis to contact Mr. Stewart, who was more familiar with the Site. Mr. Jim Stewart's impression of the Site is fairly positive and stated that the remedy is functioning as expected. Mr. Stewart was asked if there were any issues that needed to be identified in this Five-Year Review. Mr. Stewart indicated that there have been significant rain storms the past few years and suggested that the drainage system be assessed, as well as any damage the storms may have caused to the Site.

Mr. Stewart also indicated that the proposed subdivision, abutting the Site, has not made any progress since the last Five-Year Review. The developer's option to purchase the proposed subdivision property had expired. However, Mr. Stewart stated that within the last year, the Town purchased a parcel of land that is in proximity to the Site, but it is not an abutting property. This property was reportedly granted an open space grant and the Town hopes to construct ball fields on the property.

## **7.0 TECHNICAL ASSESSMENT**

### **7.1 Question A: Is the Remedy Functioning as Intended by the Decision Documents?**

Yes. Review of available documents, evaluation of compiled data, and the site inspection results indicate that the remedy is functioning as intended in the ROD, however with certain exceptions. Institutional Controls (e.g., deed restrictions) have not been fully implemented. In addition, while the GES and LCS are functioning to reduce contaminant concentrations as required under the ROD, optimizations of these systems should be evaluated to improve long-term protectiveness and to meet the cleanup standards at the point of compliance. Of greatest importance is evaluating whether the operation of the GES and LCS can be improved to result in greater capture of contaminated groundwater. These issues are discussed in the course of the following review of the remedy's performance.

The cap, leachate collection system, and groundwater extraction system have reduced the release or migration of contaminants to other environmental media and have prevented direct contact with or ingestion of contaminants. The multi-layer cap has achieved the specific objectives for reducing infiltration into the landfill so that landfill leachate generation has been decreased. In general, the various components of the landfill cover system and leachate collection and groundwater extraction systems are working as designed.

While the leachate collection and groundwater extraction systems have been effective in capturing large quantities of contaminated overburden and bedrock groundwater, the specific ROD objectives for achieving the RCRA Ground Water Protection Standard (MCLs) at the RCRA POC and achieving the concentration standard (stabilizing concentration of contaminants in groundwater) have not yet been attained. Review of records indicates that groundwater

contaminant concentrations have been declining. However, contaminated groundwater is still migrating past the LCS and GES as evidenced by VOC and metal detections exceeding standards in downgradient bedrock monitoring wells (OW-2, PW-1, MW-11, and MW-10) located north and east of the landfill. Contaminants are also migrating beyond the GES and LCS in the overburden aquifer unit as evidenced by benzene detections in newly installed monitoring well, MW-15D. While the leachate and groundwater collection system is effective in preventing off-Site contaminant migration at concentrations exceeding groundwater cleanup standards (and is expected to continue doing so) and has operated continuously for over 15 years, the system would benefit from a review of its performance to determine if there are system modifications that can be implemented to improve operational efficiency in an effort to more effectively attain cleanup standards at the POC

An additional concern is an uncertainty as to whether the remedy has attained the ROD's hydraulic standard of dewatering the waste. (Although the ROD acknowledges that it is unlikely to completely eliminate contaminant migration, one of the remedy's specific objectives is to lower the water table to below the waste, so as to minimize leachate generation.) Monitoring well MW-1 was designed to verify that the waste has been dewatered, but it is currently capable of sampling only to a depth of approximately 115.27 feet; which is nearly 2 feet too shallow to establish conclusively that the bottom of the waste (measured to reach a depth a 117.27 feet) has been dewatered. This well has been destroyed and replaced several times as the result of waste settlement. Indirectly, groundwater VOC and metal data collected from wells located outside of the landfill can provide an indication of when landfill wastes are no longer saturated. Once VOCs and metals concentrations have declined to below cleanup standards, this would indicate no further leaching of landfill wastes or that the wastes have been dewatered. To confirm this determination in the future, the damaged landfill monitoring well will need to be replaced and/or new landfill wells installed.

The LPC has been performing environmental monitoring and routine Site inspections as required by the remedy. The results of these activities have been documented and reviewed by EPA and its technical consultant. Review of the records and Site observation indicate that the cap and LCS and GES have been well maintained and required repairs are made in a timely manner. There is routine flushing of the leachate collection system lines and periodic servicing of the pneumatic pumps so that both systems would be subject to less down time and have more efficient operations.

In addition to the engineered components of the remedy, other controls implemented at the Site include installation of a public waterline to supply clean water to nearby residents, as well as fencing to prevent unauthorized access to the landfill. Efforts to implement Institutional Controls to restrict the use of contaminated groundwater and to protect the landfill from any unauthorized disturbance have been initiated by the LPC. The LPC has provided an IC Plan and all requisite documentation to EPA for the implementation of land use restrictions on two parcels owned by the LPC. Discussions with the remaining property owner of parcels that require deed restrictions are ongoing, and progress is being made toward finalization of all required Institutional Controls at the Site

**7.2 Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives Used at the Time of the Remedy Selection Still Valid?**

No. There have been changes to the toxicity values, exposure assumptions, exposure pathways and methods of evaluating risk since the time of the remedy selection. Potential dermal contact with groundwater used as a household water source, inhalation of VOCs during household water use, and the vapor intrusion pathway have not previously been evaluated. The ROD established groundwater clean-up criteria based on the MCLs. The RAOs used at the time of the remedy selection are still valid. However, Institutional Controls prohibiting groundwater use as drinking water at neighboring properties are not in place and bedrock groundwater concentrations along the perimeter of the capped landfill exceed drinking water standards. Although the remedy was not designed to be protective of vapor intrusion, comparisons of recent overburden groundwater sampling results to EPA vapor intrusion screening levels indicate that groundwater contamination is not migrating to outlying areas at levels that are a concern for future vapor intrusion. However, continued monitoring of shallow groundwater data with comparison of data to EPA Vapor Intrusion Screening Levels (VISLs) is recommended to assure the protectiveness of the remedy in regard to the vapor intrusion pathway. See Figures 6 and 7.

Changes in Standards or TBCs

The 1988 ROD identifies the following laws, regulations and guidance as applicable to the remedy. Changes in standards since the 1988 ROD do not appear to change the protectiveness of the remedy:

- Resource Conservation and Recovery Act (RCRA) Part 264. The landfill cap and all subsequent repairs and modifications to the cap were designed in accordance with applicable RCRA requirements. EPA approved the cap on July 24, 1998, and the LPC continues to perform O&M as necessary. Groundwater monitoring is performed in accordance with the RCRA Groundwater Protection Standard specified in 40 CFR 264.97.
- Clean Water Act. Leachate from the landfill is directed to the Town of Naugatuck Publicly Owned Treatment Works where it is commingled with other wastes, then treated in accordance with regulatory criteria (i.e., NPDES permit).
- Clean Air Act. Air pollution regulatory authority has been delegated to the State. Landfill gas emissions at the Site, while estimated to exceed allowable State air standards, are exempted from air pollution controls due to the age of the landfill.
- Safe Drinking Water Act; EPA Groundwater Protection Strategy. New applicable or relevant and appropriate requirements (ARARs) have been promulgated since the 1988 ROD which include Maximum Contaminant Levels (MCLs) and non-zero Maximum Contaminant Level Goals (MCLGs). However, changes in MCLs do not affect the protectiveness of the remedy because the remedy currently relies on providing an alternate safe drinking water source and Institutional Controls.

#### Newly Promulgated Standards

- Connecticut Remediation Standard Regulations (RSRs) (Section 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies). The RSRs were promulgated in 1996, and revised in June 2013, and contain numeric and narrative standards for soil and groundwater remediation, and take into consideration factors that include land use, groundwater classification, and proximity to sensitive receptors. The Groundwater Protection Criteria (GWPC) of the RSRs identify the numeric chemical

concentrations to be attained for groundwater plume remediation in aquifers with GA and GB classifications (groundwater that is currently known or presumed to be degraded, and is either being used or could be used in the future as a drinking water source). Bedrock groundwater is sampled, analyzed, and evaluated against the RSR GWPC under the Site's long-term monitoring program.

For a groundwater plume that discharges to a surface water body, the plume needs to attain the numerical limits established under the Connecticut Surface Water Protection Criteria (SWPC) of the RSRs. Because groundwater discharges to the Unnamed Stream in the vicinity of the landfill, it is possible that some groundwater contaminants are migrating into this surface water body. Evaluation of the 2011 and 2012 groundwater with respect to the SWPC indicates slight exceedances of SWPC for arsenic at OW-1, OW-5, MW-3, BH-7, BH-8, MW-17D, and MW-18D, but not at locations further downgradient or closer to the unnamed stream. Because groundwater concentrations are below the SWPC in the vicinity of the groundwater discharge, sampling of the Unnamed Stream is not needed at this time.

Groundwater containing VOCs within 15 feet of the ground surface or an occupied industrial or residential structure needs to comply with the RSRs' Volatilization Criteria (VC). However, at this time, there is only limited migration of contaminated overburden groundwater. Should contaminant concentrations increase or be detected above the VC in outlying sentinel monitoring wells, the vapor intrusion pathway will need to be reevaluated.

- In addition to reviewing the ARARs noted in the ROD, current EPA guidance was reviewed for changes that may impact the protectiveness of the remedy. Of particular note is the issuance of the EPA Vapor Intrusion Guidance (EPA, 2002) and the follow-up *Vapor Intrusion Screening Level (VISL) Calculator* (EPA, 2012). These EPA 2012 vapor intrusion screening levels (VISLs) are to be used to screen sites for potential vapor intrusion concerns. The vapor intrusion pathway was not considered at the time of the remedy. Further consideration of this pathway is discussed below.

### Changes in Exposure Pathways

The exposure pathways considered in the Endangerment Assessment performed during the 1987 RI included: (1) ingestion of groundwater; (2) ingestion of soil by small children; and (3) direct exposures to sediment and surface water. With the completion of the landfill cap, leachate collection system, and security fence, each of these pathways except the ingestion of groundwater pathway is no longer applicable. Potential dermal contact with groundwater used as a household water source and inhalation of VOCs during household water use have not previously been evaluated. Institutional Controls prohibiting groundwater use as drinking water at neighboring properties have not been implemented. Despite the expansion of the public water supply in 1989 (with the exception of one upgradient home where the property owner has declined a connection to the public water supply system), potential future ingestion of contaminated groundwater and dermal contact and inhalation of VOCs from groundwater used as a household water source present a future concern as a result of the current lack of Institutional Controls prohibiting groundwater use as drinking water for properties at the Site.

The vapor intrusion pathway was not evaluated in the original public health and environmental assessment. Overburden groundwater near the top of the water table and directly below occupied buildings, if contaminated, would be most likely to impact potential indoor air conditions through vapor intrusion. No occupied buildings exist on the Site and all neighboring properties are outside of the current zone of Site-related contaminated shallow groundwater. If data indicate that concentrations of contaminated overburden groundwater are increasing, there could be an impact to downgradient residential properties.

Since the last Five-Year Review, several overburden wells have been installed beyond the landfill's western perimeter. Comparison of 2011 and 2012 groundwater data from both overburden and bedrock wells to EPA 2012 VISLs based on protection of residential indoor air (based on  $1 \times 10^{-6}$  cancer risk and hazard quotient of 1.0) indicates the absence of VOCs at concentrations exceeding screening levels at the furthest downgradient well pair (MW-14 and MW-14S) or in any of the newly installed overburden wells. However, benzene is present at concentrations exceeding screening levels at bedrock wells OW-1, OW-2, OW-5, PW-1, MW-15D, MW-3, BH-7, BH-8, BH-2, and MP-9. Ethyl benzene is also present at concentrations exceeding screening levels at OW-1 and OW-5. The majority of these bedrock wells with VISL exceedances are located inside the ring of extraction wells or just to the north. The furthest downgradient wells to the north, and overburden wells to the north and west, show no exceedances of either VISLs or groundwater cleanup standards, and the closest residences are

approximately 1,000 feet to the north and southeast and outside of the zone of contaminated Site groundwater. Data from these wells show consistently low detections and limited migration of Site contaminants to the edge of the plume, therefore vapor intrusion is not a likely a concern the Site. Should future groundwater data indicate increasing concentrations of Site contaminants, the vapor intrusion pathway will be re-evaluated to determine if it poses a concern.

An additional minor vapor intrusion consideration is the observation that detection limits for vinyl chloride slightly exceed the screening level of 0.14 µg/L for residential exposures via the vapor intrusion pathway at all wells. A lower detection limit would provide assurance that vinyl chloride is not present at concentrations of potential concern. Since no residences exist over the plume or in close proximity to the edge of the plume, efforts to achieve lower detection limits are not recommended. Continued monitoring of shallow groundwater data with a comparison of data to EPA VISLs will further ensure the protectiveness of the remedy in regard to the vapor intrusion pathway.

#### Changes in Toxicity and Other Contaminant Characteristics

Since the time of the original endangerment assessment performed as part of the RI, EPA has re-examined and updated toxicity factors for each of the indicator contaminants evaluated. In addition, since the 1988 ROD, toxicity factors used in developing MCLs and MCLGs, which were set as groundwater clean-up goals in the 1992 Consent Decree, have been updated for several of the contaminants. Changes in these toxicity factors do not affect the remedy because of its reliance on an alternate safe drinking water source and Institutional Controls.

#### Changes in Risk Assessment Methods

Since the endangerment assessment performed during the 1987 RI and the 1988 ROD, changes have occurred in the formulas used to calculate risks from exposures to soil and groundwater and the methods for evaluating the vapor intrusion pathway. However, changes in risk assessment methods do not affect the remedy because of its reliance on an alternate safe drinking water source, institutional controls, and prevention of direct contact with soil.

### New Contaminants and/or Contaminant Sources

No new contaminant sources have been identified since startup of the remedy. The contaminants detected at highest concentrations in groundwater samples are those identified in the ROD as contaminants of concern. No toxic byproducts of the remedy were identified during the review. One new contaminant of potential concern has been identified: elevated concentrations of 1,4-dioxane were detected in Site groundwater in August 2013. This data has not yet been fully reviewed by EPA and the CT DEEP. However, EPA's initial review of the data has revealed that elevated concentrations of 1,4-dioxane are present in monitoring wells closest to the landfill but not in wells located at the leading edge of the contaminated groundwater plume. Additional sampling and analysis of 1,4-dioxane in groundwater, surface water and sediment will be included in the Long-Term Monitoring Plan.

1,4-dioxane was commonly used as a chlorinated solvent stabilizer to prevent product degradation. The existing results as well as all future data will be evaluated to determine what future measures are necessary, as appropriate. While the current 1,4-dioxane data has not been fully evaluated at the Site, it is unlikely to pose any additional threat to human health due to the use of municipal water. The one home with a private supply well is located upgradient of the Site and over 1000 feet away.

### Expected Progress Towards Meeting RAOs

The landfill cap, leachate collection system, and shallow groundwater extraction system have reduced the release of contaminants from the landfill to groundwater, surface water, sediments, soils, and air. Capping and fencing are preventing potential direct human contact with contaminated soils in the source area. The provision of the public water distribution system in 1989 to nearby homes has reduced exposures to groundwater as the primary drinking water source at all but one distant home in the area.

Although the water table underlying the landfill has been dropping, it is unclear whether the groundwater level has been lowered to below the landfill waste to prevent further release of leachate to groundwater. While most of the contaminated groundwater migrating from the landfill has been captured by the Leachate Collection System and the Groundwater Extraction System wells, some contaminated groundwater is still migrating downgradient beyond the

influence of the LCS and the GES. While contamination is migrating beyond the point of compliance at concentrations exceeding cleanup standards, there have been no detections above acceptable standards at the furthest downgradient wells. However, these low detections confirm that there is limited groundwater migration of Site contaminants to the edge of the plume. Consequently, improvement in the operation of the LCS and GES and/or other measures should be considered in an effort to more effectively limit contaminant migration and to attain cleanup standards at the POC.

Institutional Controls prohibiting groundwater use as drinking water at the Site are not yet in place. A recent survey indicates all but one area resident are using the public water supply system for drinking water and household water use. Plans for a new development at the abutting property have been discontinued. Should this change, Institutional Controls to prevent groundwater use as drinking water are still needed.

**7.3 Question C: Has Any Other Information Come to Light that Could Call into Question the Protectiveness of the Remedy?**

Yes.

**Technical Assessment Summary**

According to the data reviewed, the Site inspection, and interviews, the remedy is by and large functioning as intended by the ROD, with the exception of full implementation of Institutional Controls. There have been no changes in the physical conditions of the constructed components that would affect the protectiveness of the remedy. While there have been changes to the ARARs cited in the ROD, updates in toxicity factors and chemical characteristics, and updated risk assessment methods, capping of the landfill wastes and provision of the waterline prevent potential exposure to contaminated landfill materials and ingestion of groundwater contaminants by the vast majority of potentially impacted individuals.

Reassessment of the groundwater elevation data indicates that the zone of influence for the LCS and GES is less than previously interpreted. More contaminated groundwater is bypassing the LCS and GES than previously estimated. Long-term monitoring results indicate that chemical concentrations in both the overburden and bedrock aquifer units immediately

downgradient of landfill boundary exceed State groundwater quality criteria (GA/GB GWPC), Federal drinking water standards (MCLs), and the State's surface water quality criteria (SWPC). Groundwater data from wells further downgradient of the landfill do not show any exceedance of cleanup standards. These detections are an indication of limited groundwater migration of Site contaminants to these outlying locations beyond the POC. While the leachate and groundwater collection system is effective in preventing off-Site contaminant migration at concentrations exceeding groundwater cleanup standards (and is expected to continue doing so) and has operated continuously for over 15 years, the system would benefit from a review of its performance to determine if there are system modifications that can be implemented to improve operational efficiency in an effort to more effectively attain cleanup standards at the POC. This is a recommendation to improve operations but is not an issue that impacts either short-term or long-term protectiveness.

However, as noted in Section's 6.4.1 and 7.2 above, elevated concentrations of 1,4-dioxane were detected in Site groundwater in August 2013. This data has not yet been fully reviewed by EPA and the CT DEEP but EPA's initial review of the data has revealed that the elevated detections of 1,4-dioxane were found only in monitoring wells located closest to the landfill and not in those wells located at the leading edge of the contaminated groundwater plume. Therefore there is no current unacceptable risk to human health. However, to make a long-term protectiveness determination, sampling and analysis of 1,4-dioxane in groundwater, surface water and sediment must be included in the Long-Term Monitoring Plan and an evaluation of its potential impacts to human health and the environment must be performed.

## **8.0 ISSUES**

Based on the activities conducted during this Five-Year Review, the issues identified in Table 8-1 have been noted.

**Table 8-1  
List of Issues  
Laurel Park Landfill Superfund Site  
Borough of Naugatuck, Connecticut**

<b>Issues</b>	<b>Affects Current Protectiveness</b>	<b>Affects Future Protectiveness</b>
Institutional controls to restrict groundwater use at the Site have not been implemented.	No	Yes
Elevated levels of 1,4-dioxane were detected in Site groundwater.	No	Yes

**9.0 RECOMMENDATIONS AND FOLLOW-UP ACTIONS**

In response to the issues noted above, it is recommended that the actions listed in Table 9-1 be taken:

**Table 9-1  
Recommendations and Follow-up Actions  
Laurel Park Landfill Superfund Site  
Borough of Naugatuck, Connecticut**

<b>Issue</b>	<b>Recommendation and Follow-up Action</b>	<b>Party Responsible</b>	<b>Oversight Agency</b>	<b>Milestone Date</b>	<b>Affects Protectiveness</b>	
					<b>Current</b>	<b>Future</b>
Institutional Controls have not been fully implemented.	Implement all necessary Institutional Controls.	PRP (LPC)	EPA & CT DEEP	12/31/2015	No	Yes
Elevated concentrations of 1,4-dioxane were detected in Site groundwater.	Amend the Long Term Monitoring Plan to include further sampling and analysis of 1,4-dioxane in groundwater, surface water and sediment and perform an evaluation of its potential impacts to human health and the environment.	PRP (LPC)	EPA & CT DEEP	12/31/2015	No	Yes

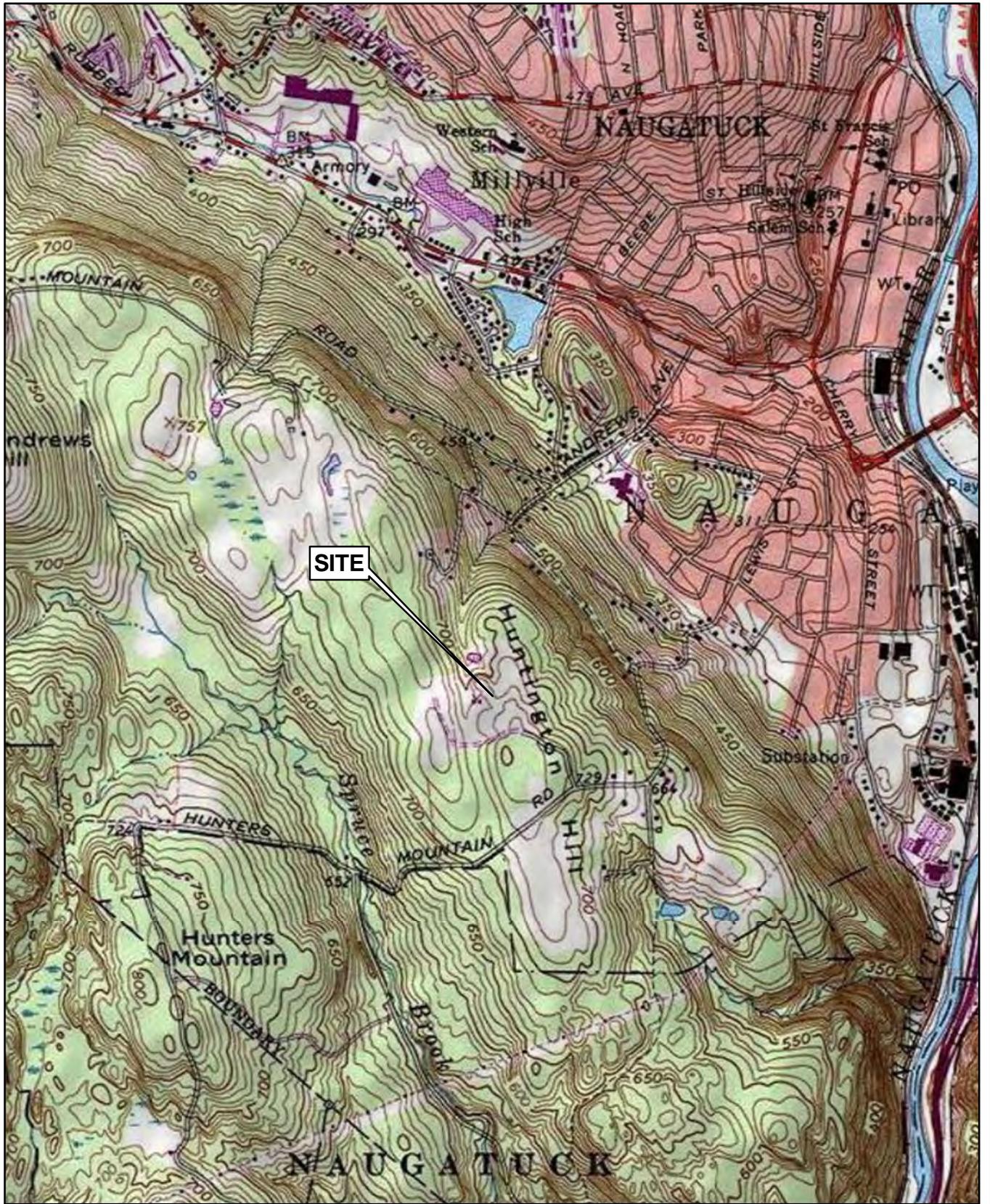
## **10.0 PROTECTIVENESS STATEMENT**

The remedy is currently protective of human health and the environment in the short-term because: (1) the cap is preventing direct contact exposures to landfill contaminants and minimizes contaminant migration; (2) the leachate collection and groundwater extraction system is containing the majority of groundwater contaminants on-Site; and (3) the waterline installed along Hunters Mountain Road helps to ensure that adjacent residents are not exposed to potential Site groundwater contamination. To make a long-term protectiveness determination Institutional Controls must be finalized and 1,4-dioxane must be further evaluated at the Site.

## **11.0 NEXT REVIEW**

The next Five-Year Review will be conducted by September 2018 since hazardous substances, pollutants, or contaminants remain at the Site above levels that are considered protective of human health and the environment.

**APPENDIX A**  
**SITE FIGURES**



Path: R:\0000\Task Orders\0007\Laurel Park\FYR\Technical Data\GIS\Figures\Fig\_1\_Laurel Park\_Location.mxd Date Printed: 6/26/2013



USGS Topographic Map  
 Naugatuck, Conn.  
 Revised 1984

0 500 1,000 2,000  
 Feet  
 1 inch = 2,000 feet

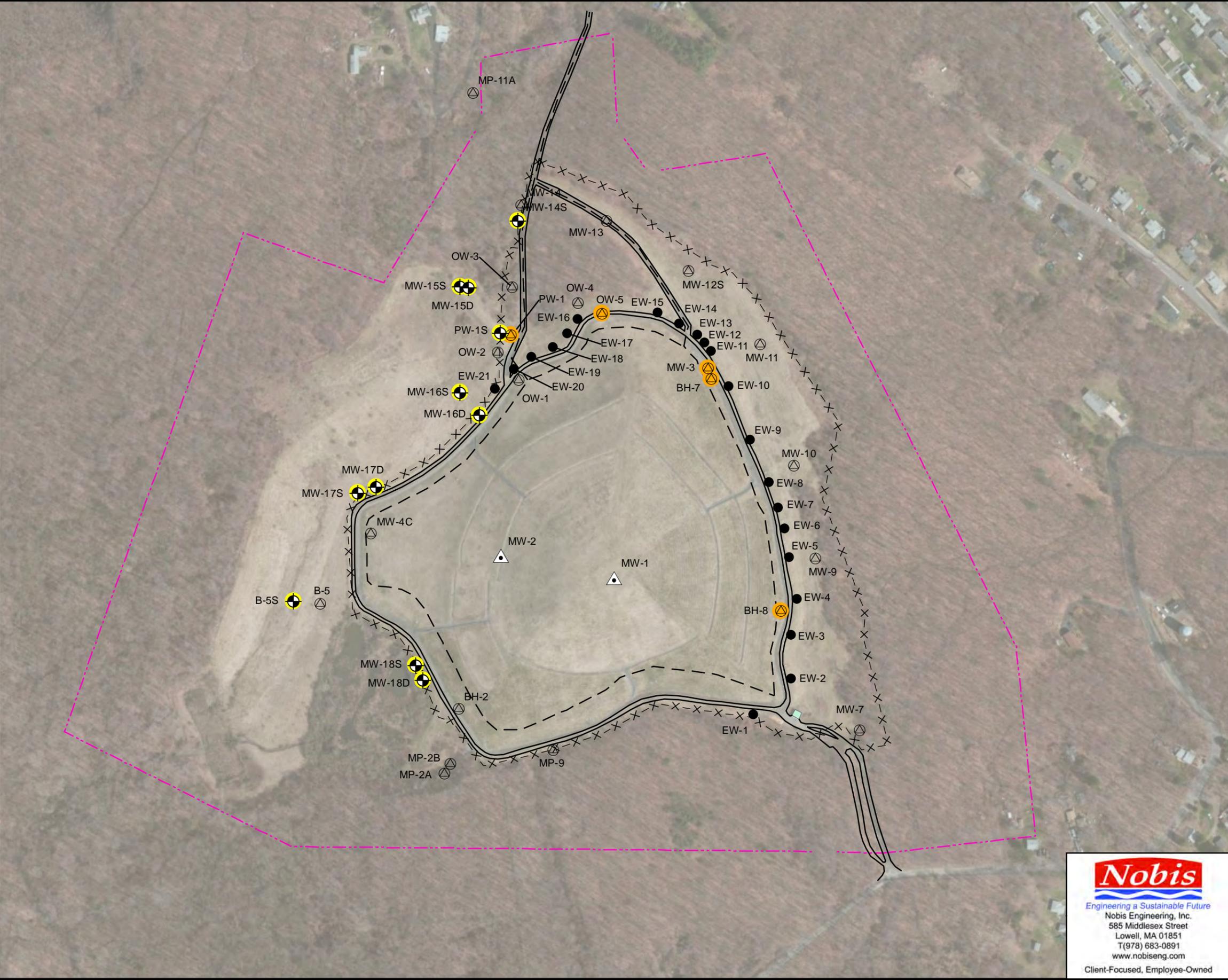


  
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**FIGURE 1**  
 SITE LOCUS  
 LAUREL PARK LANDFILL  
 HUNTERS MOUNTAIN ROAD  
 NAUGATUCK, CONNECTICUT

PREPARED BY: JH PROJECT NO. 80087	CHECKED BY: LC DATE: JUNE 2013
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Path: R:\8000\Task Orders\80087\Laurel Park\FYR\Technical Data\GIS\Figures\Fig\_2\_Laurel\_Park\_Site\_Plan.mxd Date Printed: 6/26/2013

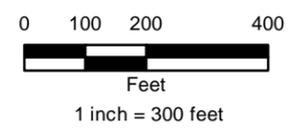


**Notes:**

1. This site plan was developed from the 2011 Annual Monitoring Report, Figure 3 by Arcadis, dated May 15, 2012.
2. Location of all features is approximate. Map is for reference purposes only. Nobis Engineering, Inc. makes no claims, warranties, representations, expressed or implied, relating to the completeness, accuracy, or reliability of the data shown.

**Legend**

- Landfill Well
- Bedrock Monitoring Well
- Overburden Monitoring Well
- Extraction Well
- New Monitoring Well
- Point of Compliance Well
- Access Road
- Fence
- Property Line
- Leachate Collection System
- Equipment & Storage Building



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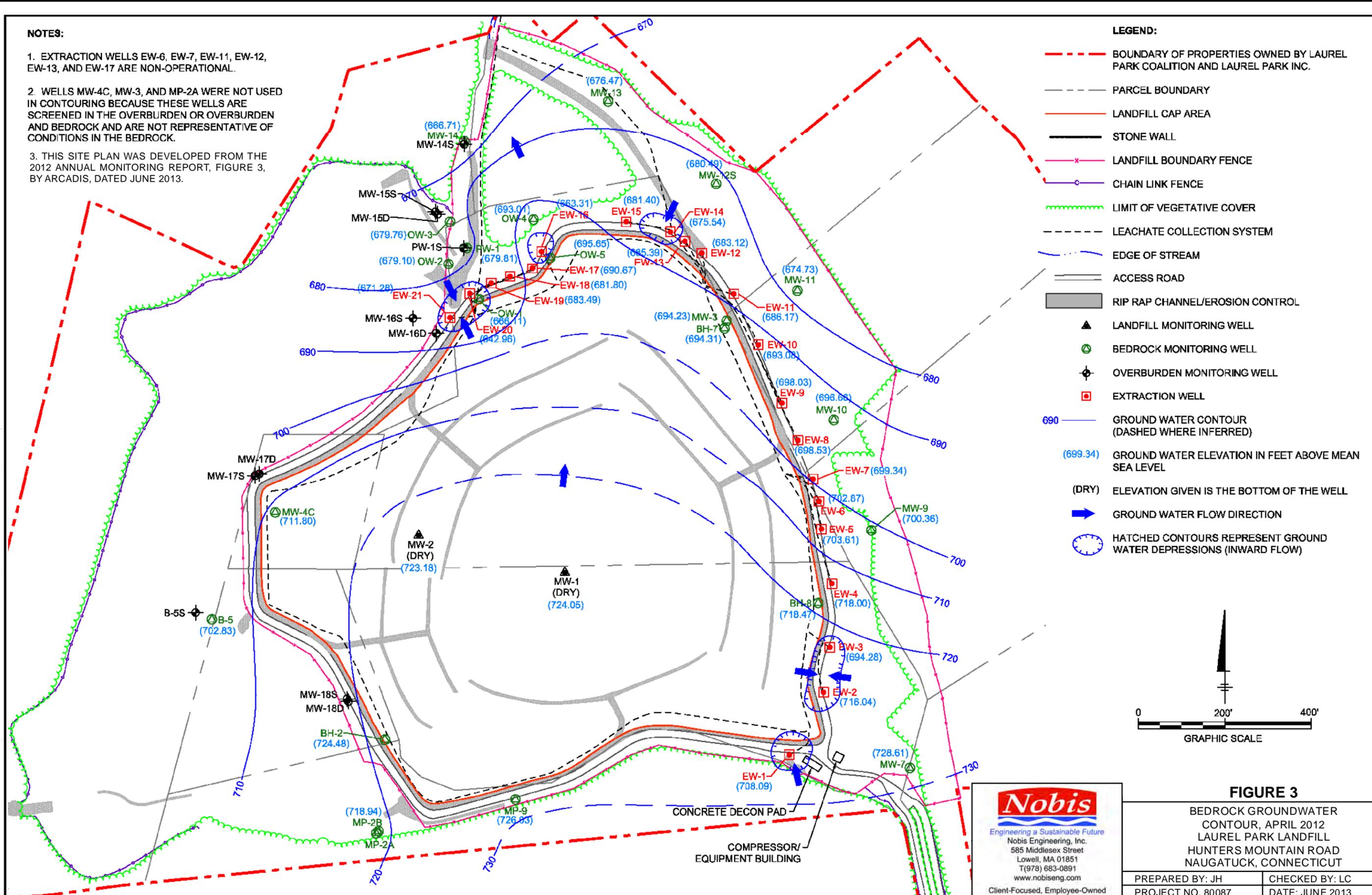
<b>FIGURE 2</b>	
<b>SITE PLAN</b>	
<b>LAUREL PARK LANDFILL</b>	
<b>HUNTERS MOUNTAIN ROAD</b>	
<b>NAUGATUCK, CONNECTICUT</b>	
PREPARED BY: JH	CHECKED BY: LC
PROJECT NO. 80087	DATE: JUNE 2013

**NOTES:**

1. EXTRACTION WELLS EW-6, EW-7, EW-11, EW-12, EW-13, AND EW-17 ARE NON-OPERATIONAL.
2. WELLS MW-4C, MW-3, AND MP-2A WERE NOT USED IN CONTOURING BECAUSE THESE WELLS ARE SCREENED IN THE OVERBURDEN OR OVERBURDEN AND BEDROCK AND ARE NOT REPRESENTATIVE OF CONDITIONS IN THE BEDROCK.
3. THIS SITE PLAN WAS DEVELOPED FROM THE 2012 ANNUAL MONITORING REPORT, FIGURE 3, BY ARCADIS, DATED JUNE 2013.

**LEGEND:**

- - - BOUNDARY OF PROPERTIES OWNED BY LAUREL PARK COALITION AND LAUREL PARK INC.
- - - PARCEL BOUNDARY
- LANDFILL CAP AREA
- STONE WALL
- x — LANDFILL BOUNDARY FENCE
- o — CHAIN LINK FENCE
- - - LIMIT OF VEGETATIVE COVER
- - - LEACHATE COLLECTION SYSTEM
- - - EDGE OF STREAM
- ACCESS ROAD
- RIP RAP CHANNEL/EROSION CONTROL
- ▲ LANDFILL MONITORING WELL
- BEDROCK MONITORING WELL
- ⊕ OVERBURDEN MONITORING WELL
- EXTRACTION WELL
- GROUND WATER CONTOUR (DASHED WHERE INFERRED)
- (699.34) GROUND WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- (DRY) ELEVATION GIVEN IS THE BOTTOM OF THE WELL
- ➔ GROUND WATER FLOW DIRECTION
- HATCHED CONTOURS REPRESENT GROUND WATER DEPRESSIONS (INWARD FLOW)



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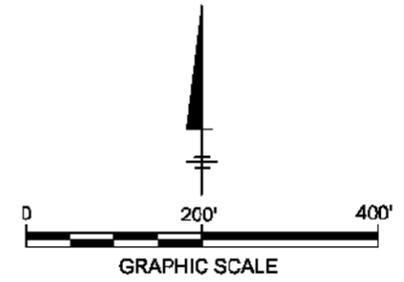
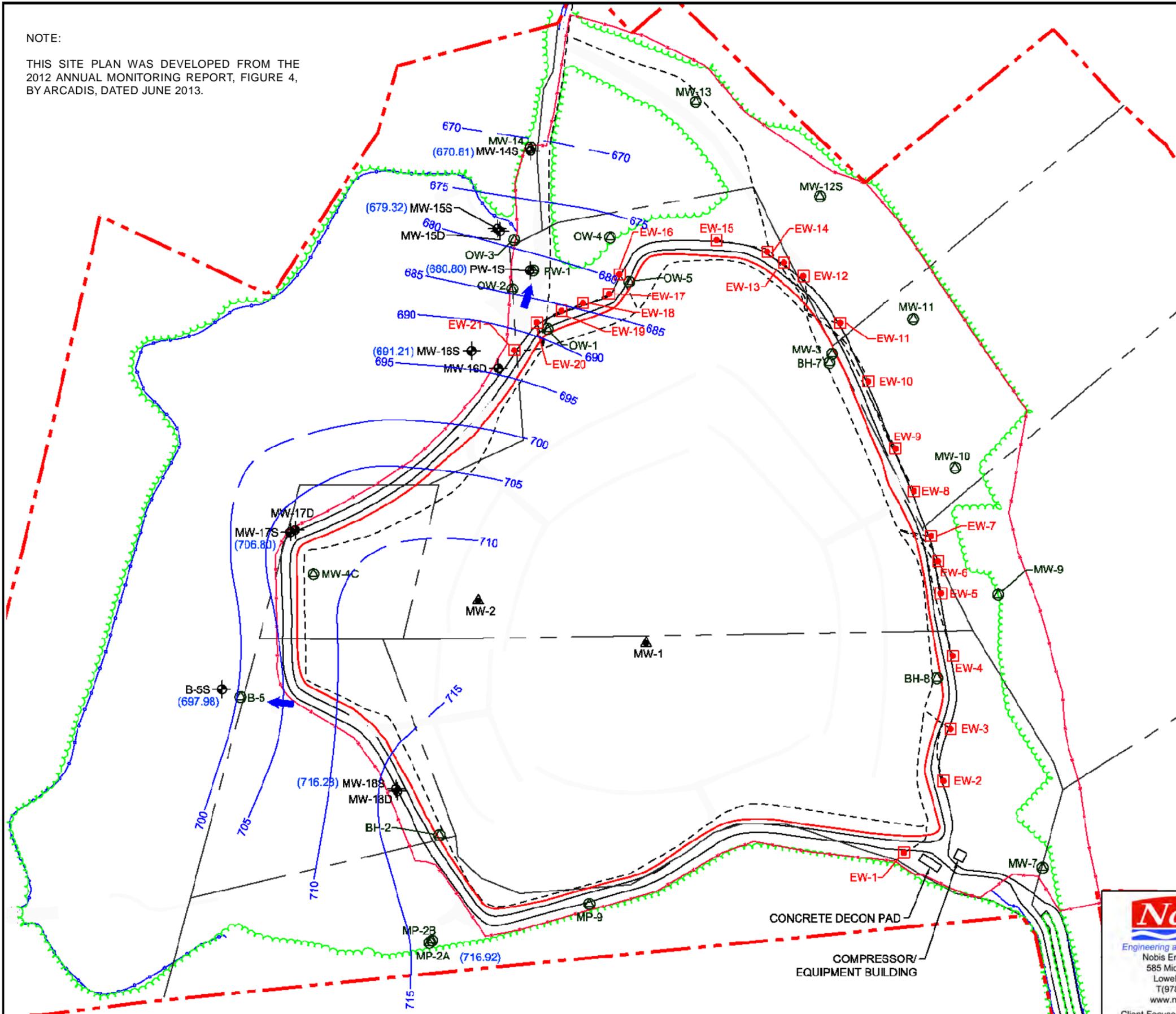
<b>FIGURE 3</b>	
BEDROCK GROUNDWATER CONTOUR, APRIL 2012 LAUREL PARK LANDFILL HUNTERS MOUNTAIN ROAD NAUGATUCK, CONNECTICUT	
PREPARED BY: JH	CHECKED BY: LC
PROJECT NO. 80087	DATE: JUNE 2013

NOTE:

THIS SITE PLAN WAS DEVELOPED FROM THE 2012 ANNUAL MONITORING REPORT, FIGURE 4, BY ARCADIS, DATED JUNE 2013.

LEGEND:

- - - - BOUNDARY OF PROPERTIES OWNED BY LAUREL PARK COALITION AND LAUREL PARK INC.
- - - - PARCEL BOUNDARY
- LANDFILL CAP AREA
- STONE WALL
- x-x- LANDFILL BOUNDARY FENCE
- o-o- CHAIN LINK FENCE
- ~ LIMIT OF VEGETATIVE COVER
- - - - LEACHATE COLLECTION SYSTEM
- - - - EDGE OF STREAM
- ACCESS ROAD
- RIP RAP CHANNEL/EROSION CONTROL
- ▲ LANDFILL MONITORING WELL
- ⊙ BEDROCK MONITORING WELL
- ⊕ OVERBURDEN MONITORING WELL
- EXTRACTION WELL
- 700 GROUND WATER CONTOUR (DASHED WHERE INFERRED)
- (680.80) GROUND WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- ➔ GROUND WATER FLOW DIRECTION



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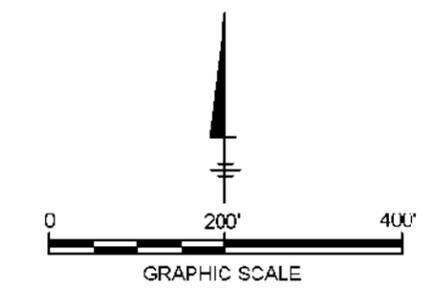
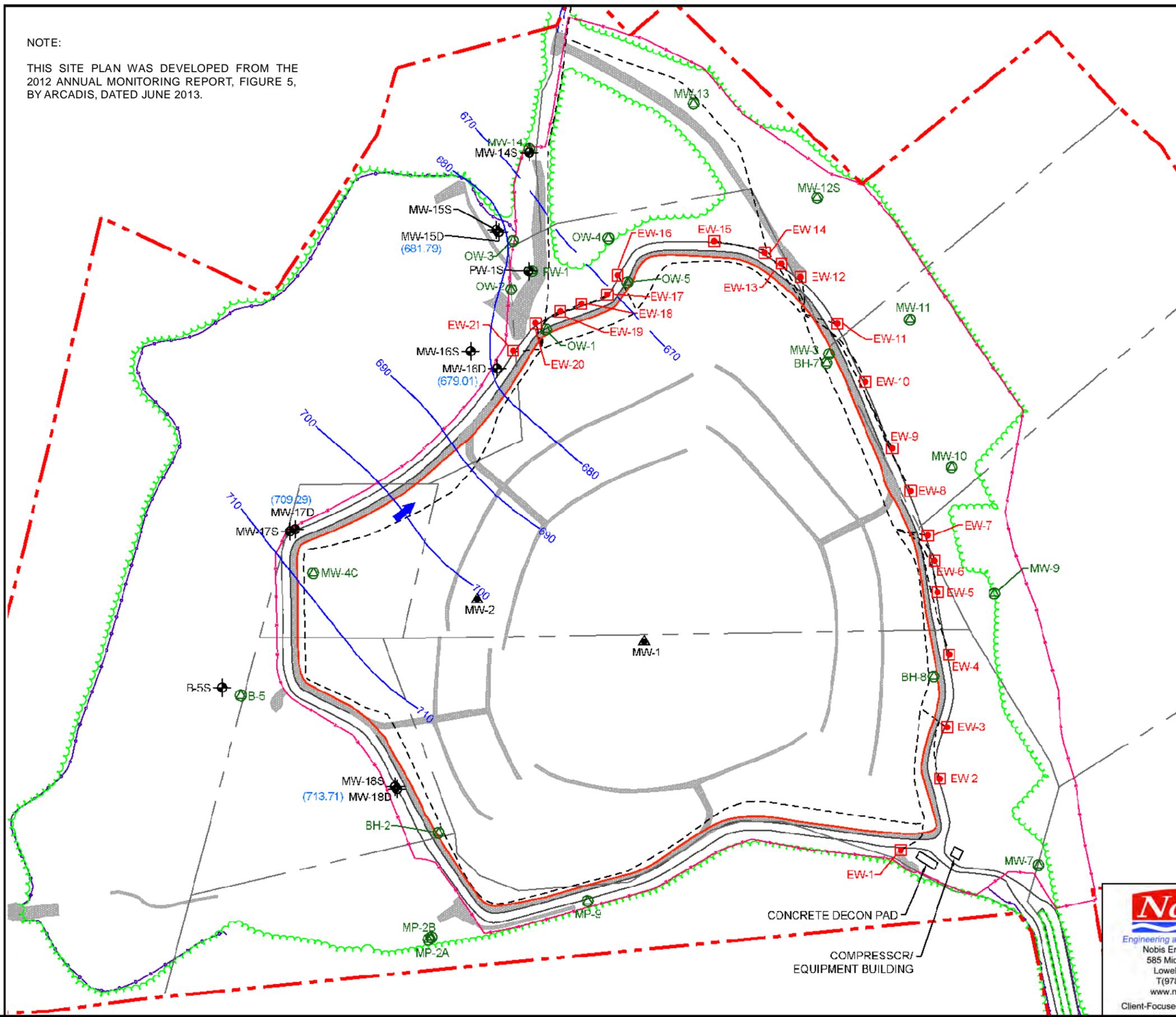
**FIGURE 4**  
 SHALLOW OVERBURDEN GROUNDWATER CONTOUR, APRIL 2012  
 LAUREL PARK LANDFILL  
 HUNTERS MOUNTAIN ROAD  
 NAUGATUCK, CONNECTICUT

PREPARED BY: JH	CHECKED BY: LC
PROJECT NO. 80087	DATE: JUNE 2013

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NOTE:  
 THIS SITE PLAN WAS DEVELOPED FROM THE  
 2012 ANNUAL MONITORING REPORT, FIGURE 5,  
 BY ARCADIS, DATED JUNE 2013.

- LEGEND:**
- - - BOUNDARY OF PROPERTIES OWNED BY LAUREL PARK COALITION AND LAUREL PARK INC.
  - - - PARCEL BOUNDARY
  - LANDFILL CAP AREA
  - STONE WALL
  - x - LANDFILL BOUNDARY FENCE
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  - ~ ~ ~ LIMIT OF VEGETATIVE COVER
  - - - LEACHATE COLLECTION SYSTEM
  - - - EDGE OF STREAM
  - ACCESS ROAD
  - RIP RAP CHANNEL/EROSION CONTROL
  - ▲ LANDFILL MONITORING WELL
  - BEDROCK MONITORING WELL
  - ⊕ OVERBURDEN MONITORING WELL
  - EXTRACTION WELL
  - 700 GROUND WATER CONTOUR (DASHED WHERE INFERRED)
  - (680 80) GROUND WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
  - ➔ GROUND WATER FLOW DIRECTION



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**FIGURE 5**  
 DEEP OVERBURDEN GROUNDWATER  
 CONTOUR, APRIL 2012  
 LAUREL PARK LANDFILL  
 HUNTERS MOUNTAIN ROAD  
 NAUGATUCK, CONNECTICUT

PREPARED BY: JH	CHECKED BY: LC
PROJECT NO. 80087	DATE: JUNE 2013

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MW-14S				
Date	2009	2010	2011	2012
Zinc		●		

MW-15D				
Date	2009	2010	2011	2012
Benzene	●●	●	●	●
1,2-DCA	●			
Chromium(Total)				●

MW-17D				
Date	2009	2010	2011	2012
Arsenic				●
Chromium(Total)				●●

MW-17S				
Date	2009	2010	2011	2012
Arsenic		●		

B-5S				
Date	2009	2010	2011	2012
Arsenic			●	
Zinc			●	

MW-18D				
Date	2009	2010	2011	2012
Arsenic		●	●	●

**Notes:**

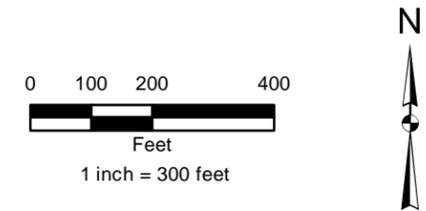
1. This site plan was developed from the 2011 Annual Monitoring Report, Figure 3 by Arcadis, dated May 15, 2012.
2. All wells were sampled except MP-11A, MW-1 and MW-2.
3. Exceedances are based on the maximum concentration detected of the three triannual sampling events. The screening criteria are indicated below.
4. Location of site features depicted hereon is approximate and given for illustrative purposes only.

**Legend**

- △ Landfill Well
- ⊖ Bedrock Monitoring Well
- ⊕ Overburden Monitoring Well
- Extraction Well
- New Monitoring Well
- Point of Compliance Well
- Access Road
- X-X Fence
- Property Line
- - - Leachate Collection System
- Equipment & Storage Building

**Exceedances**

- GA Groundwater Protection Criteria
- Surface Water Protection Criteria
- Residential Volatization Criteria
- onal Drinking Water Standard Exceedances
- USEPA Maximum Contaminant Level



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**FIGURE 7**  
**OVERBURDEN GROUNDWATER RESULTS**  
**LAUREL PARK LANDFILL**  
**HUNTERS MOUNTAIN ROAD**  
**NAUGATUCK, CONNECTICUT**

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**APPENDIX B**  
**DOCUMENT REVIEW LIST/REFERENCES**

## DOCUMENTS REVIEWED/REFERENCES CITED

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**APPENDIX C**

**SITE INSPECTION CHECKLIST AND INTERVIEWS**

## Site Inspection Checklist

I. SITE INFORMATION													
<b>Site name:</b> Laurel Park Landfill Superfund Site	<b>Date of inspection:</b> 5/15/2013												
<b>Location and Region:</b> Borough of Naugatuck, CT – Region 1	<b>EPA ID:</b> CTD980521165												
<b>Agency, office, or company leading the five-year review:</b> EPA	<b>Weather/temperature:</b> N/A												
<b>Remedy Includes:</b> (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td><input checked="" type="checkbox"/> Landfill cover/containment</td> <td><input type="checkbox"/> Monitored natural attenuation</td> </tr> <tr> <td><input checked="" type="checkbox"/> Access controls</td> <td><input checked="" type="checkbox"/> Groundwater containment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td><input type="checkbox"/> Vertical barrier walls</td> </tr> <tr> <td><input checked="" type="checkbox"/> Groundwater pump and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Surface water collection and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Other _____</td> <td></td> </tr> </table>		<input checked="" type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation	<input checked="" type="checkbox"/> Access controls	<input checked="" type="checkbox"/> Groundwater containment	<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls	<input checked="" type="checkbox"/> Groundwater pump and treatment		<input type="checkbox"/> Surface water collection and treatment		<input type="checkbox"/> Other _____	
<input checked="" type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation												
<input checked="" type="checkbox"/> Access controls	<input checked="" type="checkbox"/> Groundwater containment												
<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls												
<input checked="" type="checkbox"/> Groundwater pump and treatment													
<input type="checkbox"/> Surface water collection and treatment													
<input type="checkbox"/> Other _____													
<b>Attachments:</b> <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached													
II. INTERVIEWS (Check all that apply)													
1. <b>O&amp;M site manager</b> <u>Paul Meyer</u> <u>Authorized Representative of Laurel Park Coalition</u> <u>6/1/2013</u> <div style="display: flex; justify-content: space-between; margin-left: 100px;"> <span>Name</span> <span>Title</span> <span>Date</span> </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input checked="" type="checkbox"/> by phone    Phone no. <u>(203) 573-3545</u> Problems, suggestions; <input checked="" type="checkbox"/> Report attached													
2. <b>O&amp;M staff</b> _____                      _____                      _____ <div style="display: flex; justify-content: space-between; margin-left: 100px;"> <span>Name</span> <span>Title</span> <span>Date</span> </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____													

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency Borough of Naugatuck, CT  
Contact Jim Stewart Director of Public Works 6/23/2013 (203) 720-7071  
Name Title Date Phone no.  
Problems; suggestions;  Report attached

Agency \_\_\_\_\_  
Contact \_\_\_\_\_  
Name Title Date Phone no.  
Problems; suggestions;  Report attached \_\_\_\_\_

Agency \_\_\_\_\_  
Contact \_\_\_\_\_  
Name Title Date Phone no.  
Problems; suggestions;  Report attached \_\_\_\_\_

Agency \_\_\_\_\_  
Contact \_\_\_\_\_  
Name Title Date Phone no.  
Problems; suggestions;  Report attached \_\_\_\_\_

4. **Other interviews** (optional)  Report attached.


<b>III. ON-SITE DOCUMENTS &amp; RECORDS VERIFIED</b> (Check all that apply)			
1.	<b>O&amp;M Documents</b> <input type="checkbox"/> O&M manual <input type="checkbox"/> As-built drawings <input type="checkbox"/> Maintenance logs Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
2.	<b>Site-Specific Health and Safety Plan</b> <input type="checkbox"/> Contingency plan/emergency response plan Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
3.	<b>O&amp;M and OSHA Training Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
4.	<b>Permits and Service Agreements</b> <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits _____ Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
5.	<b>Gas Generation Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
6.	<b>Settlement Monument Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
7.	<b>Groundwater Monitoring Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
8.	<b>Leachate Extraction Records</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
9.	<b>Discharge Compliance Records</b> <input checked="" type="checkbox"/> Air <input checked="" type="checkbox"/> Water (effluent) Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
10.	<b>Daily Access/Security Logs</b> Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A



<b>C. Institutional Controls (ICs)</b>			
1.	<b>Implementation and enforcement</b> Site conditions imply ICs not properly implemented <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Site conditions imply ICs not being fully enforced <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A  Type of monitoring ( <i>e.g.</i> , self-reporting, drive by) _____ Frequency _____ Responsible party/agency _____ Contact _____ <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span>Name</span> <span>Title</span> <span>Date</span> <span>Phone no.</span> </div> Reporting is up-to-date <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Reports are verified by the lead agency <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A  Specific requirements in deed or decision documents have been met <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Violations have been reported <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Other problems or suggestions: <input type="checkbox"/> Report attached <u>Institutional controls for the Site are included in the Record of Decision (ROD). Institutional controls at the Site have not yet been implemented.</u> _____ _____		
2.	<b>Adequacy</b> <input type="checkbox"/> ICs are adequate <input type="checkbox"/> ICs are inadequate <input checked="" type="checkbox"/> N/A Remarks _____ _____ _____		
<b>D. General</b>			
1.	<b>Vandalism/trespassing</b> <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No vandalism evident Remarks _____ _____		
2.	<b>Land use changes on site</b> <input checked="" type="checkbox"/> N/A Remarks _____ _____		
3.	<b>Land use changes off site</b> <input type="checkbox"/> N/A Remarks <u>There is currently no development adjacent to the Site.</u> _____		
<b>VI. GENERAL SITE CONDITIONS</b>			
<b>A. Roads</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	<b>Roads damaged</b> <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A Remarks _____ _____		

<b>B. Other Site Conditions</b>			
Remarks _____ _____ _____ _____ _____			
<b>VII. LANDFILL COVERS</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
<b>A. Landfill Surface</b>			
1.	<b>Settlement</b> (Low spots) Areal extent _____ Remarks <u>No settlement was evident.</u>	<input type="checkbox"/> Location shown on site map Depth _____	<input checked="" type="checkbox"/> Settlement not evident
2.	<b>Cracks</b> Lengths _____    Widths _____    Depths _____ Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Cracking not evident
3.	<b>Erosion</b> Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map Depth _____	<input checked="" type="checkbox"/> Erosion not evident
4.	<b>Holes</b> Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map Depth _____	<input checked="" type="checkbox"/> Holes not evident
5.	<b>Vegetative Cover</b> <input type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram)	<input checked="" type="checkbox"/> Grass <input checked="" type="checkbox"/> Cover properly established	<input checked="" type="checkbox"/> No signs of stress
6.	<b>Alternative Cover (armored rock, concrete, etc.)</b> <input checked="" type="checkbox"/> N/A Remarks _____		
7.	<b>Bulges</b> Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map Height _____	<input checked="" type="checkbox"/> Bulges not evident

8.	<b>Wet Areas/Water Damage</b> <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks _____	<input checked="" type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map	Areal extent _____ Areal extent _____ Areal extent _____ Areal extent _____
9.	<b>Slope Instability</b> Areal extent _____ Remarks _____	<input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of slope instability
<b>B. Benches</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1.	<b>Flows Bypass Bench</b> Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A or okay
2.	<b>Bench Breached</b> Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A or okay
3.	<b>Bench Overtopped</b> Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A or okay
<b>C. Letdown Channels</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	<b>Settlement</b> Areal extent _____      Depth _____ Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of settlement
2.	<b>Material Degradation</b> Material type _____      Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of degradation
3.	<b>Erosion</b> Areal extent _____      Depth _____ Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of erosion

4.	<b>Undercutting</b>	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of undercutting
	Areal extent _____	Depth _____	
	Remarks _____		
5.	<b>Obstructions</b>	Type _____	
	<input checked="" type="checkbox"/> No obstructions		
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Size _____		
	Remarks _____		
6.	<b>Excessive Vegetative Growth</b>	Type _____	
	<input type="checkbox"/> No evidence of excessive growth		
	<input type="checkbox"/> Vegetation in channels does not obstruct flow		
	<input type="checkbox"/> Location shown on site map	Areal extent _____	
	Remarks: <u>There is excess vegetative growth around gas venting system. This area needs bush removal. There is also vegetative growth identified near the fence, which may need clearing in the future.</u>		
<b>D. Cover Penetrations</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	<b>Gas Vents</b>	<input type="checkbox"/> Active <input checked="" type="checkbox"/> Passive	
	<input checked="" type="checkbox"/> Properly secured/locked	<input checked="" type="checkbox"/> Functioning	<input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input checked="" type="checkbox"/> Needs Maintenance	
	<input type="checkbox"/> N/A		
	Remarks: <u>Brush removal suggested around gas vents.</u>		
2.	<b>Gas Monitoring Probes</b>	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Needs Maintenance	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Evidence of leakage at penetration		
	Remarks _____		
3.	<b>Monitoring Wells</b> (within surface area of landfill)	<input checked="" type="checkbox"/> Functioning	<input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition
	<input checked="" type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> N/A
	<input type="checkbox"/> Evidence of leakage at penetration		
	Remarks _____		
4.	<b>Leachate Extraction Wells</b>	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition
	<input checked="" type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> N/A
	<input type="checkbox"/> Evidence of leakage at penetration		
	Remarks _____		
5.	<b>Settlement Monuments</b>	<input checked="" type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed <input type="checkbox"/> N/A
	Remarks _____		

<b>E. Gas Collection and Treatment</b>			<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	<b>Gas Treatment Facilities</b> <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____			
2.	<b>Gas Collection Wells, Manifolds and Piping</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____			
3.	<b>Gas Monitoring Facilities</b> ( <i>e.g.</i> , gas monitoring of adjacent homes or buildings) <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____ _____			
<b>F. Cover Drainage Layer</b>			<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	<b>Outlet Pipes Inspected</b> Remarks _____ _____	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> N/A	
2.	<b>Outlet Rock Inspected</b> Remarks _____ _____	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> N/A	
<b>G. Detention/Sedimentation Ponds</b>			<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	<b>Siltation</b> Areal extent _____      Depth _____ <input type="checkbox"/> Siltation not evident Remarks _____ _____			<input checked="" type="checkbox"/> N/A
2.	<b>Erosion</b> Areal extent _____      Depth _____ <input type="checkbox"/> Erosion not evident Remarks _____ _____			
3.	<b>Outlet Works</b> Remarks _____ _____	<input type="checkbox"/> Functioning	<input checked="" type="checkbox"/> N/A	
4.	<b>Dam</b> Remarks _____ _____	<input type="checkbox"/> Functioning	<input checked="" type="checkbox"/> N/A	

<b>H. Retaining Walls</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	<b>Deformations</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Deformation not evident Horizontal displacement _____      Vertical displacement _____ Rotational displacement _____ Remarks _____ _____	
2.	<b>Degradation</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Degradation not evident Remarks _____ _____	
<b>I. Perimeter Ditches/Off-Site Discharge</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1.	<b>Siltation</b> <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Siltation not evident Areal extent _____      Depth _____ Remarks _____ _____	
2.	<b>Vegetative Growth</b> <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Vegetation does not impede flow Areal extent _____      Type _____ Remarks _____ _____	
3.	<b>Erosion</b> <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Erosion not evident Areal extent _____      Depth _____ Remarks _____ _____	
4.	<b>Discharge Structure</b> <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____ _____	
<b>VIII. VERTICAL BARRIER WALLS</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	<b>Settlement</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Settlement not evident Areal extent _____      Depth _____ Remarks _____ _____	
2.	<b>Performance Monitoring</b> Type of monitoring _____ <input type="checkbox"/> Performance not monitored Frequency _____ <input type="checkbox"/> Evidence of breaching Head differential _____ Remarks _____ _____	

<b>C. Treatment System</b>		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	<b>Treatment Train</b> (Check components that apply) <input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters _____ <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) _____ <input type="checkbox"/> Others _____ <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ Remarks _____ _____		
2.	<b>Electrical Enclosures and Panels</b> (properly rated and functional) <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____		
3.	<b>Tanks, Vaults, Storage Vessels</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____ _____		
4.	<b>Discharge Structure and Appurtenances</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____		
5.	<b>Treatment Building(s)</b> <input type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks _____ _____		
6.	<b>Monitoring Wells</b> (pump and treatment remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____		
<b>D. Monitoring Data</b>			
1.	Monitoring Data <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality		
2.	Monitoring data suggests: <input type="checkbox"/> Groundwater plume is effectively contained <input checked="" type="checkbox"/> Contaminant concentrations are declining Remarks _____ _____		

<b>D. Monitored Natural Attenuation</b>			
1.	<b>Monitoring Wells</b> (natural attenuation remedy)	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning
		<input type="checkbox"/> All required wells located	<input type="checkbox"/> Needs Maintenance
	Remarks _____	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
			<input checked="" type="checkbox"/> N/A
<b>X. OTHER REMEDIES</b>			
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.			
<b>XI. OVERALL OBSERVATIONS</b>			
<b>A. Implementation of the Remedy</b>			
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).			
<u>The remedy is designed to prevent or minimize further release of contaminants in groundwater, surface water, sediments, soil and air. The landfill cover system, leachate collection system, and groundwater extraction system are all in good condition and functioning as designed, therefore accomplished the goal of the remedy.</u>			
_____			
_____			
_____			
_____			
_____			
<b>B. Adequacy of O&amp;M</b>			
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.			
No issues.			
_____			
_____			
_____			
_____			
_____			
_____			
_____			
_____			

<b>C. Early Indicators of Potential Remedy Problems</b>
Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. <u>None.</u> _____ _____ _____
<b>D. Opportunities for Optimization</b>
Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. <u>None.</u> _____ _____ _____ _____ _____ _____ _____ _____ _____

## INTERVIEW RECORD

<b>Site Name:</b> Laurel Park Landfill Superfund Site		<b>EPA ID No.:</b> CTD07122062	
<b>Subject:</b> Fourth Five-Year Review (2013)		<b>Time:</b> 0900	<b>Date:</b> 6/12/2013
<b>Type:</b> <input checked="" type="checkbox"/> Telephone <input type="checkbox"/> Visit <input type="checkbox"/> Other <b>Location of Visit:</b>		<input type="checkbox"/> Incoming <input checked="" type="checkbox"/> Outgoing	
<b>Contact Made By:</b>			
<b>Name:</b> Michelle Carbonneau		<b>Title:</b> Staff Engineer	<b>Organization:</b> Nobis Eng., Inc.
<b>Individual Contacted:</b>			
<b>Name:</b> Jim Stewart		<b>Title:</b> Director of Public Works	<b>Organization:</b> Borough of Naugatuck, CT
<b>Telephone No:</b> (203) 720-7071		<b>Street Address:</b> 246 Ruber Ave.	
<b>Fax No:</b>		<b>City, State, Zip:</b> Borough of Naugatuck, CT 06770	
<b>E-Mail Address:</b> <a href="mailto:jstewart@naugatuck-ct.gov">jstewart@naugatuck-ct.gov</a>			
<b>Summary Of Conversation</b>			
<p>Q1: What is your overall impression of the project and site?            A1: Fairly positive. There have been no problems identified at the Site. Reports have been submitted on a fairly frequent basis.</p> <p>Q2: Are you aware of any issues the five-year review should focus on?            A2: There are no major issues or complaints at the Site. There have been significant rain storms over the past few years. Perhaps assessing the drainage systems and/or if any other damage has occurred due to these storms would be effective. There was a residential subdivision that was proposed subdivision proposal, which never started. Unsure if/when construction will continue. The residential developer's option to purchase the property had expired.</p> <p>Q3: Whom should Nobis Engineering, Inc. speak to in the community to solicit local input?            A3: Mary Lou Sharon. Mary Lou Sharon is a resident of the Town who originally got people aware of the Laurel Park Landfill.</p> <p>Q4: Is the remedy functioning as expected?            A4: Yes.</p> <p>Q5: Has there been any significant changes in the O&amp;M activities or a chance to optimize the O&amp;M?            A5: Not certain if there have been any significant changes in the O&amp;M activities.</p> <p>Q6: Is the Town actively involved in the site?            A6: No, the Town is not actively involved.</p> <p>Q7: Do you feel that information related to the site is readily available?            A7: Not sure if the information was readily available. If community members need the information, it is always readily available by talking to the Public Works Office.</p> <p>Q8: Have there been any changes in the site or surrounding property in the last 5 years, or are changes planned?</p>			

A8: The proposed residential subdivision, abutting the Site, had stopped making progress. Additionally, the Town purchased approximately 144 acres of land, a portion of which abuts the Site. The DEP granted the Town an open space grant and hopes to use this land for the construction of ball fields.

Q9: Are you aware of any changes in the state ARARs, groundwater quality standards, etc., since 2003?

A9: Unaware of any changes in the regulations.

Q10: Are you aware of any pending or future water needs or any change in water usage in the area?

A10: Yes. The proposed residential subdivision lot had multiple discussions concerning where their water was coming from (public water supply or private wells). The subdivision was also presumed to have pumping stations and tanks. Additionally, if ball fields are created on the abutting property, irrigation issues may arise.

Q11: Anything else?

A11: There is a local spring, in the area which residents use to fill their water jugs up with. Unsure where the exact location of the spring is.

## INTERVIEW RECORD

<b>Site Name:</b> Laurel Park Landfill Superfund Site		<b>EPA ID No.:</b> CTD07122062	
<b>Subject:</b> Fourth Five-Year Review (2013)		<b>Time:</b> 0800	<b>Date:</b> 6/11/2013
<b>Type:</b> <input checked="" type="checkbox"/> Telephone <input type="checkbox"/> Visit <input type="checkbox"/> Other		<input type="checkbox"/> Incoming <input checked="" type="checkbox"/> Outgoing	
<b>Location of Visit:</b>			
<b>Contact Made By:</b>			
<b>Name:</b> Michelle Carbonneau		<b>Title:</b> Staff Engineer	<b>Organization:</b> Nobis Eng., Inc.
<b>Individual Contacted:</b>			
<b>Name:</b> Paul Meyer		<b>Title:</b> Authorized Representative of Laurel Park Coalition	<b>Organization:</b> Laurel Park Coalition
<b>Telephone No:</b> (203) 573-3545		<b>Street Address:</b>	
<b>Fax No:</b> (203) 573-3362		<b>City, State, Zip:</b>	
<b>E-Mail Address:</b> <a href="mailto:paul.meyer@chemtura.com">paul.meyer@chemtura.com</a>			
<b>Summary Of Conversation</b>			
<p>Q1: What is your overall impression of the project and site? A1: The Site has a mature remedy. The Site is stable since the remedy has been implemented. There have been no significant year to year changes. Nothing has occurred that has changed the effectiveness of the landfill. Monthly site inspections are being performed. All aspects of the landfill are being handled in a very professional way.</p> <p>Q2: Are you aware of any issues the five-year review should focus on? A2: There are no issues that the five-year review should focus on. There has been very little dewatering of waste material in the landfill. Additionally, there has been effective capture of leachate and containment of the plume. All goals of the remedy are being met.</p> <p>The residential development, abutting the Site, has temporarily been put on hold. The project was located upgradient to the Site. The developer also agreed to create a buffer zone between the development and the landfill. Passive foundation soil gas vent systems were also going to be installed. These passive vent systems were of no scientific basis, but only to be aesthetically pleasing for potential buyers. The developer also was to use the public water. In CT, it is law that parcels must use public water if it is available. The public water was made available by LPC.</p> <p>During the potable well survey, two wells, which were assumed to be connected to private wells systems, are currently connected to the public water supply. However, there is still one property that has an active private well.</p> <p>LPC contacts these residential parcels one to two times every 5 years to ask whether they would like to be connected to the public water supply. LPC has offered to pay for the hook up of the public water supply, but all monthly water bill charges are the responsibility of the parcel owner.</p> <p>Q3: Whom should Nobis Engineering, Inc. speak to in the community to solicit local input? A3: The mayor of the Borough of Naugatuck and the Borough Engineer should be contacted.</p> <p>Q4: Is the remedy functioning as expected?</p>			

A4: Yes, the remedy is functioning as expected.

Q5: Has there been any significant changes in the O&M activities or a chance to optimize the O&M?

A5: There are no opportunities to optimize. The only potential form of optimization could be to minimize electricity use. A new compressor was installed, that was more efficient. The Site does not have many moving parts, and is not a complex system; therefore there is not much room for optimization.

A significant maintenance issue is the iron buildup.

Currently LPC is performing an internal study to optimize the Field Sampling Plan; however this plan is not yet mature. It is being used to determine if the Field Sampling Plan can be optimized. This internal study is outside the scope of the Field Sampling Plan. If anything was to deviate from the Field Sampling Plan, EPA would be notified. The current monitoring reporting is in compliance with the Field Sampling Plan. No changes are made to the Field Sampling Plan without prior approval.

Additional information concerning the 11 new monitoring wells can be discussed with Chris McCormick.

Q6: Is the Town actively involved in the site?

A6: The Town is not actively involved.

Q7: Do you feel that information related to the site is readily available?

A7: Yes, the Borough Library houses the reports. Contact information has changed very little in the past few years.

Q8: Have there been any changes in the site or surrounding property in the last 5 years, or are changes planned?

A8: No changes were made that he is aware of.

Q9: Are you aware of any changes in the state ARARs, groundwater quality standards, etc., since 2003?

A9: No regulations that would have any effect on the Site are being changed.

Q10: Are you aware of any pending or future water needs or any change in water usage in the area?

A10: No, there are no pending or future water needs or any changes in water usage in the area.

Q11: Anything Else.

The remedy is stable, maintained, and effective. It has reduced the leachate and captured the plume.

No groundwater extraction or monitoring wells have been redeveloped or abandoned.

There are currently 12 or 13 abutting parcels to the Laurel Park Superfund Site. Of these parcels, only 2 are owned by the LPC (Laurel Park Coalition). These parcels have executed deed restrictions. These parcels are currently unoccupied. One parcel was purchased to house the excavation material during the remedial construction phase. The second parcel was purchased to act as a buffer zone. The remaining parcels are currently owned by Harold Murtha. These parcels are currently unoccupied. There is, however, an abandoned house on one of Mr. Murtha's parcels, which has been abandoned pre-dating the installation of the remedy.

## INTERVIEW RECORD

<b>Site Name:</b> Laurel Park Landfill Superfund Site		<b>EPA ID No.:</b> CTD07122062	
<b>Subject:</b> Fourth Five-Year Review (2013)		<b>Time:</b> 1100	<b>Date:</b> 8/13/2013
<b>Type:</b> <input checked="" type="checkbox"/> Telephone <input type="checkbox"/> Visit <input type="checkbox"/> Other		<input type="checkbox"/> Incoming <input checked="" type="checkbox"/> Outgoing	
<b>Location of Visit:</b>			

### Contact Made By:

<b>Name:</b> Michelle Carbonneau	<b>Title:</b> Staff Engineer	<b>Organization:</b> Nobis Eng., Inc.
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### Individual Contacted:

<b>Name:</b> Sheila Gleason	<b>Title:</b> Environmental Analyst	<b>Organization:</b> CTDEEP
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<b>Telephone No:</b> (860) 424-3767	<b>Street Address:</b> 79 Elm Street <b>City, State, Zip:</b> Hartford, CT 06106
<b>Fax No:</b>	
<b>E-Mail Address:</b> Sheila.Gleason@ct.gov	

### Summary Of Conversation

- Q1: What is your overall impression of the project and site?  
A1: The Site is in its operation and maintenance phase.
- Q2: Are you aware of any issues the five-year review should focus on?  
A2: No issues.
- Q3: Whom should Nobis Engineering, Inc. speak to in the community to solicit local input?  
A3: Not aware of anyone in community to solicit local input.
- Q4: Is the remedy functioning as expected?  
A4: The remedy is believed to be functioning as expected.
- Q5: Has there been any significant changes in the O&M activities or a chance to optimize the O&M?  
A5: Not aware of any significant changes.
- Q6: Is the Town actively involved in the site?  
A6: The Town is not actively involved in the Site.
- Q7: Do you feel that information related to the site is readily available?  
A7: Yes, information is readily available.
- Q8: Have there been any changes in the site or surrounding property in the last 5 years, or are changes planned?  
A8: Unsure of the status of a large parcel abutting the Site, which was proposed for development.
- Q9: Are you aware of any changes in the state ARARs, groundwater quality standards, etc., since 2003?  
A9: Yes. There have been minor revisions to the RSRs, however these changes wouldn't affect the Site because the remedy is already in place.
- Q10: Are you aware of any pending or future water needs or any change in water usage in the area?

A10: No.

Q11: Anything else?

A11: No.