# Five-Year Review Report

# Third Five-Year Review Report
**for**
# Beacon Heights Landfill Superfund Site
# Beacon Falls, Connecticut

**September 2003**

## PREPARED BY:

**United States Environmental Protection Agency**
**Region 1**
**Boston, Massachusetts**

Approved by: Date:

Susan Studlien
Susan Studlien, Acting Director
Office of Site Remediation and Restoration

September 19, 2003

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# Beacon Falls, Connecticut

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# Five-Year Review Summary Form

| SITE IDENTIFICATION | | |
|---|---|---|
| **Site name:** Beacon Heights Landfill Superfund Site | | |
| **EPA ID:** CTD072122062 | | |
| **Region:** 1 | **State:** CT | **City/County:** Beacon Falls/ New Haven |

| SITE STATUS | | |
|---|---|---|
| **NPL Status:** **X** Final | Deleted | Other (specify) |
| **Remediation Status** (choose all that apply)**:** Under Construction | Operating | Complete **X** |
| **Multiple OUs?** Yes **X** No | | **Construction completion date:** 09/ 09 /1998 |
| **Has site been put into reuse?** Yes **X** No | | |

| REVIEW STATUS | |
|---|---|
| **Lead Agency:** **X** EPA State Tribe Other Federal Agency _____ | |
| **Author name:** William Lovely | |
| **Author title:** Remedial Project Manager | **Author affiliation:** U.S. Environmental Protection Agency |
| **Review Period:** 12 / 24 / 2002 to 9 / 22 / 2003 | |
| **Date(s) of inspection:** 06/ 05 / 2003 | |
| **Type of Review:** Post-SARA **X** Pre-SARA NPL-Removal Only<br>Non-NPL Remedial Action Site NPL State/Tribe-lead<br>Regional Discretion | |
| **Review number:** 1 (first) 2 (second) **X** 3 (third) Other (specify) _____ | |
| **Triggering Action:**<br>Actual RA Onsite Construction at OU #_____ Actual RA Start at OU#_____<br>Construction Completion **X** Previous Five-Year Review Report<br>Other (specify) Signing of ROD | |
| **Triggering action date (from WasteLAN):** 09 / 30 / 1998 | |
| **Due date (five years after triggering action date):** 09/ 30 / 2003 | |

* ["OU" refers to operable unit.]

## Five-Year Review Summary Form, cont'd.

**Issues:** There is a sinkhole near berm # 16 that needs to be repaired.

An increasing trend in metals concentrations was observed in 3 monitoring wells.

The current groundwater sampling protocol is outdated.

**Recommendations and Follow-up Actions:**

Investigate cause of sinkhole and repair as necessary.

Continue to sample groundwater and investigate cause of trend.

Change groundwater sampling protocol to low-flow method.

**Protectiveness Statement:**

The remedy at the Beacon Heights Landfill Superfund Site currently protects human health and the environment because the cap and leachate collection system are effectively containing the contaminants on-site, and the installation of the public water line along Skokorat and Blackberry Hill roads helps to ensure that nearby residents are not exposed to contaminants which may remain in the groundwater. Long-term protectiveness of the remedy will be verified through continued groundwater monitoring and routine site inspections, which are included as part of the site's operation and maintenance activities.

# 1.0 Introduction

As requested by the Environmental Protection Agency (EPA), a five-year review was conducted of the remedial actions selected for the Beacon Heights Landfill, in Beacon Falls, 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 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 third five-year review for the Site. The triggering action for this statutory review is the completion of the last five-year review in 1998. The five-year review is required due to the fact that contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

## 2.0 SITE CHRONOLOGY

**TABLE 1**

| DATE | EVENT |
|---|---|
| | |
| 9/8/83 | Site added the National Priorities List. |
| | |
| 4/85 | Remedial Investigation report completed. |
| | |
| 8/95 | Feasibility Study completed. |
| | |
| 9/23/85 | EPA issued a Record of Decision (ROD) for the Site. |
| | |
| 12/89 | The public water supply line is completed. |
| | |
| 9/28/90 | EPA issued a supplemental ROD for the Site. |
| | |
| 3/31/92 | Remedial Design (RD) completed |
| | |
| 12/92 | First Five-Year Review completed. |
| | |
| 3/93 | Construction of the remedial action (i.e. landfill cap, leachate collection and transfer systems) initiated. |
| | |
| 5/93 | Sewer system rehabilitation work completed. |
| | |
| 7/93 | Discharge of leachate to Beacon Falls POTW commences. |
| | |
| 7/24/98 | Construction activities specified in the ROD are complete. |
| | |
| 9/9/98 | EPA issued the Second Five-Year Review |

# 3.0 BACKGROUND

The Beacon Heights Landfill Superfund Site (the Site) is located in Beacon Falls, Connecticut, approximately ten miles south of Waterbury and two miles east of the intersection of Connecticut Routes 8 and 42. The actual landfill area covers approximately 34 acres of an original 82-acre property. A map depicting the location of the Site is presented as Attachment 1.

## 3.1 Physical Characteristics

The Beacon Heights Landfill sits atop a ridge southeast of the intersection of Skokorat and Blackberry Hill Roads. Chain-link fencing is located around the perimeter of the landfill cap area. The landfill cap consists of a multi-barrier cover system with a vegetative grass cover as the top layer. A leachate collection system consisting of perforated pipe and drainage media surround the landfill cap. Areas outside the landfill cap, but within the perimeter of the fence, are generally vegetated with bushes and trees. Low-density residential areas border the Site to the north along Blackberry Hill Road and to the west along Skokorat Roads. The closest residence is north of the Site, approximately 1,000 feet to the northwest of the landfill cap area on Blackberry Hill Road.

The Site is located within the Hockanum Brook drainage area. Hockanum Brook, a tributary of the Naugatuck River, is located about 0.5 miles northwest of the Site. Bedrock outcrops appear in many areas around the Site. The bedrock surface is fractured and dips from the south/ southeast of the Site towards the north/northwest, parallel to surface water drainage. Groundwater in the region occurs in both the unconsolidated deposits and in the bedrock and generally flows to the north/ northwest. A map depicting the site features is presented as Attachment 2.

## 3.2 Land and Resource Use

From the 1920's until 1979 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 uses include farming, forested areas, gravel excavation operations, and residential development Hockanum Brook is presently classified as recreational use water (Class C/B) with a goal of becoming a potential drinking water source (Class B/A). The Naugatuck River, located west of the Site, is classified as restricted recreational use water with a goal of becoming recreational use water. Groundwater in the area continues to be used as a drinking water supply; however, many of the surrounding properties replaced their private water supplies with public water when the public water supply system was extended along Skokorat and Blackberry Hill Roads as part of the cleanup.

## 3.3 History of Contamination

From the 1920's until 1970 a small portion of what is now know as the Beacon Heights Landfill Superfund Site was known as "Betkoski's Dump" and consisted of approximately 6 acres of active dumping and open burning in the northwestern corner of the existing Site. The dump accepted a variety of waste including municipal refuse, rubber, plastics, and industrial chemical and sludges. During this period of operation, there were general complaints and concerns due to fumes, smoke and blowing litter. The Site was not regulated by the State until 1970.

In 1970 Beacon Heights, Incorporated (BHI) purchased the Site, which included the Betkoski Dump area. BHI and its owner, Harold Murtha, owned and operated the Site as Beacon Heights Landfill and expanded the landfill area to approximately 34 acres.

From 1970 until the site closed in July 1979, the Site was used for the disposal of various waste material including: rubber, plastics, oils, hydrocarbons, chemical liquids and sludges, and solvents. In 1977 the Connecticut Department of Environmental Protection (CTDEP) approved the spreading of wastewater sludge from the Naugatuck municipal/industrial wastewater treatment facility over covered areas of the landfill. These activities continued until the summer of 1984.

## 3.4 Initial Response

On June 20, 1979 BHI signed a Consent Order to close the Site by July 1, 1979. This Consent Order was entered as a final order of the Connecticut Commissioner of Environmental Protection on July 24, 1979. The closure requirements of the Order, which included the placement of a final cover and implementation of a groundwater monitoring system, were never implemented. However, on December 4, 1979 the CTDEP inspected the Site and reported that landfill operations had ceased.

## 3.5 Basis for Taking Action

The Remedial Investigation (RI) concluded that leachate from the landfill was migrating off-site and contaminating nearby residential drinking water wells and surface water

bodies (i.e., the tributary of Hochanum Brook). This leachate was generated as a result of precipitation coming into contact with the landfill waste as it percolated through ground surface prior to reaching the water table. On-site soils were also contaminated by leachate; however, direct releases of waste material to the ground surface also contributed as a major source of soil contamination.

Based on the results of sampling conducted as part of the RI, ingestion of groundwater represented the most significant risk to human health. Benzene, chlorobenzene, chloroethanes, bis(2-chloroethyl) ether, xylenes and other site-related hazardous compounds, were detected in groundwater at concentrations well above levels considered to be protective. Moreover, as long as precipitation was allowed to percolate through the

landfill wastes and soils contaminated by that waste, the potential existed for further degradation of groundwater quality to levels which would endanger public health if consumed.

# 4.0 REMEDIAL ACTIONS

## 4.1 Remedy Selection

The selected remedy for the Site was contained in the 1985 ROD and subsequently modified in the supplemental ROD (sROD) issued in 1990. The initial recommendations in the ROD consisted of the following activities:

Excavation of satellite areas of contamination for consolidation with the main landfill prior to closure.

RCRA capping of the consolidated wastes, including gas venting and stormwater management controls.

Installation of a perimeter leachate collection system.

Extension of a public water supply line along Skokorat Road and Blackberry hill Road to provide water service to current residences.

Enclosure of the Site with security fencing.

Installation of an extensive groundwater monitoring system.

Collection of leachate generated by the landfill and transportation of it to a licensed wastewater treatment facility or an on-site treatment facility followed by discharge to a tributary of Hockanum Brook.

Preparation of further studies and a sROD to select the manner and location of leachate treatment (on-site or off-site), the extent of excavation of contaminated soils, and the need for air pollution controls on the landfill gas vents.

A ROD was completed in September 1990 that utilized information contained in a Pre-Design Study, prepared by the Potentially Responsible Parties (PRPs), to evaluate on-site and off-site treatment alternatives. The major components of the sROD included:

Contaminated leachate from the Site would be transported and subsequently treated at the Naugatuck, Connecticut wastewater treatment facility (the Naugatuck facility).

Contaminated soils, located outside the main landfill, would be excavated to levels specified within the sROD and placed under the cap.

Landfill cap gas vents would be constructed such that they could be augmented with air pollution mitigating devices in the event that future air monitoring should require such action. In addition, post-construction air quality monitoring would be conducted at the Site, specifically at, but not limited to, the location of each gas vent.

Certain components of the response action (i.e., the selection of leachate treatment facility), as constructed, varied from the selected remedial action described in the ROD and as amended in the sROD. An Explanation of Significant Differences (ESD) was prepared for the Site, describing the changes from the ROD and sROD and the reason these changes occurred. The ESD was completed in September 1998.

## 4.2 Remedy Implementation

In a Consent decree (CD) signed with EPA on September 14, 1987, the Beacon Heights Coalition (BHC) agreed to perform the remedial design/ remedial action (RD/RA) specified in the 1985 ROD. However, because of the uncertainty associated with: (1) the method of leachate treatment; (2) the extent of excavation of contaminated soils; and (3) the need for air pollution controls on the landfill gas vents, the RD for the Site did not commence until after the sROD was completed in September1990. Prior to this date, the PRPs extended the existing public water supply along Skokorat and Blackberry Hill Roads so that by the end of 1989, a permanent safe drinking water supply was provided to all homes affected by the Site.

Remedial Design (RD) was completed in January 1992, and conditionally approved by EPA on March 31, 1993. Construction of the Remedial Action (RA) began on the Site in March 1993.

The BHC reached an agreement with the Town of Beacon Falls to treat the leachate at the Town's Publicly Owned Treatment Works (POTW), rather than constructing a leachate transportation pipeline to the Naugatuck Wastewater Treatment Facility, as called for in the sROD. This agreement allowed the BHC to connect the transportation pipeline directly to the Beacon Falls sewer system. Leachate collection and conveyance systems construction was completed and discharge of leachate to the POTW began in July 1993. As part of the agreement with Beacon Falls, the BHC contributed to an upgrade of the Beacon Falls treatment facility. This upgrade was completed and operational in June 1995.

The completion of the landfill cap was delayed by more than 24 months due to several construction problems including slope failure in a portion of the landfill which resulted in damage to abutting wetlands. However, all construction problems were subsequently addressed by the BHC and the landfill cap was determined to be substantially complete by December 1995. In 1996 and 1997, the BHC performed the following activities at the

Site: (1) wetlands mitigation; (2) operation and maintenance; (3) groundwater, surface water, sediment and seep monitoring; and (4) repair and improvement of portions of the landfill cap and the leachate collection and conveyance systems. On July 24, 1998, EPA performed a final inspection of the Site and determined that the RA activities were completed according to the requirements of the ROD, sROD, and ESD.

The Site achieved construction completion status when the Preliminary Closeout Report was signed on September 9, 1998.

### 4.3 Operation and Maintenance

The BHC conducting long-term monitoring and maintenance activities according to: the Operation and Maintenance (O&M) plan that was approved by EPA on January 22, 1999 and the Long-term Monitoring Plan that was approved by EPA on November 25, 1998. The primary activities associated with O&M and long-term monitoring include:

Monthly inspections of the landfill cap, leachate collection and transportation systems, and other components of the remedy; and
Triennial groundwater sampling events

## 5.0 PROGRESS SINCE LAST REVIEW

This is the third Five-Year Review for the Site. The two previous Five-Year reviews were completed in December 1992 and September 1998. All issues identified in the prior reviews have been addressed. Significant activities completed since the last five-year review included the following:

Two new monitoring wells (MW-21 and MW-22) were installed in March 1999 to evaluate whether or not groundwater contaminants are migrating off-site at concentrations that would be harmful to human health and the environment;

EPA approved the Remedial Action Report for the Site on April 30, 1999;

The BHC implemented a protocol to the existing O&M program to address the issue of bacteria and/or iron precipitates building up within the leachate collection and transportation piplines;

In the Spring of 2000, the BHC sampled the private water supply of seven homes along Skokorat and Blackberry Hill Roads where the property owners had refused to accept the BHC's offer to connect to the to the public water supply as outlined in the 1985 ROD. The sampling results did not show water quality issues related to the Site.

The BHC sampled a newly identified seep within the landfill. Although this seep contained leachate contaminants, the level of contamination was not considered to be an issue.

# 6.0 FIVE-YEAR REVIEW PROCESS

## 6.1 Administrative Components

EPA, the lead agency for this five-year review, notified CTDEP and the PRPs in early 2003 that the five-year review would be completed. The Five-Year Review Team was led by William Lovely of EPA, Remedial Project Manger, for the Beacon Heights Landfill Superfund Site, and included staff from TRC, EPA's technical support contractor. Sheila Gleason of the CTDEP was as also part of the review team.

From February 2003, the review team established the review schedule whose review components included:

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

The schedule extended through July 30, 2003.

## 6.2 Community Involvement

EPA mailed a letters on May 29, 2003 announcing EPA's review of the progress of the Beacon Heights Landfill Site cleanup. The mailing included the residents along Blackberry Hill and Skokorat Roads and the Town of Beacon Falls Board of Selectmen. Additional copies of the fact sheet were made available to the general public at the Beacon Falls Town Hall. The fact sheet described the Five-Year Review process and how the community can contribute during the review process. EPA did not receive any comments from the community.

## 6.3 Document Review

The five-year review consisted of a review of relevant documents including O&M records and monitoring data. A more detailed description of the documents reviewed is presented in Section 2.0 of the Technical Memorandum, which is included as Attachment 3.

## 6.4 Data Review

As part off the review, EPA evaluated the surface water, leachate seep, air, and groundwater data collected by the BHI to confirm that contaminants within the landfill are being contained by the cap and leachate collection system. Technical assistance on the data review was provided by TRC. A summary of the data review is provided below.

Groundwater Monitoring

Groundwater monitoring is used to assess whether contaminated leachate continues to flow from the landfill, and if the levels of detected constituents are increasing or decreasing. This includes monitoring of the water table elevation to evaluate whether the generation of leachate has been reduced/eliminated and if the water table has been lowered under the landfill cap. Groundwater is gauged, sampled, and analyzed triennially for general chemistry, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals.

As part of the five-year review, EPA evaluated all groundwater data collected from 1996 through 2002. The review included a statistical analysis of the results to evaluate the effectiveness of the remedy. Overall, the results of the statistical analysis indicate that the levels of most contaminants of concern have decreased significantly and consistently, most to levels below regulatory criteria or background concentrations. However, the statistical analysis indicates that the levels of four contaminants (iron, lead, manganese, and bis (2-ethylhexyl phthalate) appear to be unstable or slightly increasing in comparison with previous sampling events and the upgradient well. Details regarding the groundwater data and statistical analysis are presented in Attachment 3.

Surface Water Monitoring

Surface water monitoring is performed to evaluate potential contamination from seeps. One up-slope and four down-slope surface water monitoring stations are sampled annually. A minimum of two permanent seep collection zones are also sampled semi-annually. Surface water is analyzed for general chemistry, VOCs, and metals. Overall, it appears that the concentrations of contaminants of concern in surface water have been decreasing, most to levels below the applicable comparison standards.

Air Monitoring

Analytical data for landfill gas samples collected by the BHC in 2001 were evaluated to identify any applicable air regulations. Because the reported releases of contaminates are very low, applicable state and federal air regulations do not require any actions at this site.

## 6.5 Site Inspection

EPA performed an inspection of the Site on June 5, 2003. The purpose of the inspection was to assess the protectiveness of the remedy, including the integrity of the cap and leachate collection system. A Five-Year Review checklist was used to document the observations made during the inspection. The report is based on observations made during the visual inspection of the landfill surface. A summary of the site inspection is provided below.

**Landfill Surface –** The landfill surface was generally in good condition with no obvious signs of erosion, settlement, cracks, or holes. The vegetative cover was also in good condition.

**Benches (berms) –** The benches appeared in good condition with only minor vegetation and sedimentation. It appears that a sinkhole may be developing near one of the berms.

**Letdown Channels (downchutes) –** The North and East downchutes were observed to be in good condition. Minor sedimentation was present at the bottom of the East downchute.

**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. Odors were observed at four gas vents and potential settlement was observed at GV-8 and GV-11 and continued monitoring was suggested.

**Cover drainage layer –** The rip rap outlet for the drainage layer appeared to be in good condition.

**Retaining wall –** The retaining wall appeared to be in good condition. The flow rate from the seep hole was approximately 20 gpm.

**Leachate collection system –** The above ground portions of the systems appeared to be in good overall condition. Fouling was noted at one of the manholes (MH-11) and a strong leachate odor was observed at another (MH-4). Water is still flowing in the Rabbit Area leachate seep, and an additional wet area was observed south of the landfill access road.

**Perimeter ditches and off-site discharge –** The perimeter ditches appeared to be in good conditions with the exception of minor sedimentation and vegetative growth.

**Fencing and roads –** The fence that surrounds the landfill cap and the gravel roads was generally in good condition.

Recommendations of corrective actions based on the inspection included the continued monitoring of potential settlement, erosion, and sedimentation areas and the continuation of existing programs including the rodent control and leachate transfer system maintenance programs. Also, the cause of the sinkholes that are developing needs to be investigated. The overall conclusion based on the site inspection is that the components of the landfill cover system are working as designed.

### 6.6 Interviews

On June 5, 2003, Mr. Russ Dirienzo, the BHC's operations and maintenance contractor, was interviewed to identify any current operational/maintenance issues.

Mr. Dirienzo indicated that overall, there have been no major issues with O&M. One current maintenance issue is the monitoring and planned repair of a sinkhole area that is developing near the northern end of Berm #16. A previous sinkhole (in the same area) was identified and repaired in the summer/fall of 2002. According to Mr. Dirienzo, the previous sinkhole was attributed to a fox burrow that caused a weakness in the slope. He indicated that the cause of the new sinkhole is unknown and must be investigated so that adequate repairs could be made to prevent further erosion and slope subsidence in this area.

## 7.0 TECHNICAL ASSESMENT

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

The objective of the remedial action described in the 1985 ROD was to reduce the generation of contaminated leachate and thereby mitigate future groundwater and surface water contamination; to minimize off-site migration of contaminants via surface runoff; to minimize direct human contact with contaminated soils on-site; and to assure a safe drinking water supply for area residents. These objectives may be achieved by source control actions supplemented by off-site actions. To meet these broad objectives, the landfill wastes must be isolated to minimize contact with groundwater and surface water, and to prevent human and animal exposure.

On September 9, 1998 EPA completed a Preliminary Close-Out Report, which stated that all construction activities specified in the ROD and sROD have been conducted, and that the remedy is considered operational and functional. Since that time, the BHC has been performing environmental monitoring and routine site inspections as required by the remedy. The results of these activities have been submitted to and reviewed by EPA and its technical consultant. Based on that review, the remedy is functioning as intended. The cap appears to be effectively lowering the water level in the waste by minimizing the infiltration of

water. The leachate collection system appears to be functioning as designed by intercepting overburden groundwater migrating from the landfill.

Operation and maintenance of the cap and leachate collection system has been, and continues to be effective. No issues have been discovered during the routine landfill inspections that would impact the operation and maintenance of the remedy. Issues identified during the semi-annual site inspections have been corrected or continue to be monitored.

There were no opportunities for system optimization observed during this review. The landfill cap and leachate collection system continue to function as designed. However, in light of the slightly increasing trend in some contaminant concentrations, EPA will continue to evaluate the groundwater data to determine if there is a need to implement additional remedial measures.

No additional controls have been implemented or need to be implemented. The maintenance program should be continued as designed. This includes monitoring the leachate seeps and surrounding leachate collection system components to ensure proper leachate system operation and to document and changes in the seep characteristics.

## 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?

Changes in Standards and To Be Considereds

The 1985 ROD, page 21, identifies the following laws, regulations and guidance as applicable to the remedy. Changes in standards since the 1985 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 BHC 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 transported to Town of Beacon Falls Publicly Owned Treatment Works (POTW) where it is commingled with other wastes, then treated in accordance with regulatory criteria.

Clean Air Act. Landfill gas emissions at the site continue to be well below concentrations that would trigger requirements under the federal Clean Air Act.

Safe Drinking Water Act; EPA Groundwater Protection Strategy. New applicable or relevant and appropriate requirements (ARARs) promulgated since the 1985 ROD and 1990 sROD include Maximum Contaminant Levels (MCLs) and non-zero Maximum Contaminant Level Goals (MCLGs). The MCLs listed for each of the groundwater contaminants monitored at the site continue to be valid.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

The exposure assumptions used to develop the Human Health Risk Assessment included: (1) ingestion of groundwater; (2) direct contact with leachate; (3) inhalation of the contaminants from the soil, groundwater, surface water, and leachate by workers or other individuals, and (4) consumption of fish. With the expansion of the public water supply in 1989, and completion of the landfill cap, leachate collection system, and security fence, the potential ingestion of contaminated groundwater remains the only valid exposure scenario. Assumptions used to assess the risk of groundwater contamination (including contaminant cleanup levels) remain valid and are likely to overstate the risk in light of the groundwater sampling results, and the fact that all but a few residences are connected to the existing public water supply. Sampling data from these residences continue to show that their private wells are not being impacted by the site.

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

As part of the review, EPA evaluated the current Groundwater, Surface Water, Seep, and Sediment Monitoring Plan (1996) being implemented at the site. Based on that review, EPA has determined that the sampling protocol needs to be updated to improve the representativeness of the groundwater sampling results. Consequently, future groundwater sampling events should be performed using the Low Stress (low flow) Purging and Sampling Procedure Specified in section 2.5 of the Technical Memo, which is included as Attachment 3.

Technical Assessment Summary

According to the data reviewed, the site inspection, and site interview, the remedy is functioning as intended by the ROD and sROD, as modified by the ESD. There have been no changes in the physical conditions of the site, ARARs, or assumptions used in the baseline risk assessment, that would affect the protectiveness of the remedy. In addition, a statistical analysis of the groundwater

data did not produce any results to suggest that additional remedial measures are warranted.

## 8.0 ISSUES

Based on the activities conducted during this Five-year review, the issues identified in Table 2 have been noted.

**Table 2: Issues**

| Issues | Affects Current Protectiveness | Affects Future Protectiveness |
|---|---|---|
| Sinkhole near berm # 16 | No | No |
| Increasing trend in metals concentrations in MW-11, MW-20, and MW-22 | No | Yes |
| Outdated groundwater sampling protocol | No | No |

## 9.0 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

In response to the issues noted above, it is recommended that the actions listed in Table 3 be taken:

**Table 3: Recommendations and Follow-up Actions**

| Issue | Recommendation and Follow-up Action | Party Responsible | Oversight Agency | Milestone Date | Affects Protectiveness | |
|---|---|---|---|---|---|---|
| | | | | | Current | Future |
| Sinkhole near berm # 16 | Investigate cause and repair as necessary. | PRP (BHC) | EPA & CTDEP | On-going, complete prior to the next Five-Year Review. | No | No |
| Increasing trend in metals concentrations in 3 MWs | Continue to sample groundwater and investigate cause of trend. | PRP (BHC) | EPA & CTDEP | On-going, complete prior to the next Five-Year Review. | No | Yes |
| Outdated ground-water sampling protocol | Change sampling protocol to low-flow method. | PRP (BHC) | EPA & CTDEP | Spring 2004 ground-water sampling event | No | No |

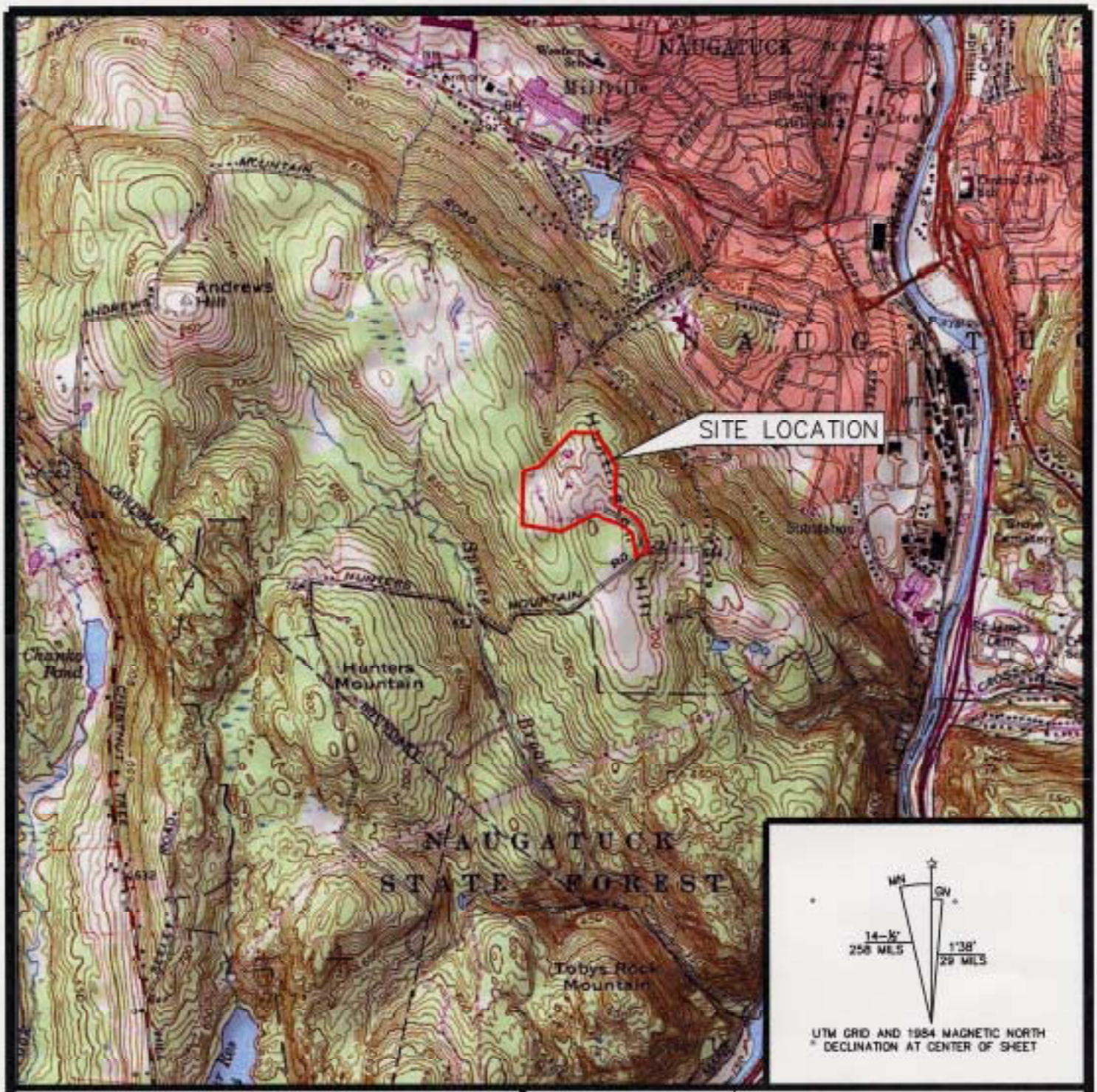
## 10.0 PROTECTIVENESS STATEMENT(S)

The remedy at the Beacon Heights Landfill Superfund Site currently protects human health and the environment because the cap and leachate collection system are effectively containing the contaminants on-site, and the installation of the public water line along Skokorat and Blackberry Hill roads helps to ensure that nearby residents are not exposed to contaminants which may remain in the groundwater. Long-term protectiveness of the remedy will be verified through continued groundwater monitoring and routine site inspections, which are included as part of the site's operation and maintenance activities.

## 11.0 NEXT REVIEW

The next five-year review will be conducted by September 2008.

# Attachments

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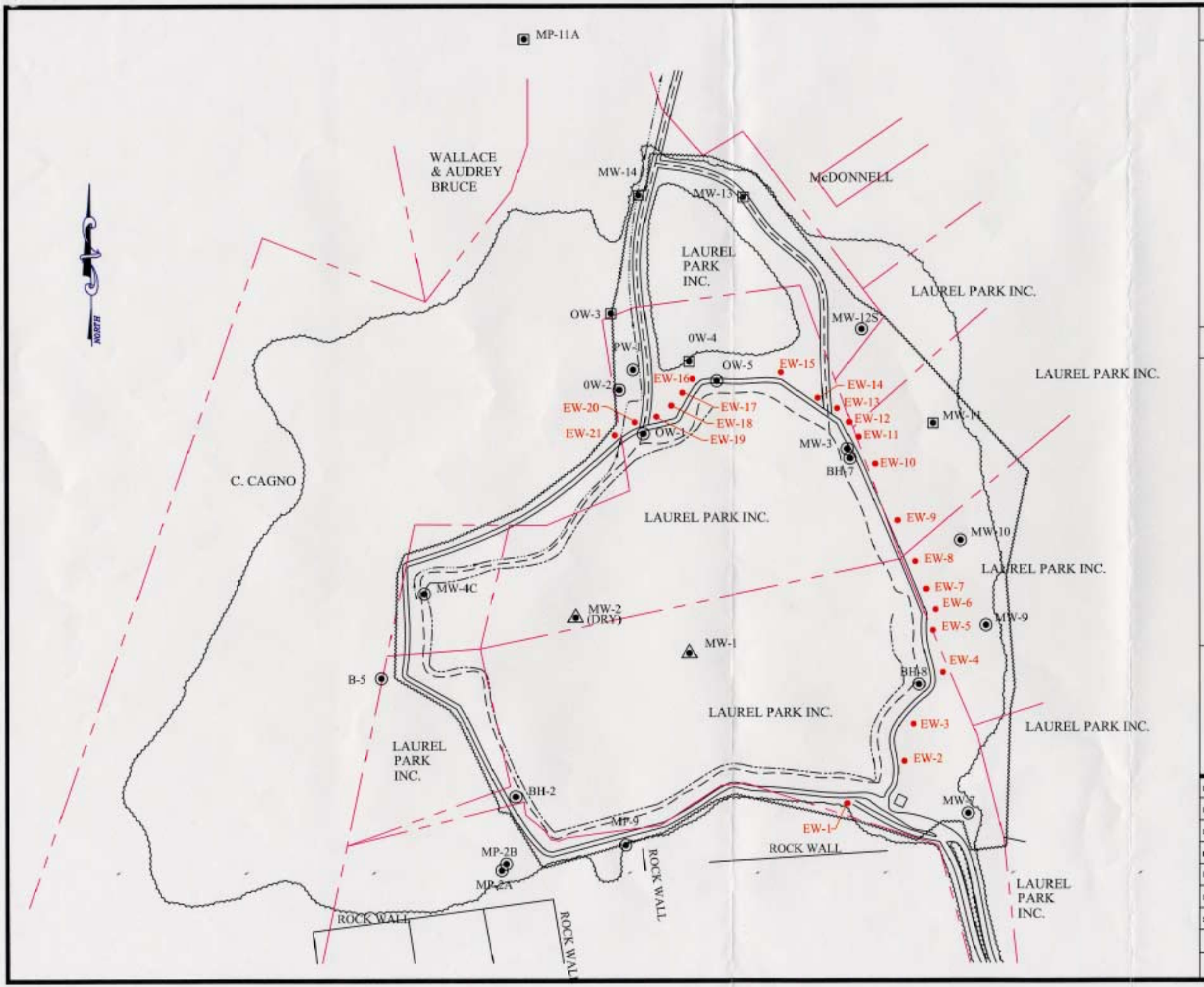
|---|---|
| DATE | 4/07/03 |
| REV. NUMBER | N/A |
| REV. DATE | N/A |
| DRAFTED BY: | SRM |
| PROJ. NO | 00-109-3 |
| DOC. NO. | 6699F1 |
| SCALE | 1:24,000 |
| | 0 INCHES 1/2 |
| SHEET | 1 OF 1 |

# FIGURE 1
## SITE LOCATION

LAUREL PARK LANDFILL
HUNTERS MTN. ROAD
NAUGATUCK, CONNECTICUT

SMC ENVIRONMENTAL




## LEGEND:

- PROPERTY BOUNDARY
- EXTENT OF LANDFILL
- FENCE
- ACCESS ROAD
- LIMIT OF VEGETATIVE COVER
- DRAINAGE PATH
- LEACHATE COLLECTION SYSTEM
- MW-1 — LANDFILL MONITORING WELL
- MW-13 — REMOTE MONITORING WELL
- MW-3 — PERFORMANCE AND COMPLIANCE MONITORING WELLS
- EW-1 — EXTRACTION WELL
- EQUIPMENT AND STORAGE BUILDING

## NOTES:

SITE PLAN PREPARED FROM INFORMATION OBTAINED AND MEASUREMENTS TAKEN BY SMC ENVIRONMENTAL.

ALL LOCATIONS, DIMENSIONS, AND PROPERTY LINES DEPICTED ON THIS PLAN ARE APPROXIMATE. THIS PLAN SHOULD NOT BE USED FOR CONSTRUCTION OR LAND CONVEYANCE PURPOSES.

HORIZONTAL, AND VERTICAL LOCATIONS OF WELLS, AND SELECTED SITE FEATURES DETERMINED THROUGH REPRESENTATIVES OF S.M.C.

SMC ENVIRONMENTAL

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|---|---|
| DATE: | 4/28/03 |
| REV. NUMBER: | N/A |
| REV. DATE: | N/A |
| DRAFTED BY: | SRM |
| PROJECT NO: | C100-109-3 |
| DOC NO: | 6699F2 |
| SCALE: | 1"=250' |

0 INCHES

# FIGURE 2
SITE PLAN

LAUREL PARK LANDFILL
NAUGATUCK,CONN.

SHEET 1 OF 1