

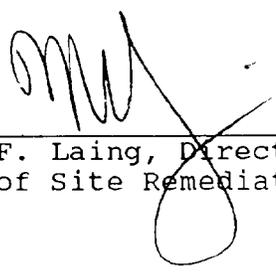
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Superfund Records Center  
SITE: Winthrop  
BREAK: 8.03  
OTHER: 35078

FIVE-YEAR REVIEW REPORT

WINTHROP LANDFILL SUPERFUND SITE  
WINTHROP, MAINE

PREPARED BY:  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
REGION I  
BOSTON, MASSACHUSETTS

  
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Harley F. Laing, Director  
Office of Site Remediation and Restoration

9-30-97  
Date

## INTRODUCTION

EPA Region I conducted this review pursuant to CERCLA section 121(c), NCP section 300.430(f)(4)(ii), and OSWER Directives 9355.7-02 (May 23, 1991), and 9355.7-02A (July 26, 1994). This is a policy (not statutory) review, conducted for pre-October 17, 1986 Remedial Actions. The purpose of a five-year review is to ensure that a remedial action remains protective of human health and the environment.

## SITE HISTORY

The Winthrop Landfill Superfund Site ("the Site"), formerly a hazardous waste disposal site, covers approximately 20 acres along the western shore of Annabessacook Lake in the Town of Winthrop, Kennebec County, Maine. The Site was first excavated in the 1920's as a sand and gravel pit, then used for residential and industrial waste disposal from 1930 to 1982. In 1980, volatile organic compounds (VOCs) were detected in a residential well south of the landfill. In 1981, the EPA added the Site to the NPL.

The Remedial Investigation/Feasibility Study (RI/FS) was conducted from 1981 to 1985. The RI determined that liquid chemical wastes were migrating from the landfill in shallow and deep groundwater in three separate flows. One deep residential well was found to be contaminated, with potential for there to also be contamination in other wells in the area. Low concentrations of organic contaminants were found in lake sediments south of the landfill and organic contaminants were detected in groundwater within the bedrock trough (a depression in the bedrock) beneath the Site.

The Superfund Enforcement Decision Document (ROD) was issued on November 22, 1985. Based on this ROD, a Consent Decree was entered on March 23, 1986, among EPA, the Maine Department of Environmental Protection (ME DEP), Inmont Corporation, Town of Winthrop, Maine, Everett Savage and Glenda Savage. Through a succession of purchases, Inmont's obligations are currently being fulfilled by United Technologies Corporation, Inc. (UTC). The Town of Winthrop and the Savages granted access to their properties. The Site is currently PRP-lead.

## REMEDIAL OBJECTIVES & REMEDIAL ACTIONS

The selected remedy for the Site included:

- the extension of an alternate water supply to area residents;
- construction of a chain link fence around the landfill and imposition of deed restrictions prohibiting use of the landfill for activities other than the remedial action;

- prohibition of groundwater withdrawal for purposes other than remedial action;
- prohibition of excavation within the landfill, except for residential construction or remedial action;
- quarterly sampling of monitoring points in sensitive areas;
- grading and placement of a RCRA cap over the entire landfill;
- completion of engineering design work (geologic, hydrogeologic, treatability pilot studies);
- and the establishment of an Alternate Concentration Limit (ACL) for each contaminant in groundwater.

If the ACLs are exceeded, the ROD provides for the installation and operation of a groundwater extraction and treatment system.

Installation of a permanent water supply to residents was completed in 1984, and in 1985, the Town of Winthrop enacted an ordinance to prohibit groundwater withdrawal and to prohibit all groundwater use and excavation within the site. This ordinance was revised in 1991 to include additional areas utilized by the PRPs during remediation, and to provide further excavation control in areas potentially impacted by landfill gas migration. Together, the water supply and ordinance protect human health by preventing exposure to contaminated groundwater.

Implementation of a monitoring program which requires, at a minimum, sampling on a quarterly basis of chemicals of concern, began in 1986. Quarterly monitoring of groundwater, surface water, and sediment has been ongoing since that time, and the monitoring program has been revised as necessary. Monitoring of surface water and sediment will prevent human exposure via recreational scenarios in the lake and area brooks, and will ensure protectiveness of the environment.

All engineering studies were completed, and the landfill cap was designed in 1986. Cap construction was completed in 1987 except for one area of slope failure, which was reconstructed in 1989 in accordance with construction plans and specifications approved by EPA and ME DEP. EPA approved the cap in 1992, and post-closure monitoring is ongoing. Settlement of the landfill cap was again reported to EPA and ME DEP in 1994, and the PRPs made repairs as necessary. The PRPs continue to make repairs, however, ongoing divots and depressions occur because of operation of a vapor extraction system (see below).

The PRPs submitted a final ACL Demonstration Report in 1992 which EPA and ME DEP accepted in a Decision Document signed March 10, 1993. Design of a Groundwater Treatment and Extraction System (GWETS) was ongoing during the design and implementation of ACLs. After the determination that a GWETS system would be necessary, EPA and ME DEP conditionally approved a 100% design report in 1994 and construction began shortly thereafter.

Operation of the GWETS began in March 1995, and must continue until cleanup standards are achieved in groundwater outside the landfill boundary. Three extraction wells and three re-injection wells, including all necessary underground piping, were placed at the site and an on-site treatment plant building was constructed. In December 1995, a recharge trench was installed to supplement the system, and a re-injection well was reconstructed in June 1996. Ongoing maintenance and upgrading of the system has occurred as necessary, and on January 27, 1997, the PRPs closed their subcontract for construction and one-year operation of the GWETS.

The PRPs also investigated the use of a vapor extraction system (VES) to supplement groundwater treatment by removing residual VOCs above the water table in soils and refuse. It is expected that the VES component will reduce the GWETS operation time. The PRPs submitted a VES Final Design in 1993 and EPA documented the inclusion of this system in an Explanation of Significant Differences. The PRPs installed and started the system in 1994, which consists of 42 vapor extraction wells installed in refuse material and 32 vapor extraction wells installed in natural soils above the groundwater table. A separate VES treatment building was installed on-site and includes two treatment technologies: a thermal oxidizer treated methane during the first 100 days of initial operations, and VOCs continue to be treated by carbon filtration. The VES currently removes about 2500 pounds per year of contaminant mass.

Contamination from the Site entered nearby Annabessacook Lake and accumulated to sufficient quantities to cause an exceedance of Protective Concentration Limits for arsenic in sediment. In October 1996, UTC excavated and filled most of the sediment and they continue to monitor this area as part of its ongoing program. A similar exceedance is present in one area of nearby Hoyt Brook. Remediation is expected to occur in Fall 1997 or Spring 1998, but the scope of this remediation will be much less intensive (i.e., use of a hand-trowel and wheelbarrow to excavate, drain, and contain less than one drum of material).

#### **RECOMMENDATIONS**

The PRPs are currently working with EPA and ME DEP on a plan to fill all depressions and divots in the landfill cap caused by the VES system. Remediation is expected to involve less than one truckload of topsoil.

The PRPs are also currently working with EPA and ME DEP on a plan to install a fourth GWETS extraction well in October 1997 at an identified hot spot on the landfill. It is expected that installation shall take one week, with another few weeks of testing prior to a full connection to the GWETS. Installation of this extraction well is above and beyond the design requirements;

the PRPs are conducting this work on a voluntary basis only in an attempt to expedite clean-up and allow them to shut down the GWETS sooner than currently anticipated.

EPA and ME DEP continue to work with the PRPs to monitor the location of the former arsenic sediment exceedance in Annabessacook Lake, as well as the ongoing sediment exceedance in Hoyt Brook. Again, it is expected that the PRPs will remediate the Hoyt Brook exceedance in Fall 1997 or Spring 1998.

No further recommendations were identified by this five-year review.

#### **STATEMENT ON PROTECTIVENESS**

EPA certifies that the remedy selected for this site remains protective of human health and the environment.

#### **NEXT FIVE-YEAR REVIEW**

The next five-year review will be conducted by September, 2002.