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Five-Year Review Report

Fourth Five-Year Review Report
for
Winthrop Landfill Superfund Site
Town of Winthrop
Kennebec County, Maine

September 2007

PREPARED BY:

United States Environmental Protection Agency
Region I
Boston, Massachusetts

Approved by: Date:

9/21/07

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LIST OF ACRONYMS AND ABBREVIATIONS

ACRONYM	DEFINITION
ACL	Alternate Concentration Limit
AOC	Administrative Order by Consent
ARARs	Applicable or Relevant and Appropriate Requirements
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability
CFR	Code of Federal Regulations
CSF	Cancer Slope Factor
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
gpm	gallons per minute
GWETS	Groundwater Extraction and Treatment System
MCLs	Maximum Contaminant Levels
MCLG	Maximum Contaminant Level Goal
ME DEP	Maine Department of Environmental Protection
MEG	1992 Maine Maximum Exposure Guidelines for Drinking Water
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation & Maintenance
OU	Operable Unit
PCL	Protective Concentration Limit
ppb	parts per billion
ppm	parts per million
PRP	Potentially Responsible Party
RA	Remedial Action
RCRA	Resource Conservation and Recovery Act
RAOs	Remedial Action Objectives
RAP	Remedial Action Plan
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision (previously known as a "Superfund Enforcement Decision Document")
SARA	Superfund Amendments and Reauthorization Act of 1986
VES	Vapor Extraction System
VOCs	Volatile Organic Compounds
WasteLAN	The Regional database related to the Comprehensive Environmental Response, Compensation, and Liability Information System
WLCAG	Winthrop Landfill Citizens Action Group

EXECUTIVE SUMMARY

The remedy selected to address contamination at the Winthrop Landfill Superfund Site, located in the Town of Winthrop, Kennebec County, Maine, as outlined in the November 22, 1985 Superfund Enforcement Decision Document (aka Record of Decision, or ROD), includes:

- 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 Resource Conservation and Recovery Act (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 (GWETS). An Explanation of Significant Differences (ESD) was also signed on October 20, 1993, which documented the inclusion of a vapor extraction system (VES) as a component of the GWETS. Following ACL exceedances, the VES and GWETS were installed and began operation in 1994 and 1995, respectively.

The Site achieved construction completion when the Preliminary Close Out Report was signed on December 23, 1997. On September 29, 1998, EPA determined that the remedy was Operational and Functional, and documented this in an Interim Remedial Action (RA) Report.

The VES was decommissioned in 2000. The GWETS continued operation through 2002, at which point it was shut down for a rebound evaluation. During the rebound evaluation, a Vinyl Chloride Contingency Plan was implemented to monitor vinyl chloride in groundwater and soil gas in the southern flowpath and evaluate potential vapor migration into indoor air, and conduct remediation activities, as necessary. Remediation has not been required since implementation of the Contingency Plan in 2003.

Data gathered before, during, and after the period of GWETS operation indicated that, while the GWETS had been effective in addressing most contaminants in groundwater, its continued operation would not significantly affect widespread elevated arsenic concentrations. Supplemental evaluations of the potential risk from vapor intrusion,

screening level evaluations of human health and ecological risks posed by contaminants at all points of exposure, and additional sampling events and evaluations at the points of exposure were conducted.

In August 2006, EPA, in conjunction with the Maine Department of Environmental Protection (ME DEP) and the potentially responsible parties (PRPs), held an open house followed by a public meeting to discuss and distribute a draft Explanation of Significant Differences (ESD). The draft ESD proposed to decommission the GWETS in light of the fact that its operation was no longer necessary to treat contaminants other than arsenic and the fact that it would not be effective in treating arsenic. EPA collected public comments on the draft ESD through October 16, 2006.

EPA issued the final ESD on February 14, 2007, permitting decommissioning of the GWETS and allowing arsenic in groundwater to be addressed through natural processes over an extended period of time. The ESD requires the development and implementation of a plan to monitor and remediate points of exposure as necessary, including arsenic accumulation in sediment, to ensure continued protection of human health and the environment. The ESD also requires continued monitoring and, as necessary, evaluation and remediation of the risk posed by potential vapor intrusion.

The remedy at the Winthrop Landfill Superfund Site currently protects human health and the environment in the short-term because an alternate water supply has been extended to area residents and a Town Ordinance prohibiting groundwater use and certain excavation is in place. The landfill is capped, a fence has been erected around the landfill, and access to the Site is controlled by the PRPs. With the exception of one parcel not owned by the Town, all parcels within the landfill are subject to institutional controls which prevent disturbance of the cap. The cap and fencing are performing as intended, and routine maintenance and repair activities continue on a regular basis. Monitoring of groundwater, surface water, and sediment is ongoing, including monitoring of vinyl chloride in the southern flowpath.

In order for the remedy to be protective in the long-term, follow-up actions are required. The Agencies will continue to coordinate with the Town to require that a deed notice and, if possible, a Declaration of Environmental Covenant, be recorded for the privately owned parcel within the landfill. The Agencies will continue to work with the PRPs to develop a Point of Exposure Monitoring and Remediation Work Plan. Following completion of the Work Plan, remediation of arsenic-contaminated sediment at Hoyt Brook will be initiated, and all other point of exposure areas will be evaluated in accordance with the Work Plan.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name: Winthrop Landfill Superfund Site

EPA ID: MED980504435

Region: 1 | **State:** ME | **City/County:** Winthrop/Kennebec

SITE STATUS

NPL Status: X Final Deleted Other (specify)

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

Multiple OUs? Yes X No | **Construction completion date:** 12/23/1997

Has site been put into reuse? Yes X No

REVIEW STATUS

Lead Agency: X EPA State Tribe Other Federal Agency

Author name: Anni Loughlin

Author title: Remedial Project Manager | **Author affiliation:** U.S. Environmental Protection Agency

Review Period: 3/26/2007 to 8/30/2007

Date(s) of inspection: 5/24/2006, 8/28/2006, 6/4/2007

Type of Review: Post-SARA X Pre-SARA NPL-Removal Only
Non-NPL Remedial Action Site NPL State/Tribe-lead
Regional Discretion

Review number: 1 (first) 2 (second) 3 (third) X Other: 4 (fourth)

Triggering Action:
Actual RA Onsite Construction at OU #_____ Actual RA Start at OU#_____
Construction Completion X Previous Five-Year Review Report
Other (specify) Signing of ROD

Triggering action date (from WasteLAN): 9/30/2002

Due date (five years after triggering action date): 9/30/2007

* [OU refers to operable unit.]
** [Review period should correspond to the actual start date and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, continued

Issues: Notice in the deed to one privately-owned property at the landfill was never filed. Excavation control and cap protections are required.

Exceedances at points of exposure require additional evaluation, and exceedance of arsenic in sediment at Hoyt Brook requires remediation.

Recommendations and Follow-up Actions: The Agencies will continue to coordinate with the Town of Winthrop to require that a deed notice and, if possible, a Declaration of Environmental Covenant, be recorded for the privately owned parcel within the landfill to provide additional protections for the cap portion of the remedy.

EPA, ME DEP, and the PRPs are currently working to develop and implement a Point of Exposure Monitoring and Remediation Work Plan as outlined in the February 2007 ESD. Citizen involvement is required. Remediation at the Hoyt Brook seep area will be implemented as soon the Plan is finalized, or earlier if possible and with agency approval. When the Plan is finalized, evaluation of all other seep areas will also occur.

Protectiveness Statement: The remedy at the Winthrop Landfill Superfund Site currently protects human health and the environment in the short-term because an alternate water supply was extended to area residents and a Town Ordinance preventing groundwater use and certain excavation is in place. Institutional controls to prevent exposure to contaminants in groundwater and exposure pathways that could result in unacceptable risks have been implemented and are being monitored, with the exception of one parcel not owned by the Town. The public is protected from on-site contaminants because the landfill is capped, the fence impedes access, and control of the Site is in the hands of United Technologies Corporation and their contractors. The landfill cap and fencing are performing as intended, and routine maintenance and repair activities continue on a regular basis. Monitoring of groundwater, surface water, and sediment is ongoing, including monitoring of vinyl chloride in the southern flowpath.

In order for the remedy to be protective in the long-term, follow-up actions are required. The Agencies will continue to coordinate with the Town of Winthrop to require that a deed notice and, if possible, a Declaration of Environmental Covenant be recorded for the privately owned parcel within the landfill. The Agencies will continue to work with the PRPs to develop a Point of Exposure Monitoring and Remediation Work Plan. Once implemented, remediation of arsenic-contaminated sediment at Hoyt Brook will be initiated, as well as evaluation of all point of exposure areas in accordance with the final Plan.

1.0 INTRODUCTION

The purpose of this five-year review is to determine whether the remedy for the Winthrop Landfill Superfund Site is protective of human health and the environment. The methods, findings and conclusions of this review are documented in this Five-Year Review Report. In addition, this report identifies any issues found during the preparation of this five-year review along with recommendations to address such issues.

The United States Environmental Protection Agency (EPA) must implement five-year reviews consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA Section 121(c), as amended, 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 often 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 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 NCP; part 300.430(f)(4)(ii) of the Code of Federal Regulations (CFR) 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.*

EPA Region I conducted a five-year review of the remedial actions implemented at the Winthrop Landfill Superfund Site in the Town of Winthrop, Kennebec County, Maine. This review was conducted from March 2007 through September 2007. This report documents the results of the review.

This is the fourth five-year review for the Winthrop Landfill Site. The triggering action for this review is the date of the third five-year review, as shown in EPA's WasteLAN database: September 30, 2002. This review is required by policy as the Superfund Enforcement Decision Document (or, Record of Decision or ROD) was signed before October 17, 1986, the effective date of the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the remedial action will leave hazardous substances, pollutants, or contaminants on-site above levels that allow for unlimited use and unrestricted exposure. The Maine Department of Environmental Protection and EPA's Office of Emergency and Remedial Response reviewed this document.

2.0 SITE CHRONOLOGY

The chronology of the Site, including all significant Site events and dates is included in Table 1.

Note that the Superfund Enforcement Decision Document (ROD) provided for numerous actions, all of which were covered under one operable unit (OU) only. EPA's older tracking systems utilized in the 1980's did not allow for phasing of a remedy under one OU to track accomplishments. At that time, the remedy was divided into three OU's to allow for easier tracking of the different phases of the remedy, including the cap, the Alternate Concentration Limits, and the Groundwater Extraction & Treatment and Vapor Extraction Systems. The definitions of accomplishments have also changed, which adds to the discrepancies in the current tracking system.

While EPA's WasteLAN system currently shows three separate OUs, this report provides for start and completion dates of Site-wide activities.

Table 1: Chronology of Site Events

Event	Date
Residential and industrial waste disposal on Site	1930 to 1982
Volatile organic compounds detected in residential well	1980
Proposal to National Priorities List (NPL)	October 23, 1981
Final Listing on NPL	September 8, 1983
Remedial Investigation/Feasibility Study	1981 to 1985
Administrative Order by Consent	June 6, 1984
Public water distribution system installed to all private residences	1984 to 1987
Town of Winthrop enacts Ordinance prohibiting groundwater withdrawal and groundwater use and certain excavation within the Site.	October 9, 1985
Superfund Enforcement Decision Document (aka "ROD") signed	November 22, 1985
Consent Decree entered	March 23, 1986
Quarterly monitoring program begins	March 23, 1986
Remedial Design Start	March 24, 1986
Remedial Action Start	November 19, 1986
Fence installation and cap construction completed, except for one area of slope failure	October 21, 1987
Investigation of slope failure, and slope reconstruction	1989
Town of Winthrop revises its October 9, 1985 ordinance prohibiting groundwater withdrawal and use, and certain excavation within the Site, to include additional areas	April 3, 1991
Remedial Design Complete	March 24, 1992
EPA approves landfill cap	June 23, 1992
Potentially Responsible Parties (PRPs) submit ACL Demonstration Report and revisions	1992
First Five-Year Review	October 9, 1992

EPA and ME DEP Decision Document accepts PRP's revised ACL Demonstration Report	March 10, 1993
Explanation of Significant Differences documenting inclusion of a Vapor Extraction System (VES); construction of VES begins	October 20, 1993
EPA and ME DEP conditionally approve a 100% design report for the Groundwater Extraction & Treatment System (GWETS); construction begins	April 28, 1994
Landfill cap settlement reported and repairs completed	1994
Operation of the VES begins	October 1994
Operation of the GWETS begins	March 1995
Recharge trench installed to supplement GWETS	December 1995
Re-injection well reconstructed	June 1996
PRPs excavate a large area of exposed arsenic-contaminated sediment from Annabessacook Lake	October 1996
EPA and ME DEP conduct final inspection	October 24, 1996
Second Five-Year Review	September 30, 1997
PRPs construct fourth extraction well at an identified hot spot on the landfill	October 1997
PRPs excavate arsenic-contaminated sediment from Hoyt Brook	December 1997
Preliminary Close-Out Report Amendment (Construction Completion Determination)	December 23, 1997
PRPs re-configure VES system	January 1998 to March 1998
PRPs repair landfill cap depressions caused by VES	September 1998
Remedial Action Complete (Operational & Functional Determination; Interim RA Report)	September 29, 1998
Operations & Maintenance Begins	September 29, 1998
VES reaches limit of effective remediation & discontinued	2000
Meeting among Agencies & PRPs to discuss GWETS rebound evaluation	November 29, 2001
Public meeting on Site to discuss conceptual plan for GWETS rebound evaluation; Site visit	August 21, 2002
Third Five-Year Review	September 30, 2002
Start of GWETS Rebound Evaluation, GWETS shutdown	November 2002
Implementation of Contingency Plan, Vinyl Chloride Reactivation Criterion Exceedance, in response to vinyl chloride detections in the southern flowpath	October 2003
EPA human health and ecological risk screening evaluations of risks at points of exposure	April 2006
Evaluation of soil vapor pathway in the southern flowpath	June 2006
Evaluation of sediment occurrence, toxicity testing, and surface water and sediment delineation at points of exposure	June-July 2006
Post-GWETS Engineering Evaluation and Cost Analysis	August 2006

Public meeting to discuss and distribute draft ESD	August 28, 2006
Public comment period for draft ESD (extended at request of public)	August 28 – October 16, 2006
Supplemental Hoyt Brook delineation sampling for arsenic	November 2006
Explanation of Significant Differences outlining decommissioning of the GWETS and attainment of the arsenic ACL through natural processes, a requirement to monitor, evaluate, and if warranted, remediate, contaminants at points of exposure, and a requirement to continue monitoring and, as necessary, evaluate and remediate any risk posed by potential vapor intrusion	February 14, 2007
Public notice regarding start of Fourth Five-Year Review published in *Kennebec Journal*	May 28, 2007
Posting of caution signs in sediment at Hoyt Brook seep	June 4, 2007
Wetland delineation at Hoyt Brook seep	July 2007

3.0 BACKGROUND

Physical Characteristics.

The Winthrop Landfill Superfund Site is located at 294 Annabessacook Road in the Town of Winthrop, Kennebec County, Maine. The landfill consists of two contiguous parcels with a total surface area of approximately 20 acres, and is situated along the east side of Annabessacook Road. An 11.5 acre sphagnum bog is located directly to the east of the Site. A 6 acre cattail marsh and Hoyt Brook are located to the north. The Site is also located along the western shore of 1,420-acre Annabessacook Lake, a large controlled reservoir which is located in the upper reaches of the Cobbossee Watershed. Lower reaches of the watershed provide backup municipal water supplies for Augusta, Maine. Groundwater flow from the Site discharges primarily to Annabessacook Lake to the south, and secondarily to Hoyt Brook to the north.

The Site is located approximately two miles away from the center of the Town of Winthrop. There are approximately 21 residential homes in close proximity to the landfill (within 300 to 400 feet). Figures provided in Attachment 1 and Attachment 2 to this report show the general location of the Site and a more detailed map of the area.

Land and Resource Use.

The Site was excavated in the 1920's as a sand and gravel pit, then operated as the Winthrop Town Dump from 1930 to 1982. The Site is currently inactive.

The current land use for the surrounding area is mainly residential, with some areas of limited commercial use (i.e., an auto repair shop). Annabessacook Lake is used for recreational purposes, such as swimming, fishing, and boating. Hoyt Brook is primarily used for recreational boating via canoe or kayak within the vicinity of the Site.

Residential homes near the Site originally obtained their drinking water from private residential wells. In 1980, volatile organic compounds (VOCs) were detected in a residential well south of the landfill. Area residents have since been connected to a permanent public water supply, and all groundwater use and certain excavation in the area is prohibited.

History of Contamination.

The Site was first excavated in the 1920's as a sand and gravel pit, then operated as the Winthrop Town Dump, accepting residential and industrial waste disposal from 1930 to 1982. Disposal of hazardous wastes occurred in the northern portion of the landfill from the early to mid-1970's. Until the mid-1970's, wastes were also burned periodically. From the mid-1970's to 1982, the southern portion of the Site operated as a sanitary landfill. After 1982, the Site has been and continues to be inactive.

It is estimated that over 3 million gallons of chemical wastes, consisting mostly of organic compounds, were disposed at the Site. Free liquid wastes were dumped and burned periodically, and wastes in drums were also dumped.

In 1980, VOCs were detected in a residential well south of the landfill. Subsequent sampling detected Site-related contaminants in groundwater to the northeast, east, and south of the landfill at levels up to 400 parts per million (ppm).

Initial Response.

The Site was listed on the National Priorities List (NPL) on October 23, 1981. Under an Administrative Order by Consent (AOC), the Town of Winthrop and Inmont Corporation installed a permanent public water supply to area residents in 1984.

On October 9, 1985, the Town of Winthrop enacted an ordinance to prohibit groundwater withdrawal and to prohibit all groundwater use and certain excavation within the Site. This ordinance was revised April 3, 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.

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 beneath the Site. At the time, there were approximately 21 homes in proximity of the landfill. Residents also raised concerns over impact to surface water in Annabessacook Lake, and impacts to the nearby bog and marsh.

The Superfund Enforcement Decision Document was issued on November 22, 1985. (Note that this type of decision document would later come to be called a "Record of Decision," or "ROD" -- this acronym will be used for the remainder of this report.) Based on this ROD, a Consent Decree (CD) was entered on March 23, 1986, among EPA, the Maine Department of Environmental Protection (ME DEP), Inmont Corporation as a generator, and the Town of Winthrop, Maine, Everett Savage and Glenda H. Savage as owners and operators of the landfill. The CD designates Inmont Corporation as the lead PRP. The Town of Winthrop and the Savages granted access to their portions of the Site. The Site is currently PRP-lead.

The CD designates Inmont Corporation as the lead PRP. Inmont was subsequently purchased by BASF Corporation. United Technologies Corporation (UTC), as the former owner of Inmont and on behalf of BASF Corporation, has taken responsibility for conducting Site work. Currently, MACTEC Engineering and Consulting, Inc. (MACTEC) is performing all post-closure monitoring work on behalf of UTC, including landfill cap post-closure work, and monitoring of groundwater, surface water, and sediment.

Basis for Taking Action.

The ROD concluded that potential threats to human health and the environment could primarily occur via ingestion of contaminated groundwater, physical contact with wastes, discharge of contaminants to surface waters, and migration of contaminated groundwater off-site. Ingestion of contaminated groundwater was determined to be the primary threat to human health, particularly due to the levels of carcinogens detected in a well serving two residences. Included in that well were the following compounds:

Compound	Maximum Reported Concentration, Parts Per Billion (ppb)
Tetrahydrofuran	720
Dimethylformamide	500
Methylene chloride	57
trans-1,2-Dichloroethylene	31
Trichloroethylene	10
1,1,1-Trichloroethane	6
1,1-Dichloroethane	22
Vinyl chloride	3.2

The Site monitoring program subsequently included the following landfill constituents:

2,4-Dinitrophenol	Ethylbenzene	Styrene
Diethylphthalate	Methylene chloride	Total Xylenes
Chrysene (*)	Fluorotrichloromethane	Tetrahydrofuran
Benzene	Tetrachloroethylene	Di-2-ethylhexyl adipate
1,1-Dichloroethane	Toluene	Dimethylformamide
1,2-Dichloroethane	Trichloroethylene	2-Methoxyethanol

1,1,1-Trichloroethane	Vinyl chloride	Zinc
Chloroethane	Acetone	Nickel
1,1-Dichloroethylene	2-Butanone	Arsenic
trans-1,2-Dichloroethylene	4-Methyl-2-pentanone	Phenol
1,2-Dichloropropane	2-Hexanone	

* Chrysene was later removed from the monitoring program, as described in the March 10, 1993 EPA/ME DEP Decision Document.

4.0 REMEDIAL ACTIONS

Remedy Selection.

Remedial action objectives for the Site included the following:

- to protect public health by providing uncontaminated water supplies for residents in currently contaminated areas and areas in which there was potential for contamination of groundwater supplies;
- to protect public health by minimizing the potential for human contact with contaminants via inhalation, ingestion or dermal contact;
- to protect the environment by minimizing the potential for discharge to Annabessacook Lake, Hoyt Brook, the sphagnum bog, and the cattail marsh of contaminants already in groundwater and contaminants which continue to be released from the landfill; and
- to minimize further degradation of groundwater resources.

As outlined in the November 22, 1985 ROD, the selected remedy for the Winthrop Landfill Superfund 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 Resource Conservation and Recovery Act (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 were exceeded, the ROD provided for the installation and operation of a groundwater extraction and treatment system (GWETS). An Explanation of Significant Differences (ESD) was also signed on October 20, 1993, which documented the inclusion of a vapor extraction system (VES) as a component of the GWETS.

Remedy Implementation.

As previously outlined, under an AOC, the Town of Winthrop and Inmont Corporation installed a permanent public water supply to area residents in 1984. (One remaining residence was connected in 1987.) On October 9, 1985, the Town of Winthrop enacted an ordinance to prohibit groundwater withdrawal and to prohibit all groundwater use and certain excavation within the Site. This ordinance was revised April 3, 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. New residences in the area have all been connected to the water line in accordance with the Town's Ordinance. During the previous five-year review, UTC's contractor, MACTEC, undertook a records review and conducted discussions with several area residents to confirm that all residences within the Town of Winthrop's Groundwater and Air Protection Zone are connected to the municipal water source.

A monitoring program was implemented in March 1986, which specified a quarterly monitoring program for 37 samples at specified groundwater, surface water, and sediment locations (see Attachment 2) with analysis for 32 landfill constituents as listed in Remedial Action Plan (RAP) Table 1 (see Attachment 3). The RAP also required annual analysis for a second list of constituents, RAP Table 2 (see Attachment 4), to identify whether additional constituents should be added to RAP Table 1.

After completion of engineering studies, landfill cap design began in March 1986. Cap design was completed with the approval of the Remedial Action Work Plan submitted on November 19, 1986. Cap construction was completed in September 1987 except for one area of slope failure. The vegetative layer and fence installation were completed in October 1987. In April 1989, the PRPs began investigating the area of slope failure and determined that slippage occurred because the ground around a nearby bog was weaker than expected and it could not adequately support the weight of the cap. Slope reconstruction was completed in November 1989, in accordance with construction plans and specifications approved by EPA and ME DEP. EPA approved the cap on June 23, 1992, and post-closure monitoring of the cap has continued since that time. Settlement of the landfill cap was reported in July 1994, and the PRPs made repairs as necessary. Landfill monitoring systems are outlined on Attachment 5.

In 1988, the PRPs began a wetlands enhancement project in Annabessacook Lake to the north of the Site, which consisted of a wild rice planting intended to compensate for landfill cover encroachment into the sphagnum bog. The PRPs continued to annually seed the area until 1995, when EPA and ME DEP approved a two-year cessation of planting activities. In 1998, the Agencies concurred that no further wetlands compensation action was needed.

The PRPs submitted an ACL Demonstration Report on April 15, 1992; EPA and ME DEP disapproved all proposed ACLs. On September 25, 1992, the PRPs submitted a revised ACL Demonstration Report which EPA and ME DEP accepted in a Decision Document signed March 10, 1993. ACLs were set at the point of compliance, the edge of the solid waste disposal area. Protective Concentration Limits (PCLs) were set for the points of exposure, where contaminated groundwater could come into contact with a potential human or ecological receptor in surface water or sediment. (See Attachment 6.)

The ACLs were set at Maximum Contaminant Levels (MCLs) for most contaminants of concern. If an MCL had not been promulgated, a human health risk-based drinking water guideline was used, such as the State of Maine's Maximum Exposure Guidelines (MEGs). If ACLs set at the MCL were determined to not protect ecological receptors at the points of exposure, an ecologically derived guideline was used instead. PCLs were also set at MCLs for most contaminants, with the same aforementioned caveats.

Arsenic was recognized in the 1993 Decision Document as being an ubiquitous, naturally-occurring compound, for which background concentrations often exceed health based guidelines. The ACL for arsenic in groundwater was set at 30 ppb. The PCL for arsenic in sediment was set at 31,000 ppb. The PCL for arsenic in surface water was to be set as a background concentration, not less 0.77 ppb and not to exceed 30 ppb in surface or groundwater. In March 1994, ME DEP approved a PCL of 5 ppb for arsenic in surface water; EPA concurred with this decision in June 1995.

Contamination from the Site did accumulate in sufficient quantities in sediments at the Annabessacook Lake seep area to cause an exceedance of PCLs for arsenic in sediment. In October 1996, the PRPs excavated a large area of exposed contaminated sediment. Geotextile fabric and riprap material were placed over the discharge area. A similar exceedance was present in a smaller affected portion of nearby Hoyt Brook, and the PRPs remediated this area in December 1997.

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 due to ACL exceedances, formal design plans were submitted to EPA and ME DEP. EPA and ME DEP conditionally approved a 100% design report on April 28, 1994 and construction began shortly thereafter. All extraction and re-injection wells, including all necessary underground piping, were placed at the Site and an on-site treatment plant building was constructed.

Operation of the GWETS began in March 1995, and was required to continue until ACLs were achieved in groundwater outside the landfill boundary. The GWETS was designed to hydraulically isolate groundwater underneath the landfill and to remediate groundwater constituents. Groundwater was extracted from the central portion of the landfill and treated to remove VOCs, N,N-dimethylformamide, iron, and arsenic. The treated water was re-injected at the landfill northern and southern boundaries to create artificial groundwater mounds that enhanced the size of the capture zone of the extraction system.

The GWETS system consisted of one extraction well (EW-2) located in the center of the landfill pumping at a maximum of 65 gallons per minute (gpm) and five recharge wells, two at the north end of the landfill accepting treatment plant effluent at 30 and 5 gpm respectively, two at the south end accepting 5 gpm total, and one in the southern flowpath accepting 25 gpm. In December 1995, a recharge trench was installed to supplement the system, and another recharge well was installed in June 1996. In October 1997, the PRPs installed two additional extraction wells at an identified hot spot on the landfill in an attempt to maximize efficiency and expedite shutdown of the GWETS. However, when detected concentrations were much lower than the initial investigations, the PRPs determined that operating these wells as permanent extraction wells would not result in significant mass removal of contamination, and operation of these wells ceased.

The PRPs had also investigated the use of a VES to supplement any groundwater treatment. Soil and gas analyses showed that residual VOCs remained within soils and refuse above the water table. Studies indicated that removal of the VOCs above the water table was possible, and that inclusion of the VES component should reduce the GWETS operation time. The PRPs submitted a VES Final Design in August 1993, and on October 20, 1993, EPA documented the inclusion of the VES in the remedial action by issuing an Explanation of Significant Differences.

The full-scale VES design consisted 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 was used to treat methane during the first 100 days of initial operations, and remaining VOCs were treated by carbon filtration. In October 1993, the PRPs began installation of the vapor extraction wells, manifold pipe network and the VES building. VES process equipment was installed during the summer of 1994 and the system was started in October 1994. The PRPs continued to make repairs to ongoing divots and depressions that occurred in the landfill cap because of operation of the VES.

EPA and ME DEP conducted final inspections of the Site on October 24, 1996 and determined that the PRP contractors had constructed the remedy in accordance with remedial design plans and specifications approved by the Agencies. Final designs contained construction quality assurance programs to verify that the work met the ROD and design requirements. EPA and ME DEP staff had performed oversight of all construction activities and design of monitoring programs and the ACLs during the remedial action; EPA's contractors also provided oversight of all construction activities, as well as significant oversight of quarterly monitoring activities, from 1984- 1997. EPA and ME DEP confirmed in a Site visit on August 3, 1998 that minor items associated with ongoing maintenance had been completed.

The Site achieved construction completion when the Preliminary Close Out Report was signed on December 23, 1997. On September 29, 1998, EPA determined that the remedy was Operational and Functional, and documented this in an Interim RA Report. The

Operational and Functional determination for the Site triggered the start of Site-wide Operations and Maintenance (O&M).

GWETS Operation and Maintenance, and 2007 Explanation of Significant Differences.

The PRPs continued operation of the VES through 1999, reconfiguring the system in early 1998 to extract soil vapor only from an identified hot spot on the landfill. Between 1994 and 1999, the VES removed an estimated 3,181 pounds of non-methane VOCs. In 2000, the VES was decommissioned after a determination that it had reached the limit of effective remediation for organic vapors, and that VOC concentrations had not rebounded after a temporary shutdown of the system.

The PRPs continued GWETS operation through November 2002. Throughout this time, sampling indicated that the system was achieving performance standards and that the effluent met established cleanup levels. 1,1-dichloroethane was the last organic compound to be detected above the ACL in extracted groundwater in March 1999. The only constituent that continued to be detected above the ACL in extracted groundwater was arsenic.

In November 2002, following a public meeting and public comment period, the Agencies approved a temporary shutdown of the GWETS to allow for a rebound evaluation to observe Site conditions under non-pumping conditions and evaluate how effective the operation of the GWETS had been on the contaminated groundwater plume. During the rebound evaluation, vinyl chloride was detected at one well in the southern flowpath above the criterion which had been established for reactivation of the system. In order to allow the rebound evaluation to continue, but still maintain protection of human health and the environment, the Agencies approved a Vinyl Chloride Contingency Plan submitted by the PRPs which outlined definitive response actions to a confirmed exceedance of the reactivation criteria. The Contingency Plan also established action levels for evaluating potential vapor migration into indoor air, and required remediation in the southern flowpath if data indicated that migration was likely. Since implementation of the Contingency Plan in 2003, remediation has not been required.

In August of 2006, EPA, in conjunction with ME DEP, UTC, and UTC's contractor, MACTEC, held an open house followed by a public meeting to discuss and distribute a draft Explanation of Significant Differences (ESD) allowing the GWETS to be permanently decommissioned. As stated in the ESD, the Agencies had determined that the GWETS was no longer necessary to treat contaminants other than arsenic, and that it would not be effective in treating arsenic. Specifically, extensive data gathered from before, during, and after the period of GWETS operation showed that removal/treatment of contamination by the GWETS had led to significantly reduced concentrations of all contaminants other than arsenic in the northern and southern flowpaths, to the point that ACLs had been or would soon be achieved. By contrast, arsenic continued to be found in groundwater at most downgradient wells at concentrations comparable to those measured prior to GWETS operation, and at levels significantly above the ACL.

As explained in the ESD, the Agencies believed that the widespread elevated arsenic levels reflected the mobilization of naturally occurring arsenic into groundwater, which was the result of a change in the aquifer underlying the landfill to anaerobic/reducing conditions. The anaerobic/reducing conditions in the aquifer were in turn caused by the degradation of organic waste in the landfill, an ongoing process which was expected to persist for decades to centuries. These facts, supported by the results of the rebound evaluation, indicated that continued operation of the GWETS would not have any significant effect on arsenic concentrations in the future.

The ESD described alternative methods evaluated by the PRPs to address the remaining problem of arsenic in groundwater, including technologies to accelerate the process of waste degradation, technologies to return the aquifer to aerobic conditions, technologies to immobilize dissolved arsenic, and technologies to capture dissolved arsenic in groundwater prior to its discharge in the lake and brook. Each of these approaches was considered inadvisable due to technical challenges, cost considerations, and/or the fact that the remedy would not be permanent. The conclusion reached was that there are no currently available technologies which could address mobilization of naturally occurring arsenic in a cost-effective and reliable manner.

EPA collected public comments through October 16, 2006, and finalized the ESD on February 14, 2007. Pursuant to the final ESD, arsenic in groundwater is expected to be addressed through natural processes over an extended period of time. To ensure continued protection of human health and the environment, the ESD also requires the development and implementation of a plan to monitor and remediate points of exposure as necessary, including arsenic accumulation in sediment.

In 2006, the Agencies also conducted a supplemental evaluation of existing Site data to determine if there was a potential risk to occupants of buildings in the southern flowpath from vapor intrusion of vinyl chloride or other VOCs. The Agencies have determined that conditions currently at the Site do not present an unacceptable risk via the vapor intrusion pathway, but that continued monitoring, evaluation, and remediation if necessary, is required to ensure that changes in conditions do not present an unacceptable risk in the future from vinyl chloride or any other Site-related contaminants.

In 2006, EPA also performed screening level evaluations of human health and ecological risks posed by Site-related contaminants at all points of exposure. Throughout 2006, UTC and its contractor, MACTEC, conducted a number of additional sampling events and evaluations in order to help the Agencies further assess human health and ecological risk at the points of exposure.

Current Status.

UTC and its contractor, MACTEC, continue to conduct Site-wide monitoring of groundwater, surface water and sediment in accordance with the post-closure monitoring program. When the monitoring program was implemented in March 1986, the program

specified quarterly sampling for groundwater, surface water, and sediment locations. In November 1998, the post-closure monitoring program was revised to reduce monitoring from quarterly to semi-annually in May and October, and to reduce the number of locations and constituents sampled based on historical detections.

EPA, ME DEP, and UTC and its contractor, MACTEC, are currently working on revisions to the post-closure monitoring program. As of July 2007, the Agencies had concurred with formally deleting performance monitoring of the GWETS and VES systems. The Agencies also tentatively concurred with a change in frequency for the RAP Table 2 parameters from annually to once every five years, conditioned on the development of a contingency plan to address unforeseen problems or changes in the data. The last RAP Table 2 monitoring occurred in May 2007, with no detections above state or federal drinking water criteria with the exception of sodium, the levels of which have declined over the last five years.

To specifically address the ongoing discharge of arsenic at points of exposure, and any future exceedance at points of exposure of the PCL for any Site-related contaminant, the February 2007 ESD requires the development and implementation of a Point of Exposure Monitoring and Remediation Work Plan. This plan will require periodic monitoring of water and sediment at all points of exposure, and will set forth a phased response to the discovery of any exceedance of the PCL for arsenic or any other Site-related contaminant. The response to a PCL exceedance will include, at a minimum, procedures for confirmation sampling, for delineation of the areal extent of the exceedance, for determining whether remedial actions, including excavation of sediment and off-site disposal, are necessary to protect human health or the environment at the location where the PCL exceedance is discovered, and for implementing any other response actions determined by the Agencies to be necessary. EPA, ME DEP, and UTC and its contractor, MACTEC, have been working towards the development of the plan, and anticipate involving the local citizens' group and affected landowners in discussions by the end of calendar year 2007. When finalized, the Point of Exposure Monitoring and Remediation Work Plan will become part of the Post-Closure Monitoring Plan.

In advance of development of the Point of Exposure Monitoring and Remediation Work Plan, UTC and its contractor, MACTEC, have already conducted a number of sampling events in an effort to delineate the areal extent of arsenic in sediment at the Hoyt Brook seep area. Data confirm that arsenic concentrations exceed PCLs in sediment near the seep area and up to approximately 50 feet downstream of the seep. The greatest potential risk in this area exists for a young child, who may wade directly into and/or incidentally ingest the contaminated sediment. In February 2007, the Town of Winthrop requested permission from landowners abutting the Hoyt Brook seep area for UTC and its contractor, MACTEC, to access the area and post caution signs to mark this potential problem area for those who might pass through the area. The owner of the property directly abutting the seep area and contaminated sediment granted permission for this activity, and in June 2007, MACTEC posted two caution signs in the Hoyt Brook seep area. (See Attachment 7 for sign content.)

In May of each year, UTC's contractor, MACTEC, also conducts surface water sampling in the area of the Annabessacook Lake seep and provides the data to EPA for a determination on potential risks to residents via recreational use. To date, EPA's human health risk staff have consistently determined that the levels of contaminants in surface water are unlikely to cause negative health impacts to people who will swim or wade in the lake.

Vinyl chloride monitoring of groundwater and soil gas in the southern flowpath also continues in accordance with the Vinyl Chloride Contingency Plan, and in accordance with the February 2007 ESD, which requires continued monitoring and, as necessary, evaluation and remediation of the risk posed by potential vapor intrusion. The most recent vinyl chloride monitoring in the southern flowpath occurred in August 2007. Based on data collected to date, VOCs have not posed a vapor intrusion threat to area structures, and remediation has not been required.

UTC and its contractors also continue to perform O&M work on the cap as necessary. Visual monitoring of the landfill occurs at least twice per year to check for the following: evidence of erosion; cap differential settlement; the condition of fence gates, locks, and signs; condition of the vegetative cover; condition of gas probes and groundwater monitoring wells; condition of drainage structures; and the condition of roads and surrounding residential properties. The most recent cap inspection occurred in June 2007. Minor problems with fence gates were repaired, and no settlement or depressions were observed. UTC's contractor, MACTEC, also continues to inspect the GWETS building as needed and plans to provide a GWETS decommissioning plan in the future.

An off-site landfill gas monitoring program is conducted to identify any subsurface gas migration; in May 2007, the Agencies approved a reduction in gas probe measurement frequency from quarterly to annually based on past data. MACTEC regularly contacts the Town of Winthrop Code Enforcement Officer to assess whether any new building permit applications were submitted in order to evaluate compliance with air and groundwater provisions of the Town's Ordinance.

EPA does not have detailed information on costs expended on O&M activities to date. The Remedial Design/Remedial Action has been performed entirely by the PRPs, and the1986 Consent Decree does not require the PRPs to provide information about O&M costs.

5.0 PROGRESS SINCE LAST FIVE-YEAR REVIEW

In the third five-year review, dated September 30, 2002, EPA certified that the remedy selected for this Site remains protective of human health and the environment.

The last five-year review stated that there were multiple settlement areas on the landfill cap, and noted that the PRPs had very recently completed landfill cap settlement repairs to re-establish proper grading and a vegetative cover. Cap maintenance was ongoing at

that time, and has continued as part of regular O&M activities. During the most recent cap inspection in June 2007, no settlement or depression areas were observed.

The last five-year review also noted that the GWETS was ineffective in reducing concentrations of arsenic, which at the time was the only remaining contaminant in the influent above an Alternate Concentration Limit within the GWETS capture zone. The GWETS was also observed to be ineffective in addressing ongoing VOC exceedances and the mobilization of naturally occurring arsenic in downgradient flow paths outside of the system's capture zone, and ineffective in addressing the ongoing discharge of arsenic to sediment at points of exposure.

In November 2002, the GWETS was shut down and a rebound evaluation begun to determine the potential for optimization of the GWETS and/or the need for alternate remedial technologies. During the rebound evaluation, in response to a detection in the southern flowpath of vinyl chloride above the criterion for reactivation of the GWETS, a Vinyl Chloride Contingency Plan was developed and implemented which provided for enhanced monitoring, evaluation and remediation, as necessary, of the risk posed by potential vapor intrusion in structures located above the southern flowpath. In 2006, the Agencies performed a supplemental review of existing data to evaluate the vapor intrusion risk and determined that, while existing conditions did not present an unacceptable risk, continued monitoring, evaluation and remediation, if necessary, was required to ensure that no unacceptable risk occurred in the future.

UTC and its contractor, MACTEC, worked with the Agencies to evaluate rebound evaluation data and the results of engineering evaluations of other technologies available to address the problem of mobilization of naturally-occurring arsenic. EPA also performed screening level evaluations of human health and ecological risks posed by arsenic and other Site-related contaminants at points of exposure. As previously outlined, in February 2007, EPA issued an ESD providing for the decommissioning of the GWETS and acknowledging that no cost-effective and reliable technologies were available to prevent the mobilization and discharge to points of exposure of naturally-occurring arsenic . The ESD requires the monitoring and evaluation of contaminants at points of exposure, and, if warranted, remediation of contaminants posing an unacceptable risk, as well as the continued monitoring and, as necessary, evaluation and remediation of the risk posed by potential vapor intrusion.

In June 2007, MACTEC posted caution signs at the Hoyt Brook seep area. The PRP, EPA and ME DEP are currently working on the development of a Point of Exposure Monitoring and Remediation Work Plan, as required by the ESD, and it is expected that seep areas will be evaluated and, if necessary, remediated pursuant to this Plan. Currently, UTC's contractor, MACTEC, continues to perform all Site-wide monitoring, including monitoring of downgradient flow paths and points of exposure.

Last, the previous five-year review noted the need for a notice in the deed to the property on which the landfill is located. While the public was protected from on-site contaminants because a fence around the landfill impedes access and control of the Site is

in the hands of United Technologies Corporation and its contractors, the lack of a notice to the deed called into question the long-term protectiveness of the remedy.

In October 2002, EPA and ME DEP notified the Town of Winthrop of the need to comply with Consent Decree requirements regarding notice to the deed of the property, and suggested that the vehicle instead be in the form of a more protective restrictive covenant which provides enforceable restrictions on future use of the landfill property. In January 2005, the Town of Winthrop provided the Agencies with a copy of a fully executed Declaration of Covenant Running With the Land for Town of Winthrop Property, recorded in the Kennebec County Registry of Deeds. (See Attachment 8.)

While the Declaration of Covenant addressed a Town-owned property over which the bulk of the Winthrop Landfill is located, the Town and the Agencies discovered that the Winthrop Landfill was also located on a separate, smaller parcel previously owned by two individual potentially responsible parties, Glenda H. Savage and Everett Savage, both of whom signed the original 1986 Consent Decree. Unbeknownst to the Agencies, these individuals had transferred their property ownership to other parties many years ago. The Agencies have discussed this matter with the Town of Winthrop, and the Town had agreed to pursue these parties and request that they record a similar deed notice for the remaining parcel. The Agencies will coordinate with the Town regarding the implementation of a Declaration of Environmental Covenant pursuant to the Uniform Environmental Covenants Act of July 2005. This issue is still outstanding.

No further recommendations were identified by the third five-year review.

6.0 FIVE-YEAR REVIEW PROCESS

This five-year review was conducted in accordance with EPA's guidance document, "Comprehensive Five-Year Review Guidance," EPA 540-R-01-007, dated June 2001. Tasks completed as part of this five-year review include review of pertinent Site-related documents, an inspection of the Site, discussions with ME DEP, the PRPs and community members, and a review of the current status of regulatory or other relevant standards.

Document Review.

Site-related documents reviewed as part of this effort are listed in Attachment 9. Additionally, this review included review of recent post-closure monitoring reports and data.

Community Involvement/Interviews.

This is the Site's fourth five-year review. A public notice announcing the start of the fourth five-year review was published in the Kennebec Journal on May 28, 2007. Community involvement activities were conducted on a limited basis only, given the age of the Site, the level of citizen interest in recent years, and recent activities involving the

community on other issues. Individual citizen interviews were not conducted. The area around the Site is largely rural, and owners of homes along the shore of Annabessacook Lake generate most of the interest. The Winthrop Landfill Citizens Action Group (WLCAG), was extremely active at the Site during the Remedial Design/Remedial Action phase, but WLCAG's involvement, and overall citizen interest, decreased markedly after the GWETS was implemented, and most Site activities since 1995 have proceeded without significant issue or concern.

In August 2006, EPA, in conjunction with ME DEP and UTC and its contractor, MACTEC, held an open house and public meeting regarding the draft ESD on GWETS decommissioning and arsenic issues. Most attendants were local residents and representatives from WLCAG. EPA collected public comments on the draft ESD through October 16, 2006, and only received two comments from the public. More recently, EPA has kept WLCAG and affected landowners involved and informed of the need for and posting of caution signs in the Hoyt Brook seep area in June 2007, and EPA has committed to involving these citizens in the development of the Point of Exposure Monitoring and Remediation Work Plan.

Apart from these issues, EPA and ME DEP have received a very limited number of calls pertaining to the Site in recent years, most of which are from citizens interested in buying property near the Site or Annabessacook Lake, or regarding issues at Annabessacook Lake that are not within the scope of the Superfund Site. The Agencies and UTC's contractor, MACTEC, as well as the Town of Winthrop, fielded several calls regarding the signs posted at the Hoyt Brook seep area, and have pointed out the need to exercise caution near the seep area. Some local citizens continue to occasionally request that the Agencies remove the fence and/or signs around the landfill designating it as a hazardous waste disposal area; the Agencies have not granted these requests, citing the Consent Decree requirement to restrict access and alert potential trespassers.

The public information repository is currently located in the GWETS treatment building. Citizens could visit the repository during normal business hours when the GWETS was running, and can currently visit by appointment. In the last 10 years, UTC's contractor, MACTEC, has received virtually no requests to view documents in the repository.

The completed fourth five-year review report for this Site will be sent to the information repository, and a notice of its availability will be mailed to the community.

Data Reviewed.

As previously outlined, EPA issued an ESD in February 2007 allowing the GWETS to be decommissioned in light of the fact that it is no longer necessary to treat contaminants other than arsenic and the fact that it will not be effective in treating arsenic. Prior to issuing the ESD, EPA, in conjunction with ME DEP and UTC and its contractor, MACTEC, conducted a number of studies to investigate whether alternative technologies were available to address arsenic at the points of exposure. EPA also conducted screening level evaluations of human health and ecological risks posed by contaminants

at all points of exposure, and UTC's contractor, MACTEC, conducted a number of additional sampling events and evaluations in order to help the Agencies further assess human health and ecological risk at the points of exposure.

Since the ESD was issued, MACTEC has conducted further sampling events and evaluations related to the Hoyt Brook seep area, and posted caution signs at that area in June 2007. The ESD includes a requirement to monitor and evaluate contaminants at points of exposure and, if warranted, remediate contaminants that pose an unacceptable risk. EPA, ME DEP, and UTC and its contractor, MACTEC, have conducted efforts related to the development of a Point of Exposure Monitoring and Remediation Work Plan, and will be working to develop and finalize this plan with input from WLCAG and affected landowners. The ESD also includes a requirement to continue monitoring and, as necessary, evaluation and remediation of the risk posed by potential vapor intrusion.

UTC's contractor, MACTEC, has been monitoring groundwater, surface water, and sediment since 1986 as part of a long-term post-closure monitoring plan. Landfill constituents are currently analyzed on a semi-annual basis, and a much larger group of constituents have been analyzed annually to identify whether additional constituents should be added to the regular sampling program. For most landfill constituents (with the exception of arsenic), long-term trend analysis have indicated generally decreasing trends in concentrations.

Since the last five-year review, the only potentially new constituent detected has been sodium. Sodium detections exceed the Maine Maximum Exposure Guidelines, but have been within the normal background range, and levels have declined over the last five years. Prior to the last five-year review, there had been one detection of a potentially new constituent, but re-sampling did not confirm the detection.

As outlined in Attachment 10, which highlights exceedances detected in the most recent May 2007 monitoring round, arsenic continues to exceed the ACL at numerous locations. Within the two groundwater plumes downgradient of the landfill, VOCs that continue to be detected above ACLs in groundwater are:

- 1,1-dichloroethane, found in monitoring well MW-8A in the southern groundwater flow path, and at monitoring well MW-15A in the northern flow path, and
- vinyl chloride, found in the southern flowpath, at monitoring well MW-5A.

1,1-Dichloroethane was present at declining levels in the northern and southern flowpaths during GWETS operation. It is expected that levels will continue to decrease and that this contaminant will eventually meet the ACL through natural processes.

Levels of vinyl chloride are also expected to decrease through natural processes, although the current levels of vinyl chloride are of greater concern to the Agencies. When vinyl chloride was detected in the southern flowpath during the GWETS rebound evaluation, the Agencies approved a Vinyl Chloride Contingency Plan which outlines definitive

response actions within the southern flowpath at several groundwater and soil gas monitoring locations. The Contingency Plan also establishes action levels for evaluating potential vapor migration into indoor air and requires remediation if data indicate that migration is likely. Since implementation of the Contingency Plan in 2003, remediation has not been required. Further, in 2006, the Agencies conducted a supplemental evaluation of existing Site data to determine if there was a potential risk to occupants of buildings in the southern flowpath from vapor intrusion of vinyl chloride or other VOCs, and determined that conditions currently at the Site do not present an unacceptable risk via the vapor intrusion pathway. The February 2007 ESD requires continued monitoring, evaluation and remediation of the risk posed by potential vapor intrusion, as necessary.

UTC's contractor, MACTEC, continues to monitor all points of exposure, where arsenic and other metals continue to accumulate in sediment, including the Annabessacook Lake Seep Area, the Hoyt Brook Seep Area, Sphagnum Bog/Seep East, and Cattail Marsh/Seep Marsh. Surface water is also sampled at Points of Exposure where groundwater is known to discharge to surface water bodies. As previously outlined, EPA, ME DEP, and UTC and its contractor, MACTEC, are currently developing a Point of Exposure Monitoring and Remediation Work Plan, and it is expected that seep areas will be evaluated and, if necessary, remediated pursuant to this Plan.

Arsenic concentrations at the Hoyt Brook seep area currently exceed PCLs in sediment near the seep area and up to approximately 50 feet downstream of the seep. MACTEC posted two caution signs in this seep area in June 2007. EPA has already determined, based on human health risks, that remediation will be required in this seep area.

Arsenic concentrations have also exceeded the PCL in sediment at the Annabessacook Lake seep area. The extent of the exceedance has not been fully delineated. (Ideally, the seep area would be delineated while the lake level was lowered in the winter, but lake levels remained higher than normal throughout last winter.)

UTC's contractor, MACTEC, also continues to conduct surface water sampling in the area of the sediment seep at Annabessacook Lake in May of each year, and provide the data to EPA for a determination on potential risks to residents via recreational use. EPA's human health risk staff have consistently determined that the levels of contaminants in surface water are unlikely to cause negative health impacts to people who swim or wade in the lake.

At Sphagnum Bog/Seep East and Cattail Marsh/Seep Marsh, arsenic, zinc, and nickel have all been detected in sediment and surface water at levels exceeding PCLs. Screening level evaluations of potential risk at these areas considered additional factors, including accessibility, areal extent of the PCL exceedances, contaminant toxicity, and sediment occurrence. At this time, the Agencies have not determined that these areas require remediation. Monitoring of surface water and sediment will continue, and it is expected that these areas will continue to be evaluated in accordance with the Point of Exposure Monitoring and Remediation Work Plan, once developed.

Site Inspection.

Major Site inspections occurred in 1996 and 1998. On October 24, 1996, EPA and ME DEP conducted final inspections of the Site and determined that the PRP contractors had constructed the remedy in accordance with Remedial Design plans and specifications approved by the Agencies. EPA and ME DEP confirmed in a Site visit on August 3, 1998, that minor items associated with ongoing maintenance had since been completed.

EPA, ME DEP, and UTC and its contractor, MACTEC, conducted a Site inspection on May 24, 2006, which included all points of exposure, including the seeps at Annabessacook Lake, Hoyt Brook, Sphagnum Bog, and Cattail Marsh, as well as the landfill cap itself. EPA's ecological risk assessor also attended to observe conditions at the points of exposure as part of EPA's ongoing evaluation of surface water and sediment PCL exceedances at the POEs. Following the Site inspection, MACTEC conducted a variety of additional evaluations and sampling events associated with this effort.

EPA conducted a Site visit on August 28, 2006, primarily to observe the condition of the fence surrounding the landfill cap and associated features.

On June 4, 2007, EPA, ME DEP, and UTC's contractor, MACTEC, conducted a Site visit primarily to inspect the Hoyt Brook seep area, meet with the owner of the property directly abutting the seep area, and to post caution signs in the seep area.

One item of note is the status of the GWETS system and building. The February 2007 ESD allows decommissioning of the GWETS, and as of July 2007, the Agencies had concurred with formally deleting performance monitoring of the GWETS and VES systems from the Post-Closure Monitoring Plan. MACTEC continues to inspect the GWETS building as needed and plans to provide a GWETS decommissioning plan in the future. UTC and its contractor, MACTEC, are also investigating the potential future use of the GWETS building once the system is dismantled and removed.

7.0 TECHNICAL ASSESSMENT

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

Yes, the remedy, as outlined in the ROD and modified by the ESDs, is operating as designed and as intended by the decision documents. The 1985 ROD outlined the following specific objectives for the remedial response:

- protect public health by providing uncontaminated water supplies for residents,
- protect public health by minimizing the potential for human contact with contaminants,
- protect the environment by minimizing the potential for discharge to surface water bodies, and
- minimize further degradation of groundwater resources.

As required by the 1985 ROD, an alternate water supply was extended to area residents. A 1985 Town Ordinance, modified in 1991, prohibits all groundwater withdrawal, groundwater use, and certain excavation within the Site, as well as excavation control in areas potentially impacted by landfill gas migration. During the previous five-year review, UTC's contractor, MACTEC, undertook a records review and conducted discussions with several area residents to confirm that all residences within the Town of Winthrop's Groundwater and Air Protection Zone are connected to the municipal water source.

The landfill cap and fencing are performing as intended. Routine maintenance and repair activities continue on a regular basis. The most recent cap inspection occurred in June 2007; minor problems with fence gates were repaired, and no settlement or depressions were observed. UTC's contractor, MACTEC, continues to conduct an off-site landfill gas monitoring program to identify any subsurface gas migration; in May 2007, the Agencies approved a reduction in gas probe measurement frequency from quarterly to annually based on past data. MACTEC regularly contacts the Town of Winthrop Code Enforcement Officer to assess whether any new building permit applications were submitted in order to evaluate compliance with air and groundwater provisions of the Town's Ordinance.

No problems with the cap have been identified that fall outside of the range of normal maintenance, and no activities or actions that would violate the Town Ordinance requirements have been identified. These measures have succeeded in preventing direct contact with contaminants in soil and preventing exposure to, or ingestion of, contaminated groundwater.

ACLs were established for each contaminant in groundwater at MCLs, MEGs, or a more stringent ecologically derived guideline. UTC's contractor, MACTEC, continues to conduct monitoring of groundwater, surface water, and sediment and is currently working with the Agencies on revisions to the post-closure monitoring program.

The GWETS operated from 1995 until 2002 when it was shut down for a rebound evaluation. The GWETS effectively removed and treated contamination in the groundwater beneath the landfill, and resulted in significantly reduced concentrations of all contaminants other than arsenic in the northern and southern flowpaths, to the point that ACLs are or will soon be achieved. The VES performed as intended until it was decommissioned in 2000.

As previously outlined, the February 2007 ESD allows the GWETS to be decommissioned in light of the fact that it is no longer necessary to treat contaminants other than arsenic and the fact that it will not be effective in treating arsenic. Prior to issuing the ESD, EPA, in conjunction with ME DEP and UTC and its contractor, MACTEC, conducted a number of studies to investigate whether alternative technologies were available to address arsenic at the points of exposure and concluded that no cost-effective and reliable technologies were available. EPA also conducted screening level evaluations of human health and ecological risks posed by arsenic and other Site-related

contaminants at all points of exposure, and MACTEC conducted a number of additional sampling events and investigations in support of these evaluations.

In addition to decommissioning of the GWETS, the ESD requires monitoring and evaluation of contaminants at points of exposure and, if warranted, remediation of contaminants that pose an unacceptable risk. UTC's contractor, MACTEC, currently continues to monitor all points of exposure, including the Annabessacook Lake Seep Area, the Hoyt Brook Seep Area, Sphagnum Bog/Seep East, and Cattail Marsh/Seep Marsh. As previously outlined, EPA, ME DEP, and UTC and its contractor, MACTEC, are currently developing a Point of Exposure Monitoring and Remediation Work Plan, and it is expected that seep areas will be evaluated and, if necessary, remediated pursuant to this Plan.

EPA has already determined, based on human health risks, that remediation is required for the PCL exceedance of arsenic in sediments at Hoyt Brook. The greatest potential risk in the Hoyt Brook seep area exists for a toddler, who may wade into and/or accidentally ingest the contaminated sediment. While there is nothing to prevent access to the area, the property is privately owned, wooded, and undeveloped. The nearest home is located approximately 500 feet away. The area is most frequently accessed by recreational boaters via kayak or canoe.

The ESD also includes a requirement for continued monitoring and, as necessary, evaluation and remediation of the risk posed by potential vapor intrusion. Vinyl chloride monitoring of groundwater and soil gas in the southern flowpath has continued in accordance with the Vinyl Chloride Contingency Plan since it was implemented in 2003, and in accordance with the February 2007 ESD. The most recent vinyl chloride monitoring in the southern flowpath occurred in August 2007. Based on data collected to date, vinyl chloride and other VOCs have not posed a vapor intrusion threat to occupants of area structures, and remediation has not been required.

Consistent with the ROD, the Consent Decree required that deed notices be recorded documenting the presence of hazardous waste on property within the landfill. The previous five-year review noted that a notice in the deed to the property on which the landfill is located was never filed.

In January 2005, the Town of Winthrop provided the Agencies with a copy of a fully executed Declaration of Covenant Running With the Land for Town of Winthrop Property, recorded in the Kennebec County Registry of Deeds. This Declaration of Covenant is more protective than a deed notice, and provides enforceable restrictions on future use of the landfill property and additional protections for the cap portion of the remedy.

While this Declaration of Covenant addresses a Town-owned property on which the bulk of the Winthrop Landfill is located, the Town and the Agencies discovered that the Winthrop Landfill was also located on a separate, smaller parcel previously owned by two individual potentially responsible parties, Glenda H. Savage and Everett Savage,

both of whom signed the original 1986 Consent Decree. Without the required notice to the Agencies, these individuals had transferred their property ownership to other parties many years ago. The Agencies have discussed this matter with the Town of Winthrop, and the Town had agreed to pursue these parties and request that they record a similar deed notice for the remaining parcel. The Agencies will coordinate with the Town regarding the implementation of a Declaration of Environmental Covenant pursuant to the Uniform Environmental Covenants Act of July 2005. This issue is still outstanding.

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

Yes, the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of remedy selection are still valid. Detail on each of these areas is presented below.

Changes in Standards. The 1985 ROD, page 38, identifies the following laws, regulations and guidance as applicable to the proposed remedial alternative. Changes in standards since the 1985 ROD do not appear to affect the protectiveness of the remedy, with the possible exception of a new Maximum Contaminant Level for arsenic.

- 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 June 23, 1992, and the PRPs continue to perform O&M as necessary.

- Executive Orders 11990 (Wetlands) and 11988 (Floodplains) and guidance outlined under 40 CFR Part 6, Appendix A. Construction of the landfill cap impacted one area. In accordance with wetlands and floodplains requirements, the PRPs began a wetlands enhancement project in 1988 to compensate for the landfill cover encroachment into the bog; the Agencies determined in 1998 that no further wetlands compensation action was needed.

In July 2007, UTC's contractor, MACTEC, conducted a wetland delineation of the Hoyt Brook seep area which confirmed that portions of the seep area were located within a wetland. It also appears that the Hoyt Brook seep area is located in a floodplain. EPA has already determined, based on human health risks, that action is required for the PCL exceedance of arsenic in sediments at Hoyt Brook. Future remediation plans will account for the location of the seep area in a wetland/floodplain.

- Clean Water Act. The GWETS met all effluent limits as required. The GWETS was shut down in November 2002, and the ESD issued in February 2007 allows for decommissioning of the GWETS. There are no activities currently being conducted that trigger requirements under the Clean Water Act.

- Clean Air Act. Past construction activities were conducted to minimize future emissions from the Site. The VES was decommissioned entirely in 2000. There are no activities currently being conducted that trigger requirements under the Clean Air Act.

• Safe Drinking Water Act; EPA Groundwater Protection Strategy. New Applicable or Relevant and Appropriate Requirements (ARARs) promulgated since the 1985 ROD include Maximum Contaminant Levels (MCLs), non-zero Maximum Contaminant Level Goals (MCLGs), and 1992 Maine Maximum Exposure Guidelines for Drinking Water (MEGs). The Maine MEGs have been revised, with the most recent update in 2007.

The Alternate Concentration Limit remedy required the establishment of a groundwater protection standard for each contaminant to be set at background levels, MCLs or ACLs, Site-specific limits that are protective of human health and the environment. The ROD provided for installation and operation of the GWETS if ACLs were exceeded.

As outlined in the EPA/ME DEP 1993 Decision Document, the ACLs were set at MCLs for most contaminants of concern. If an MCL had not been promulgated, a human health risk-based drinking water guideline was used (i.e., Maine's 1992 MEGs). If ACLs set at the MCL were determined to not protect ecological receptors at the points of exposure, an ecologically derived guideline was used instead. The 1993 Decision Document set the ACL for arsenic at 30 ppb, while recognizing that it was an ubiquitous, naturally-occurring substance, for which background concentrations often exceed health based guidelines.

As outlined previously, due to the mobilization of naturally-occurring arsenic, levels of the contaminant continue to exceed the ACL in numerous monitoring wells. The February 2007 ESD acknowledges that, due to the inability of the GWETS and other technologies to address the problem of mobilization, it is likely to take significantly longer to achieve the ACL for arsenic at the point of compliance (the edge of the waste management unit) than anticipated at the time of the 1985 ROD. However, EPA believes this is reasonable given conditions at the Site, the fact that the community is connected to a public drinking water supply system, and a Town Ordinance prohibits all groundwater withdrawal and use. This increase in the time to achieve the ACL is not the result of the decommissioning of the GWETS, but rather the result of inherent limitations to the original remedy which were unforeseen at the time the ROD was being developed. Operation of the GWETS most likely shortened the overall period of time that ultimately will be required to attain the ACL for arsenic, through the removal of a significant amount of organic contaminants which would otherwise have lengthened the amount of time in which reducing conditions in the aquifer continued to cause mobilization of arsenic.

Since the arsenic ACL was set at 30 ppb, EPA has revised the safe drinking water standard, or MCL, for arsenic downward from 50 ppb to 10 ppb, and the Maine MEG for arsenic in drinking water is also 10 ppb. This calls into question the protectiveness of the arsenic ACL. At the same time, it is possible that natural background levels of arsenic in groundwater in the vicinity of the Site, which have yet to be determined, may exceed both the MCL of 10 ppb and the ACL of 30 ppb. Under the Superfund law, EPA cannot cleanup contaminants at a Site below natural background concentrations. To address these issues, the 2007 ESD requires that, as levels of arsenic approach the ACL of 30

ppb, or at such other time as determined by EPA, a study shall be conducted to determine background for arsenic in groundwater for this Site. Based upon the results of that study, the ACL for arsenic maybe revised to the higher of the MCL or background.

All other risk-based cleanup goals as presented in the ROD remain substantively unchanged.

- Pretreatment Standards for Discharge into Publicly Owned Treatment Work. Not applicable.

- State Water Quality Standards; Federal Ambient Water Quality Criteria. The selected remedy was not required to achieve cleanup standards in surface water. However, these state & federal standards are being used to monitor the effectiveness of the remedy. In particular, at points of exposure, where groundwater discharges to surface water, risk-based Protective Concentration Limits have been established using state and federal water quality criteria to ensure that the remedy is properly functioning and that no additional action is warranted to prevent impact to human health and the environment. Based upon a comparison of the Site-wide monitoring data to these standards, the landfill cap and prior operation of the VES and GWETS systems have minimized contaminated groundwater discharge and impacts to surface water to the maximum extent practicable. As previously outlined, EPA, ME DEP, and UTC and its contractor, MACTEC, are currently developing a Point of Exposure Monitoring and Remediation Work Plan to address all points of exposure, which will incorporate state and federal standards and criteria in its design.

- Health Advisories. ARARs based on health advisories are addressed above.

Changes in Exposure Pathways. No new human health or ecological exposure pathways or receptors have been identified. While EPA screening level evaluations of human health and ecological risks posed by contaminants at all points of exposure do consider additional factors related to the exposure pathways (such as accessibility, toxicity, etc.), the basis for the original exposure assumptions remain unchanged.

There are no changes in land use or the anticipated land use on or near the Site.

No new contaminants or contaminant sources have been identified, nor are there toxic remedy byproducts. As previously identified, capping the landfill did enhance reducing (anoxic) conditions in the underlying aquifer, which resulted in the mobilization of naturally-occurring arsenic and its subsequent discharge to points of exposure. This issue is discussed at length in the February 2007 ESD, and will be addressed through the development of a Point of Exposure Monitoring and Remediation Work Plan.

Changes in Toxicity and Other Contaminant Characteristics; Changes in Risk Assessment Methods.

The 1985 ROD, pages 12-13, summarized the following potential risks:

- Endangerment to the public health through ingestion of contaminated groundwater,
- Endangerment to the public health through physical contact with wastes,
- Endangerment to the aquatic organisms in the wetlands through the discharge of contaminants to these surface waters,
- Endangerment to birds and mammals and to the public health through exposure (dermal contact and ingestion) to contaminants in the wetlands, lake, or brook, and
- Endangerment to the environment, i.e. the wetlands, lake, and brook, and groundwater through the continued migration of contaminated groundwater off-site.

The document review did not provide information regarding the previous cancer slope factors (CSFs) used in the RI/FS and the ROD to calculate risk, however, CSFs have generally decreased since the time of the ROD. In the early 1990s, risks to Site-specific receptors were addressed through human health and ecological risk assessments in the development of ACLs and PCLs. More recently, the risks identified in the ROD associated with points of exposure were reviewed by EPA in screening level risk evaluations, and these risks will continue to be assessed in development of a Point of Exposure Monitoring and Remediation Work Plan as required by the February 2007 ESD. Other risks have been addressed through provision of an alternate water supply, implementation of a Town Ordinance, and continued maintenance of the landfill cap.

The exposure scenarios associated with Site contaminants and remedial action objectives remain the same as those identified at the time of the ROD.

Expected Progress Towards Meeting RAOs. The remedy is progressing as expected, with the exception of the issues regarding arsenic as previously outlined. The February 2007 ESD acknowledges that it is likely to take significantly longer to achieve the ACL for arsenic at the point of compliance (the edge of the waste management unit) than anticipated at the time of the 1985 ROD due to the inability of the GWETS to reduce elevated arsenic levels, and the inability of other technologies to address the problem. However, EPA believes this is reasonable given conditions at the Site, the fact that the community is connected to a public drinking water supply system, and a Town Ordinance prohibits all groundwater withdrawal and use.

The ESD also requires the development of a Point of Exposure Monitoring and Remediation Work Plan to address PCL exceedances at all points of exposure, as well as continued monitoring, evaluation, and remediation, as necessary, of the risk posed by potential vapor intrusion.

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

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

As previously described, the Consent Decree requires that a deed notice be recorded documenting the presence of hazardous waste on property within the landfill. The previous five-year review noted that a notice in the deed to the property on which the landfill is located was never filed.

In January 2005, the Town of Winthrop provided the Agencies with a copy of a fully executed Declaration of Covenant Running With the Land for Town of Winthrop Property, recorded in the Kennebec County Registry of Deeds. This Declaration of Covenant is more protective than a deed notice, and provides enforceable restrictions on future use of the landfill property.

A deed notice is still required on a separate, smaller parcel, the ownership of which was transferred from individual potentially responsible parties to other parties many years ago. The Agencies have discussed this matter with the Town of Winthrop, and the Town has agreed to pursue these parties and request that they record the required deed notice on the remaining parcel. This issue is still outstanding. The Agencies will coordinate further with the Town in seeking to record a Declaration of Environmental Covenant pursuant to the Uniform Environmental Covenants Act of July 2005.

The public is protected from on-site contaminants because a fence around the landfill impedes access and control of the Site is in the hands of United Technologies Corporation and its contractors. Additionally, the Town Ordinance prohibits all groundwater withdrawal, groundwater use, and certain excavation within the Site, as well as excavation control in areas potentially impacted by landfill gas migration. However, the lack of a notice to the deed or Declaration of Environmental Covenant on the privately-owned parcel, calls into question the long-term protectiveness of the remedy.

No other new information has come to light which would call into question the effectiveness of the remedy. No new human or ecological receptors have been identified at this time. No evidence of damage due to natural disasters was noted during the Site inspection.

Technical Assessment Summary.

The remedy, as outlined in the ROD and modified by the ESDs, is operating as designed and meeting all remedial action objectives in the short term. Additional activities are required to ensure long-term protectiveness.

An alternate water supply was extended to area residents and a Town Ordinance restricting excavation and groundwater use is in place. With the exception of one parcel

not owned by the Town, all property within the landfill is subject to a restrictive covenant which further protects against exposure to Site-related contaminants. The Agencies will coordinate with the Town in seeking to record a Declaration of Environmental Covenant for the remaining parcel, or at a minimum a deed notice as required by the Consent Decree.

Land use at the Site has not changed and is not expected to change. UTC and its contractor, MACTEC, are investigating the potential future use of the GWETS building once the system is dismantled and removed.

The landfill cap and fencing are performing as intended, and routine maintenance and repair activities continue on a regular basis, including off-site landfill gas monitoring. UTC's contractor, MACTEC, continues to conduct monitoring of groundwater, surface water, and sediment and are currently working with the Agencies on revisions to the post-closure monitoring program.

ACLs were established for each contaminant in groundwater at MCLs, MEGs, or a more stringent ecologically derived guideline. Following the detection of ACL exceedances, the GWETS was installed and operated as designed, reducing concentrations of contaminants in groundwater to the point that ACLs are or will soon be achieved for all contaminants, with the exception of arsenic.

The February 2007 ESD allows for the decommissioning of the GWETS and attainment of the arsenic ACL through natural processes over an extended period of time. The ESD also requires the monitoring and evaluation of contaminants at points of exposure, and, if warranted, remediation of contaminants posing an unacceptable risk. EPA, ME DEP and UTC and its contractor, MACTEC, are currently working to develop a Point of Exposure Monitoring and Remediation Work Plan.

EPA has already determined, based on human health risks, that action is required for the PCL exceedance of arsenic in sediments at Hoyt Brook, and caution signs were posted at the seep area in June 2007. The greatest potential risk in the Hoyt Brook seep area exists for a toddler, who may wade into and/or accidentally ingest the contaminated sediment. While there is nothing to prevent access to the area, the property is privately owned, wooded, and undeveloped. The nearest home is located approximately 500 feet away. The area is most frequently accessed by recreational boaters via kayak or canoe.

Beyond arsenic, 1,1-dichloroethane and vinyl chloride are the only other contaminants still exceeding ACLs. It is expected that levels of both contaminants will continue to decrease and that they will eventually meet the ACL through natural processes. To specifically address the presence of vinyl chloride in the southern flowpath, a Vinyl Chloride Contingency Plan was implemented in 2003 which outlines definitive response actions at several groundwater and soil gas monitoring locations. The Contingency Plan also established action levels for evaluating potential vapor migration into indoor air, and requires remediation in the southern flowpath if data indicate that migration is likely. Since implementation of the Contingency Plan in 2003, remediation has not been

required. Additionally, in 2006, the Agencies conducted a supplemental evaluation of the risk posed by potential vapor intrusion of vinyl chloride or other VOCs, and determined that conditions currently at the Site do not present an unacceptable risk via this pathway. The February 2007 ESD requires continued monitoring, evaluation and remediation of the risk posed by potential vapor intrusion, as necessary. No additional routes of exposure have been identified.

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	Affects Current Protectiveness	Affects Future Protectiveness
Privately-owned property at landfill requires deed notice.	N	Y
Exceedance of PCL for arsenic in sediment at Hoyt Brook requires remediation, and exceedances at other points of exposure require additional evaluation,	N	Y

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

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness	
					Current	Future
Deed notice never filed; further protections may be required.	Agencies to discuss need to comply with CD requirements with Town. Private owners will be requested to implement deed notice, or preferably, Declaration of Environmental Covenant to provide additional protections for the cap portion of the remedy.	Town of Winthrop (PRP)	EPA & ME DEP	9/30/2008	N	Y

Exceedances at points of exposure require additional evaluation, and exceedance of arsenic in sediment at Hoyt Brook requires remediation.	Develop and implement Point of Exposure Monitoring and Remediation Work Plan as outlined in February 2007 ESD. Citizen involvement is required. Implement remediation at Hoyt Brook as soon as the Plan is finalized, or earlier if possible and with agency approval. When Plan is finalized, evaluation to also occur at all other seep areas.	PRP	EPA & ME DEP	Plan activities ongoing. Involve citizens by 10/31/2007. Finalize Plan by 3/31/2008. Begin remediation at Hoyt Brook by 3/31/2008.	N	Y

10.0 PROTECTIVENESS STATEMENTS

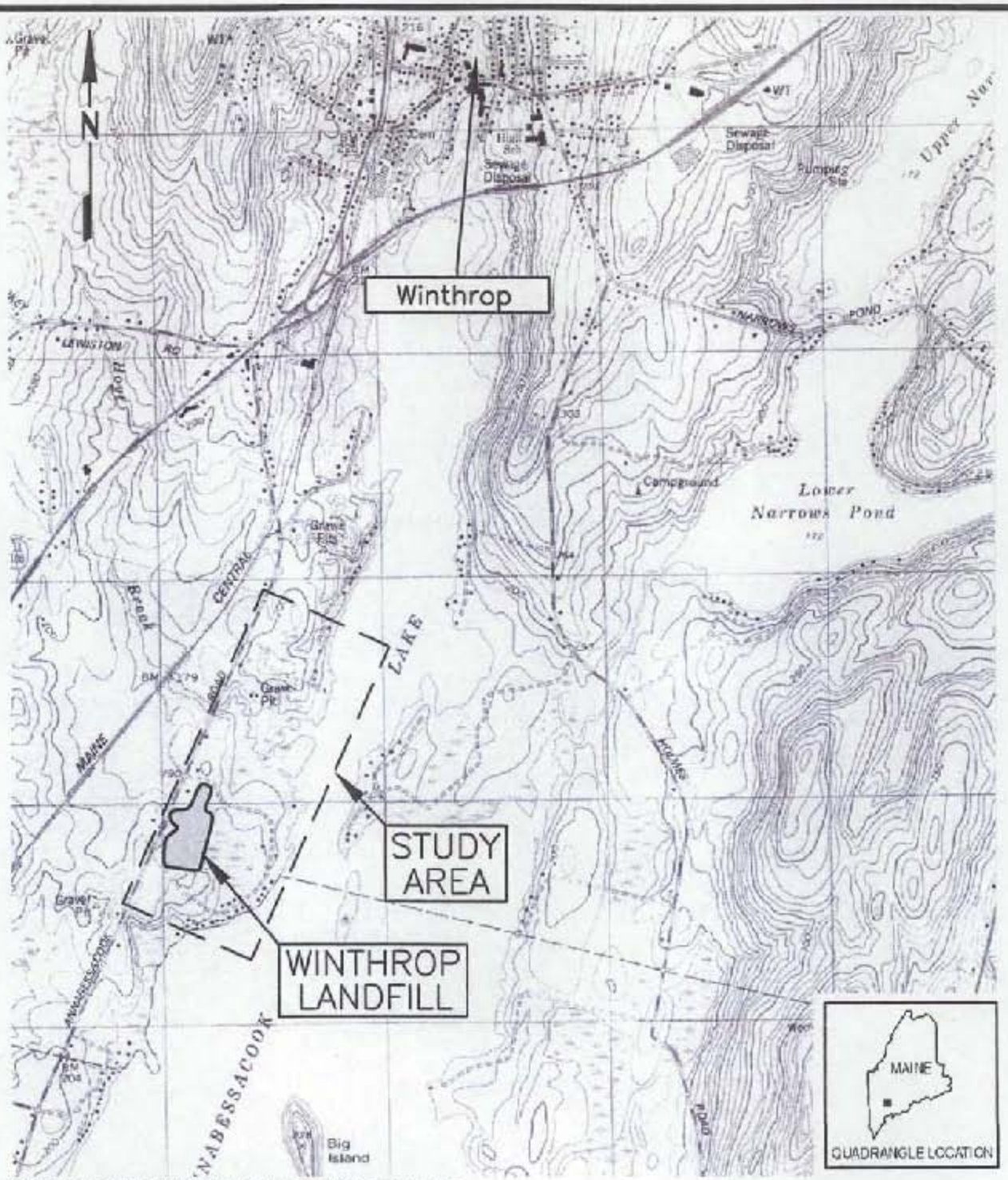
The remedy at the Winthrop Landfill Superfund Site currently protects human health and the environment in the short-term because an alternate water supply has been extended to area residents and a Town Ordinance prohibiting groundwater use is in place. The landfill is capped, a fence has been erected around the landfill, and access to the Site is controlled by the PRPs. With the exception of one parcel not owned by the Town, all parcels within the landfill are subject to institutional controls which prevent disturbance of the cap. The cap and fencing are performing as intended, and routine maintenance and repair activities continue on a regular basis. Monitoring of groundwater, surface water, and sediment is ongoing, including monitoring of vinyl chloride in the southern flowpath.

In order for the remedy to be protective in the long-term, follow-up actions are required. The Agencies will continue to coordinate with the Town to require that a deed notice and, if possible, a Declaration of Environmental Covenant, be recorded for the privately owned parcel within the landfill. The Agencies will continue to work with the PRPs to develop a Point of Exposure Monitoring and Remediation Work Plan. Following completion of the Work Plan, remediation of arsenic-contaminated sediment at Hoyt Brook will be initiated, and all other point of exposure areas will be evaluated in accordance with the Work Plan.

11.0 NEXT REVIEW

The due date for this fourth five-year review of the Winthrop Landfill Superfund Site is September 30, 2007. Therefore, the next five-year review should be completed by September 30, 2012.

ATTACHMENT 1
SITE MAP



SOURCE: USGS TOPOGRAPHIC QUADRANGLE, 7.5-MINUTE SERIES, WINTHROP, ME., DATED 1980.

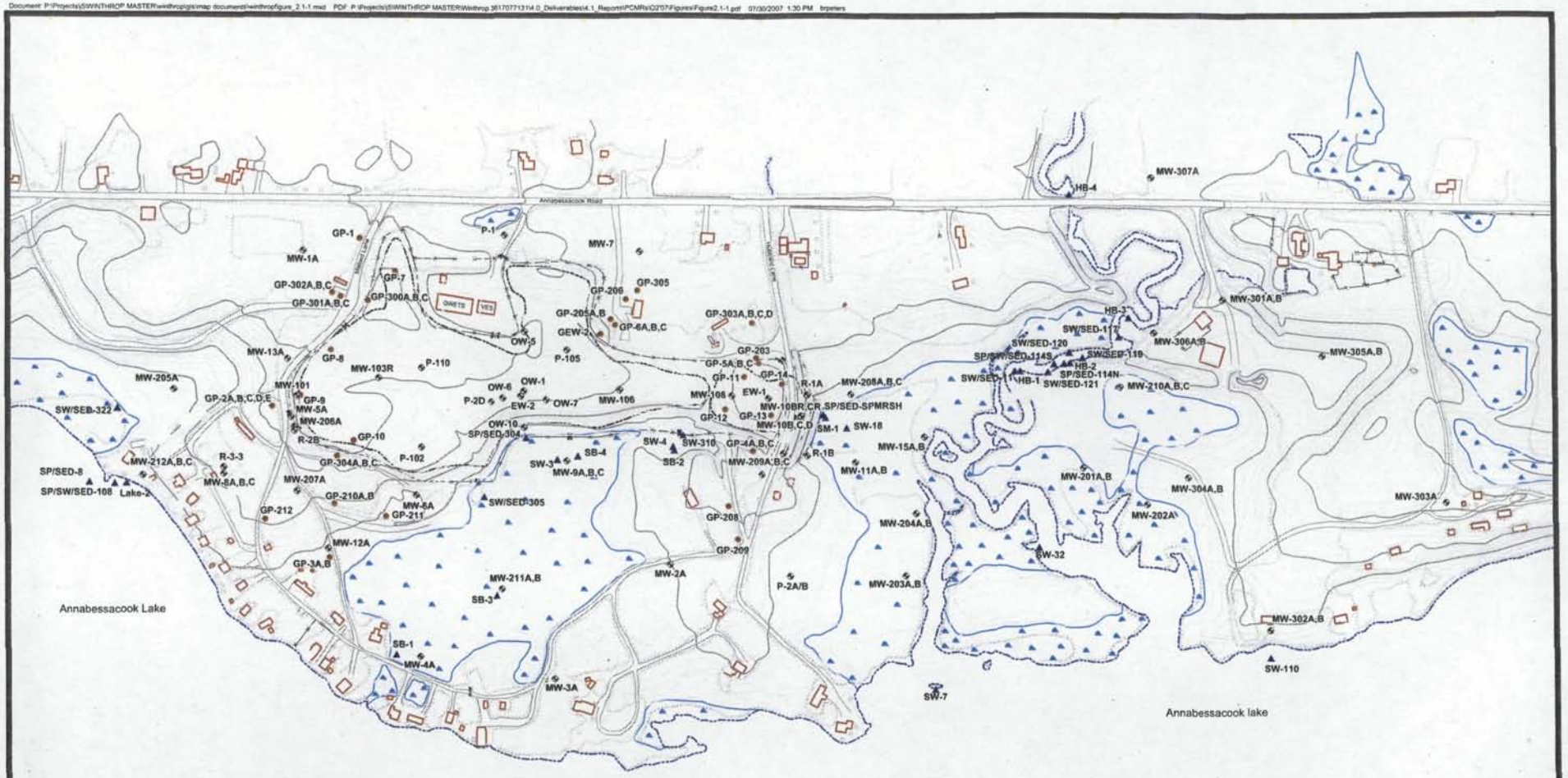
0 1000 2000
Scale in feet

Prepared/Date: JJW 02/21/06
Checked/Date: NWH 02/21/06

United Technologies Corporation Winthrop Landfill	MACTEC	Site Location Post-Closure Monitoring Report Winthrop Landfill Project No. 3617077131 FIGURE 1.0-1

ATTACHMENT 2
SAMPLING LOCATIONS

Document: P:\Projects\j5\WINTHROP MASTER\winthrop\gis\map documents\winthrop\figure_2.1-1.mxd PDF: P:\Projects\j5\WINTHROP MASTER\Winthrop 3617077131\4.0_Deliverables\4.1_Reports\PCMRs\Q2'07\Figures\Figure2.1-1.pdf 07/30/2007 1:30 PM brpeters



Notes:
1. (SW) Surface Water/Sediment Location, (SB) Shagnum Bog Surface Water Measurement, (SM) Seep Marsh Surface Water Measurement, (HB) Hoyt Brook Surface Water Measurement (MW) Groundwater Monitoring Well, (P) Piezometer, (EW) Extraction Well, (R) Reinjection Well.

Legend

- Groundwater Measurement Location
- Surface Water Measurement Location
- Monitoring Well, Extraction Well, or Piezometer Location
- Landfill Gasprobe Monitoring Location
- Surface Water/Seep/Sediment Sampling Location
- Tree Line
- Roads/Driveways
- Index Contours (10 ft)
- Intermediate Contours (2 ft)
- Water Boundary
- Bog/Marsh
- Landfill Limit Boundary
- Building Outlines
- Fence
- Gate

N

0 175 350 Feet

Prepared/Date: BRP 07/30/07
Checked/Date: NWH 07/30/07

United Technologies Corporation
Winthrop Landfill
Winthrop, Maine

MACTEC

Groundwater and Surface Water/Sediment and Gas Probe Monitoring Locations

Project 3617077131 Figure 2.1-1

ATTACHMENT 3
REMEDIAL ACTION PLAN (RAP) TABLE 1

TABLE 2-2

RAP TABLE 1 - QUARTERLY ANALYTICAL PROTOCOL

POST-CLOSURE MONITORING PLAN
WINTHROP LANDFILL

2,4-Dinitrophenol	Trichloroethylene
Diethylphthalate	Vinyl chloride
Chrysene[1]	Acetone
Benzene	2-Butanone
1,1-Dichloroethane	4 Methyl-2-pentanone
1,2-Dichloroethane	2-Hexanone
1,1,1-Trichloroethane	Styrene
Chloroethane	Total Xylenes
1,1-Dichloroethylene	Tetrahydrofuran
trans-1,2-Dichloroethylene	Di-2-ethylhexyl adipate
1,2-Dichloropropane	Dimethylformamide
Ethylbenzene	2-Methoxyethanol
Methylene chloride	Zinc[2]
Fluorotrichloromethane	Nickel[2]
Tetrachloroethylene	Arsenic[2]
Toluene	Phenol[2]

Notes:

1 = deleted March 1993

2 = added February 1988

Adapted from Remedial Action Work Plan (RAP), Element II-5, Table 1.

ATTACHMENT 4
REMEDIAL ACTION PLAN (RAP) TABLE 2

TABLE 2-3

RAP TABLE 2 - ANNUAL ANALYTICAL PROTOCOL

POST-CLOSURE MONITORING PLAN
WINTHROP LANDFILL

Volatile Organic Compounds (27)	
Acrolein	1,3-Dichloropropene
Acrylonitrile	Ethylbenzene
Benzene	Methylene chloride
Carbon Tetrachloride	Methyl chloride
1,1-Dichloroethane	Bromoform
1,2-Dichloroethane	Dichlorobromomethane
1,1,2-Trichloroethane	Dichlorodifluoromethane
1,1,2,2-Tetrachloroethane	Chlorodibromomethane
Chloroethane	Tetrachloroethylene
2-Chloroethyl vinyl ether	Toluene
Chloroform	Trichloroethylene
1,1-Dichloroethylene	Vinyl chloride
trans-1,2-Dichloroethylene	bis (Chloromethyl) ether
1,2-Dichloropropane	
Base-Neutral Extractable Organic Compounds (46)	
Acenaphthene	Nitrobenzene
Benzidine	N-Nitrosodimethylamine
1,2,4-Trichlorobenzene	N-Nitrosodiphenylamine
Hexachlorobenzene	N-Nitrosodi-n-propylamine
Hexachloroethane	Butyl benzyl phthalate
bis (2-Chloroethyl) ether	Di-n-butyl phthalate
2-Chloronaphthalene	Di-n-octyl phthalate
1,2-Dichlorobenzene	Diethylphthalate
1,3-Dichlorobenzene	Dimethylphthalate
1,4-Dichlorobenzene	Benzo (a) anthracene
3,3-Dichlorobenzidine	Benzo (a) pyrene
2,4-Dinitrotoluene	Benzo (b) fluoranthene
2,6-Dinitrotoluene	Benzo (k) fluoranthene
1,2-Diphenylhydrazine	Chrysene
Fluoranthene	Acenaphthylene
4-Chlorophenyl phenyl ether	Anthracene
4-Bromophenyl phenyl ether	Benzo (g,h,i) perylene
bis (2-Chloroisopropyl) ether	Fluorene
bis (2-Chloroethoxy) methane	Phenanthrene

TABLE 2-3

RAP TABLE 2 - ANNUAL ANALYTICAL PROTOCOL

POST-CLOSURE MONITORING PLAN
WINTHROP LANDFILL

Hexachlorobutadiene	Dibenzo (a,h) anthracene
Hexachlorocyclopentadiene	Ideno (1,2,3-cd) pyrene
Isophorone	Pyrene
Naphthalene	bis (2-Ethylhexyl) phthalate
Acid Extractable Organic Compounds (11)	
2,4,6-Trichlorophenol	4,Nitrophenol
d-Chloro-m-cresol (4-chloro-3-methylphenol)	2,4-Dinitrophenol
2-Chlorophenol	4,6-Dinitro-o-cresol
2-Nitrophenol	(4,6-Dinitro-2-methylphenol)
Pentachlorophenol	2,4-Dichlorophenol
2,4-Dimethylphenol	Phenol
Pesticides and PCBs (22)	
Aldrin	alpha-BHC
Dieldrin	beta-BHC
4,4'-DDE	PCB-1242
4,4'-DDD	PCB-1254
alpha-Endosulfan	PCB-1221
beta-Endosulfan	PCB-1232
Endosulfan sulfate	PCB-1248
Endrin	PCB-1260
Endrin aldehyde	PCB-1016
Heptachlor	Toxaphene
Heptachlor epoxide	2,3,7,8-Tetrachlorodibenzo p-dioxin (TCDD)
Metals (13)	
Antimony (Sb)	**Inorganic Constituents**
Arsenic (As)	Calcium
Beryllium (Be)	Iron
Cadmium (Cd)	Magnesium
Chromium (Cr)	Potassium
Copper (Cu)	Sodium
Lead (Pb)	Chloride
Mercury (Hg)	Sulfate
Nickel (Ni)	**Other Volatile Organic Compounds**
Selenium (Se)	1,2-cis-Dichloroethylene

continued

TABLE 2-3

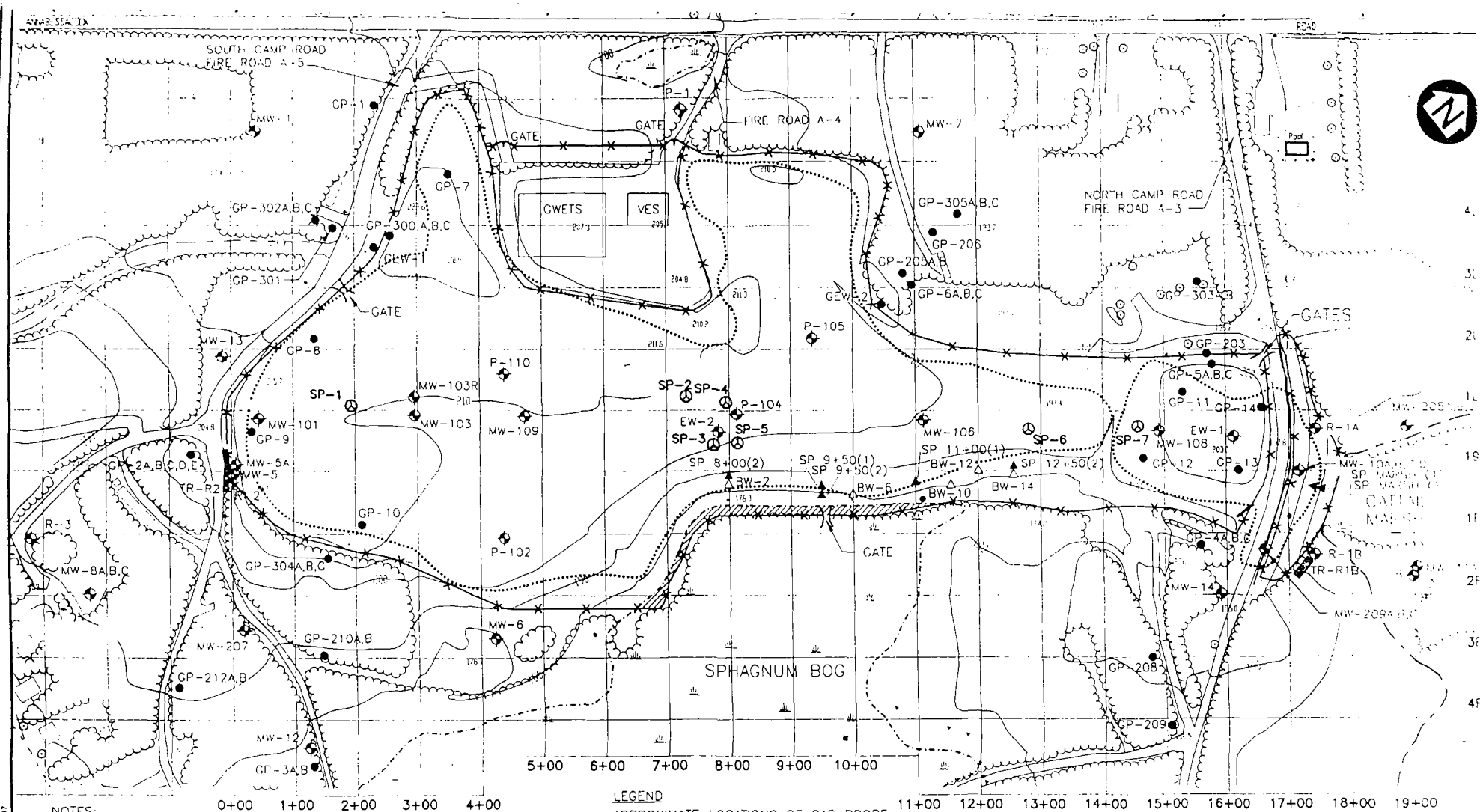
RAP TABLE 2 - ANNUAL ANALYTICAL PROTOCOL

POST-CLOSURE MONITORING PLAN
WINTHROP LANDFILL

Silver (Ag)	2-Butanone
Thallium (Ti)	4-Methyl-2-Pentanone
Zinc (Zn)	Tetrahydrofuran
Miscellaneous	
Total Cyanides	
Other Non-Volatile Organic Compounds	
Di-2-ethyladipate	
Di-2-ethylhexyladipate	
Dimethylformamide	

Adapted from Remedial Action Work Plan (RAP), Element II-5, Table 2.

ATTACHMENT 5
LANDFILL MONITORING SYSTEMS



NOTES:

1. BASELINE AND GRID FROM H.E. SARGENT, INC., 1987.
2. BASE MAP COMPILED BY JAMES W. SEWALL COMPANY, OLD TOWN, MAINE BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS DATED 11-23-88, CONTROLLED BY E.C. JORDAN COMPANY.

SCALE IN FEET

0 75 150 300

LEGEND

- APPROXIMATE LOCATIONS OF GAS PROBE (GP) OR GAS EXTRACTION WELL (GEW)
- GROUNDWATER MONITORING WELL (MW) OR PIEZOMETER (P)
- BW-2 ▲ SLOPE MONITORING SURVEY POINTS
- △ SLOPE INCLINOMETER LOCATION
- SETTLEMENT PLATFORM
- APPROXIMATE LIMIT OF LANDFILLED WASTE
- APPROXIMATE LIMIT OF SITE FENCE

FIGURE 3-1
LANDFILL MONITORING SYSTEMS
POST-CLOSURE MONITORING PLAN
WINTHROP LANDFILL

ABB Environmental Services, Inc.

ATTACHMENT 6
EPA AND DEP APPROVED ALTERNATE CONCENTRATION LIMITS AND PROTECTIVE CONCENTRATION LIMITS

TABLE 6

EPA AND DEP APPROVED ALTERNATE CONCENTRATION LIMITS AND PROTECTIVE CONENTRATION LIMITS FOR THE WINTHROP LANDFILL SUPERFUND SITE

(The numbers in this Table are in parts per billion (ppb))

COMPOUND	A	B	C	D	E
	SEDIMENT PCLs	SURFACE WATER PCL		ACLs	
		Number	Basis	Number	Basis
BENZENE	3,100	5		5	(MCL)
TOLUENE	5,800	650	(MEDEP F&S)	1,000	(MCL)
STYRENE	18,500	27	(MEDEP DW)	100	(MCL)
ETHYLBENZENE	5,500	320	(MEDEP F&S)	440	(ECO)
XYLENES	9,500	590		590	(ECO)
METHYLENE CHLORIDE	3,900	5		5	(MCL)
TRICHLOROFLUROMETHANE	7,500	2,300		2,300	(MEG)
CHLOROETHANE	1,800	1,300#		1,300	(ECO)
1,1-DICHLOROETHANE	3,800	5		5	(MEG)
1,2-DICLOROETHANE	5,700	0.73	(EPA F&S)	5	(MCL)
1,1,1-TRICHLOROETHANE	11,800	200		200	(MCL)
1,2-DICHLOROPROPANE	7,500	5		5	(MCL)
VINYL CHLORIDE	1,300	0.32	(EPA F&S)	2	(MCL)
1,1-DICHLOROETHYLENE	1,800	0.34	(EPA F&S)	7	(MCL)
1,2-DICHLOROETHYLENE	460	70		70	(MCL)
TRICHLOROETHYLENE	7,200	5		5	(MCL)
TETRACHLOROETHYLENE	3,000	1.9	(EPA F&S)	5	(MCL)
ACETONE	4,100	390		390	(ME DW)
2-BUTANONE (MEK)	2,600	170		170	(MEG)
2-HEXANONE (MBK)	920	1,400		1,400	(ME DW)
4-METHYL-2-PENTANONE (MIBK)	30,300	190		190	(ME DW)
PHENOL	600	160		160	(ECO)
2,4-DINITROPHENOL	18	31		31	(MEG)
TETRAHYDROFURAN	8,000	3,300		3,300	(ME DW)
DIMETHYLFORMAMIDE	1,200	390		390	(EPA & ME DW)
2-METHOXYETHANOL	810	46		46	(ME DW)
DIETHYLPHALATE	8,300	1,700	(MEDEP F&S)	2,900	(ECO)
DI-2-ETHYLHEXYL ADIPATE	2,100,000	2	(EPA F&S)	40	(ECO)
NICKEL	50,000	88		88	(ECO)
ZINC	270,000	59		59	(ECO)
ARSENIC	31,000	0.77-30	(BACKGROUND)	30	+

: Chloroethane shall be 3,500 at the Seeps and Marshes based on eco.

+ : Formerly a Maine Maximum Exposure Guideline.

ATTACHMENT 7
SIGNS POSTED AT HOYT BROOK SEEP AREA

CAUTION

AVOID CONTACT WITH WATER AND SEDIMENT NEAR SIGNS

WINTHROP LANDFILL SUPERFUND SITE GROUNDWATER DISCHARGE AREA.

FOR MORE INFORMATION CONTACT TOWN MANAGER CORNELL KNIGHT 207-377-7200 ext. 423

ATTACHMENT 8
DECLARATION OF COVENANT RUNNING WITH THE LAND FOR TOWN OF WINTHROP PROPERTY

Bernstein, Shur, Sawyer & Nelson, P.A. Counselors at Law

100 Middle Street, West Tower, P.O. Box 9729, Portland, Maine 04104-5029
207-774-1200 Fax 207-774-1127
Internet: bssn.com

Gregory M. Cunningham
E-mail: gcunningham@bssn.com

January 25, 2005

Anni Loughlin, Project Manager
U.S. EPA (Mailcode HBT)
ME/VT/CT Superfund Section
One Congress St., Suite 1100
Boston, Massachusetts 02114-2023

Rebecca Hewitt
Bureau of Remediation & Waste Management
Maine Department of Environmental Protection
17 State House Station
Augustan, ME 04333-0017

RE: Town of Winthrop Declaration of Covenant

Dear Becky and Anni:

Enclosed please find for the records of your respective agency a copy of the fully executed and recorded Declaration of Covenant Running With the Land for Town of Winthrop Property. As you can see, the declaration was recorded in the Kennebec County Registry of Deeds and can be found at Book 8276, Page 0292. Should you have any further questions regarding this declaration, please feel free to contact me.

Sincerely,

Gregory M. Cunningham

GMC:jld

Enclosure

cc: Cornell Knight, Town Manager
Lee K. Bragg, Esquire

DECLARATION OF COVENANT RUNNING WITH THE LAND FOR TOWN OF WINTHROP PROPERTY

This DECLARATION is made as of this 7th of December 2004 by the Town of Winthrop, Maine, a municipal corporation, located in the County of Kennebec, Maine hereinafter referred to as the "Town."

WITNESSETH:

WHEREAS, Town is the owner of a certain property located in the Town of Winthrop, Kennebec County, Maine which property is described in the following deeds Book 654, Page 438; Book 620, Page 571; Book 669, Page 471; Book 933, Page 97; Book 4509, Page 330; and Book 6086, Page 249; Book 5516, Page 18; Book 5516, Page 20 as recorded in the Kennebec County Registry of Deeds (the "Property") and as depicted on a plan entitled Composite Plan of Property Lines and Landfilled Wastes dated April 17, 2003;

WHEREAS, the Property has been utilized by the Town as a municipal dump and landfill from approximately 1930 through 1982; the Property encompasses the entirety of the Town-owned land formerly utilized as the Town landfill;

WHEREAS, chemical wastes from commercial and industrial operations were disposed of at the Property from the early 1950's to the mid 1970's and included complex organic compounds, including resins, plasticizers, solvents and other process chemicals. Volatile organic compounds including toluene, vinyl chloride, acetone, methyl ethyl ketone ("MEK"), methyl isobutyl ketone ("MIBK") and tetrahydrofuran were discharged into groundwater in the area of the Property;

WHEREAS, the site was placed on the Comprehensive Environmental Response, Compensation, and Liabilities Act (CERCLA) National Priorities List ("NPL") on October 23,

(1) B. L. Nelson

1981 and was designated by the Maine Department of Environmental Protection (DEP) as an Uncontrolled Hazardous Substance Site on May 23, 1984.

WHEREAS, Inmont Corporation, the Town of Winthrop, Maine and Everett Savage and Glenda Savage entered into a Consent Decree, effective date March 24, 1986, with the DEP and United States Environmental Protection Agency ("USEPA").

WHEREAS, substantial remediation has occurred and continues to occur on the Property to address these discharges and all such remediation work has been performed with the oversight of the DEPand the USEPA.

WHEREAS, as a result of the documented discharges, DEP and USEPA have determined, in accordance with Appendix A, Remedial Action Work Plan, Section II.2.D.ii of the Consent Decree and 38 M.R.S.A. § 1310(H)(1) that this notice and deed covenant is necessary to protect the public health and safety. This covenant shall run with the land.

WHEREAS, presently the site is fenced and access is limited to those responsible for the remediation activities.

NOW, THEREFORE, for and in consideration of the facts above recited and the covenants herein contained, and intending to create and be legally bound by a perpetual covenant running with the land, subject to the terms hereof, the Town hereby declares, covenants and agrees as follows:

1. It is intended that this Declaration shall be construed liberally to protect the health and welfare of the public and the quality of the environment from the risk of adverse effects of exposure to hazardous substances.

2. The following acts shall be prohibited throughout the Property, and the Town or any subsequent owner or operator shall not cause, permit or suffer any such acts to occur therein,

except to the extent that such acts are undertaken pursuant to and consistent with ongoing and future approved remediation activities (including but not limited to groundwater extraction and treatment, installation of monitoring wells or gas probes, and repairs to the landfill cap and Hubbard Lane, formerly North Camp Road, etc.):

(a) The construction or placement of any buildings, roads, fill or structures on, in, or under the ground;

(b) The excavation, digging, grading, drilling, mining or any other disturbance of the ground;

(c) The removal of vegetation, soil, subsoil, rock, minerals or any other surface or subsurface materials;

(d) Erosion or compaction of the soil or subsoil;

(e) Alteration in any surface water, ground water or water table (other than that occurring naturally);

(f) Any other act detrimental to the stability of the land, surface or subsurface or resulting in increased risk of discharge from the Property of any hazardous material or waste, or increased risk of exposure of the public or of the environment to any hazardous material or waste.

(g) Causing, permitting or allowing installation of any water supply wells or injection wells on the Property for any purpose without specific authorization in writing from the DEP.

(h) Any disturbance of the integrity of the final cover, liner system, monitoring systems or other components of the closed landfill without the prior written approval of the DEP.

None of the prohibitions herein above set forth shall apply to actions taken which are required or authorized by any order, license or other specific written authorization from the DEP, the U.S. EPA or which are otherwise required by any other local, state or federal laws.

3. The Town, its successors, tenants and assigns may petition the DEP to modify or remove some or all of the covenants, restrictions, agreements and obligations hereunder. The burden is upon the party seeking DEP approval of the modification or removal of a restriction to show that the restriction is no longer necessary to protect the public health and safety and the environment.

4. The terms and conditions hereof may not be altered or modified except by an instrument duly executed by the Town or its successors in interest, tenant and assigns holding an interest in the Property, and accepted and approved by the DEP, which instrument must by duly recorded in the Kennebec County Registry of Deeds.

5. If any part of this Declaration shall be decreed to be invalid by any Court of competent jurisdiction, all other provisions hereof shall not be affected thereby and shall remain in full force and effect.

6. The Town shall cause this Declaration to be duly recorded in the Kennebec County Registry of Deeds and shall provide a copy of the recorded Declaration to the DEP and the USEPA.

7. The restrictions contained herein shall only inure to the benefit of and shall only be enforceable by the Town and the State of Maine, on behalf of the people thereof, acting by and through the DEP or by and through the Attorney General of the State of Maine, or the successor in legal function of either of them. No owner of any property or other third party shall benefit from the restriction contained herein or have any right or standing to enforce the

same.

8. Plans relating to the closure of the Town's landfill formerly located on the Property, as well as documentation relating to remedial studies performed at the landfill are available for review at the Winthrop Landfill Groundwater Extraction and Treatment System facility located at 294 Annabessacook Road, Winthrop, Maine 04364. Copies of these documents and record of the type, location and quantity of hazardous waste disposed of in the landfill are on file with the Maine DEP and the U.S. EPA, Region 1.

9. This Declaration and each and every covenant restriction agreement and obligation hereunder shall be a covenant running with the land in perpetuity and shall bind the Town of Winthrop, it's successors, tenants and assigns and all those acting by, through or under any of them, forever.

IN WITNESS WHEREOF, the parties hereto have executed this Declaration of Restrictive Covenant as of the 7th day of December, 2004.

INHABITANTS OF THE TOWN
OF WINTHROP

By: Cornell F. Knight
Cornell F. Knight
Its Town Manager

STATE OF MAINE
Kennebec County, ss.

The above named Cornell F. Knight, Town Manager of the Inhabitants of the Town of Winthrop, personally appeared before me this 7th day of December, 2004 and made oath that the foregoing is true and correct and based on his personal knowledge.

Lisa Gilliam SEAL
NOTARY PUBLIC

LISA J. GILLIAM
Notary Public, Maine
My Commission Expires June 16, 2010

ACKNOWLEDGED AND AGREED TO
MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

By: _____

Name: David Littell

Title: Deputy Comm'r

STATE OF MAINE
KENNEBEC COUNTY, ss.

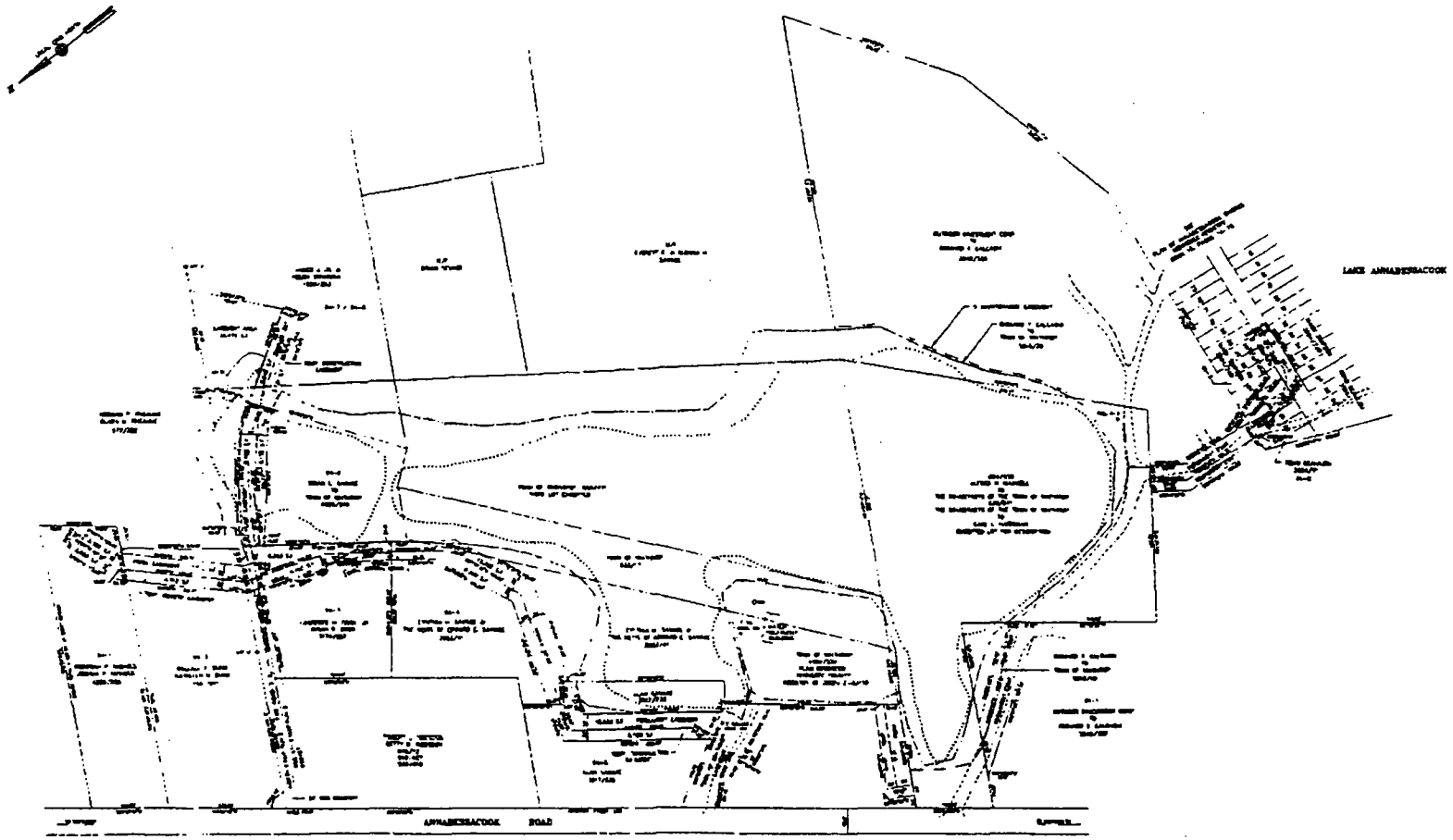
The above named David Littell personally appeared before me this 20th day of December, 2004 and made oath that the foregoing is true and correct and based on his / her personal knowledge.

Lynn A Boutelier
NOTARY PUBLIC 4/10/11
Lynn A. Boutilier

SEAL

Doc # 200500146 0
Book 8276 Page 0298

Received Kennebec SS.
01/18/2005 9:33AM
Pages 7 Attest:
BEVERLY BUSTIN-HATHEWAY
REGISTER OF DEEDS



LEGEND

FENCE

TRAVELLED WAY

LIMITS OF LANDFILL WASTES AS SHOWN ON PLAN REF. 1

PLAN REFERENCES

1. STANDARD ALTA/ACSM SURVEY WINTHROP LANDFILL WINTHROP, MAINE TAX MAP ... OF 22 PROPERTY BOUNDARY AND EASEMENT AREA OWEN HASKELL INC JOB NO. 993 JOB DIVISION ...

2. STANDARD ALTA/ACSM SURVEY EASEMENT PLAN OF NORTHERN BOUNDARY EXTENSION AND RECORDED EASEMENT AT WINTHROP LANDFILL, ANNABESSACOOK ROAD, WINTHROP, MAINE OWEN HASKELL INC. JOB NO. ...

NOTE

THE OWNER OR OPERATOR OF THE LANDFILL WILL REPORT ANY DISTURBANCE OF THE HAZARDOUS WASTE ... THE DEPARTMENT OF ENVIRONMENTAL PROTECTION WITHIN ... HOURS.

NOTE

WASTE LIMIT LINES ARE BASED ON APPROXIMATE LOCATION OF WASTE LIMITS OBSERVED DURING TEST PITTING.

THE LIMITS THAT WERE IN NOT THE RESULT OF AN ACTUAL SURVEY WORK AT THIS TIME. SEE PLAN REF. AS LISTED IN PLAN REFERENCES FOR AN ACTUAL SURVEY.

REV. 1	10-14-04	MISC. REVISIONS

COMPOSITE PLAN OF
PROPERTY LINES
AND LANDFILLED WASTES
ANNABESSACOOK ROAD
WINTHROP, MAINE

OWEN HASKELL, INC.
16 CASCO STREET PORTLAND, MAINE 04101
(207) 774-0424

Drawn By: JTM	Date: APRIL 11, 2003	Job No.
Traced By: AJP		
Checked By: JTM		
Sheet No. 6 of 14		

ATTACHMENT 9
LIST OF DOCUMENTS REVIEWED

Enforcement Decision Document
Winthrop Landfill, ME
November 22, 1985

Consent Decree, Civil Action No. 86-0029-B and 86-0031-B
Winthrop Landfill Superfund Site
March 23, 1986

Remedial Action Work Plan
Winthrop Landfill
E.C. Jordan Company for United Technologies Corporation
November 19, 1986

Remedial Action Work Plan
Task II-8 Alternate Concentration Limit Demonstration
Winthrop Landfill
ABB Environmental Services, Inc. for United Technologies Corp.
April 15, 1992.

Remedial Action Work Plan
Task II-8 Alternate Concentration Limit Demonstration
Winthrop Landfill
ABB Environmental Services, Inc. for United Technologies Corp.
September 25, 1992

Decision Document
Winthrop Landfill Superfund Site, Alternate Concentration Limit
March 10, 1993

Version 1.0 - Soil Vapor Extraction System Final Design
VAPEX for United Technologies Corp.
August 1993

Explanation of Significant Differences
Vapor Extraction System
Winthrop Landfill Superfund Site
October 20, 1993

Second Five-Year Review
Winthrop Landfill Superfund Site
September 30, 1997

Preliminary Close-Out Report
Winthrop Landfill Superfund Site
September 30, 1997

Preliminary Close-Out Report Amendment
Winthrop Landfill Superfund Site
December 23, 1997

Interim Remedial Action Report
Winthrop Landfill Superfund Site
September 29, 1998

Revised Post-Closure Monitoring Plan
Winthrop Landfill
Harding Lawson Associates for Unites Technologies Corporation
November 13, 1998

Third Five-Year Review
Winthrop Landfill Superfund Site
September 30, 2002

Final Rebound Evaluation Work Plan
Winthrop Landfill
MACTEC Engineering and Consulting, Inc. for United Technologies Corp.
February 2003

Contingency Plan, Vinyl Chloride Reactivation Criterion Exceedance
Winthrop Landfill Rebound Evaluation
MACTEC Engineering and Consulting, Inc. for United Technologies Corp.
October 2003

Winthrop Landfill Sediment Review
Review of Human Health Risk Questions at Points of Exposure
EPA
April 18, 2006

Winthrop Landfill
Screening-Level Evaluation of Ecological Risks at Points of Exposure
EPA
April 19, 2006

Sediment Occurrence in Sphagnum Bog and Cattail Marsh
Winthrop Landfill
MACTEC Engineering and Consulting, Inc.
June 26, 2006

Data Evaluation of Soil Vapor Pathway in the Southern Flow Path
Winthrop Landfill
MACTEC Engineering and Consulting, Inc.
June 26, 2006

Hoyt Brook Toxicity Testing
Winthrop Landfill
MACTEC Engineering and Consulting, Inc.
July 27, 2006

Surface Water and Sediment Delineation for RAP Table 1 Metals at the Points of Exposure
Winthrop Landfill
MACTEC Engineering and Consulting, Inc.
July 27, 2006

Post-GWETS Engineering Evaluation/Cost Analysis
Winthrop Landfill
MACTEC Engineering and Consulting, Inc. for United Technologies Corp.
August, 2006

Supplemental Hoyt Brook POE Delineation Sampling for Arsenic
Winthrop Landfill
MACTEC Engineering and Consulting, Inc.
November 10, 2006

Explanation of Significant Differences
GWETS Decommissioning, Points of Exposure, and Potential Vapor Intrusion Pathway
Winthrop Landfill Superfund Site
February 14, 2007

Winthrop UTC Wetland Delineation at Hoyt Brook Seep
Winthrop Landfill
MACTEC Engineering and Consulting, Inc.
July 24, 2007

Post-Closure Monitoring Report, Second Quarter 2007 (and previous reports)
Winthrop Landfill
MACTEC Engineering and Consulting, Inc. for United Technologies Corp.
August 3, 2007

ATTACHMENT 10
RECENT GROUNDWATER, SURFACE WATER, AND SEDIMENT DETECTIONS (MAY 2007)

Table 2.4-1: Groundwater Detections

FLOW PATH	SAMPLE LOCATION	QC CODE	MEDIA	FRACTION	PARAMETER	CONCENTRATION	ACL	UNITS
Northern Flowpath Wells	**MW-10B**	**FS**	**GW**	**T**	**Arsenic**	**252**	30	µg/L
Northern Flowpath Wells	**MW-15A**	**FS**	**GW**	**T**	**1,1-Dichloroethane**	**9.1**	5	µg/L
Northern Flowpath Wells	**MW-15A**	**FS**	**GW**	**T**	**Arsenic**	**59.6**	30	µg/L
Northern Flowpath Wells	MW-15A	FS	GW	T	Chloroethane	24.4	1300	µg/L
Northern Flowpath Wells	MW-15A	FS	GW	T	Vinyl chloride	1	2	µg/L
Northern Flowpath Wells	**MW-15B**	**FS**	**GW**	**T**	**Arsenic**	**34.8**	30	µg/L
Northern Flowpath Wells	MW-201A	FS	GW	T	Arsenic	14.2	30	µg/L
Northern Flowpath Wells	MW-201B	FS	GW	T	Arsenic	19.5	30	µg/L
Northern Flowpath Wells	MW-202A	FS	GW	T	Arsenic	16.6	30	µg/L
Northern Flowpath Wells	MW-202A	FD	GW	T	Arsenic	16.3	30	µg/L
Northern Flowpath Wells	**MW-203A**	**FS**	**GW**	**T**	**Arsenic**	**53.7**	30	µg/L
Northern Flowpath Wells	MW-203B	FS	GW	T	Arsenic	2.5	30	µg/L
Northern Flowpath Wells	**MW-204A**	**FS**	**GW**	**T**	**Arsenic**	**114**	30	µg/L
Northern Flowpath Wells	MW-204B	FS	GW	T	Arsenic	2.4	30	µg/L
Northern Flowpath Wells	MW-208A	FS	GW	T	1,1-Dichloroethane	2.5	5	µg/L
Northern Flowpath Wells	MW-208A	FS	GW	T	1,2-Dichloroethane	0.52 J	5	µg/L
Northern Flowpath Wells	**MW-208A**	**FS**	**GW**	**T**	**Arsenic**	**254**	30	µg/L
Northern Flowpath Wells	MW-208A	FS	GW	T	Benzene	1.1	5	µg/L
Northern Flowpath Wells	MW-208A	FS	GW	T	Chloroethane	6.1	1300	µg/L
Northern Flowpath Wells	MW-208A	FS	GW	T	Ethyl benzene	0.39 J	440	µg/L
Northern Flowpath Wells	MW-208A	FS	GW	T	Xylenes, Total	0.79 J	590	µg/L
Northern Flowpath Wells	MW-208B	FS	GW	T	1,1-Dichloroethane	1.4	5	µg/L
Northern Flowpath Wells	**MW-208B**	**FS**	**GW**	**T**	**Arsenic**	**304**	30	µg/L
Northern Flowpath Wells	MW-208B	FS	GW	T	Benzene	1.1	5	µg/L
Northern Flowpath Wells	MW-208B	FS	GW	T	Chloroethane	22.4	1300	µg/L
Northern Flowpath Wells	MW-208C	FS	GW	T	1,1-Dichloroethane	0.83 J	5	µg/L
Northern Flowpath Wells	**MW-208C**	**FS**	**GW**	**T**	**Arsenic**	**112**	30	µg/L
Northern Flowpath Wells	MW-208C	FS	GW	T	Chloroethane	7.2	1300	µg/L
Northern Flowpath Wells	MW-210A	FS	GW	T	1,1-Dichloroethane	2.8	5	µg/L
Northern Flowpath Wells	**MW-210A**	**FS**	**GW**	**T**	**Arsenic**	**41.3**	30	µg/L
Northern Flowpath Wells	MW-210A	FS	GW	T	Benzene	0.24 J	5	µg/L
Northern Flowpath Wells	MW-210A	FS	GW	T	Chloroethane	1.4 J	1300	µg/L
Northern Flowpath Wells	MW-210A	FS	GW	T	Vinyl chloride	0.52 J	2	µg/L
Northern Flowpath Wells	MW-210B	FS	GW	T	1,1-Dichloroethane	2.1	5	µg/L
Northern Flowpath Wells	**MW-210B**	**FS**	**GW**	**T**	**Arsenic**	**37.3**	30	µg/L
Northern Flowpath Wells	MW-210B	FS	GW	T	Benzene	0.54	5	µg/L
Northern Flowpath Wells	MW-210B	FS	GW	T	Chloroethane	6.6	1300	µg/L
Northern Flowpath Wells	MW-210C	FS	GW	T	1,1-Dichloroethane	3.4	5	µg/L
Northern Flowpath Wells	MW-210C	FS	GW	T	Arsenic	18.5	30	µg/L
Northern Flowpath Wells	MW-210C	FS	GW	T	Tetrahydrofuran	3 J	3300	µg/L
Northern Flowpath Wells	MW-210C	FS	GW	T	Vinyl chloride	0.56 J	2	µg/L
Northern Flowpath Wells	MW-301A	FS	GW	T	Arsenic	2.5	30	µg/L
Northern Flowpath Wells	MW-301B	FS	GW	T	Arsenic	4.5	30	µg/L
Northern Flowpath Wells	MW-306A	FS	GW	T	Arsenic	1.3	30	µg/L
Perched	MW-10C	FS	GW	T	1,1-Dichloroethane	1	5	µg/L
Perched	MW-10C	FS	GW	T	Acetone	6.7	390	µg/L
Perched	**MW-10C**	**FS**	**GW**	**T**	**Arsenic**	**329**	30	µg/L
Perched	MW-10C	FS	GW	T	Benzene	4	5	µg/L
Perched	MW-10C	FS	GW	T	Dimethylformamide	19 J	390	µg/L
Perched	MW-10C	FS	GW	T	Ethyl benzene	47.7	440	µg/L
Perched	MW-10C	FS	GW	T	Nickel	11	88	µg/L
Perched	MW-10C	FS	GW	T	Tetrahydrofuran	21.9	3300	µg/L
Perched	MW-10C	FS	GW	T	Toluene	0.76 J	1000	µg/L
Perched	MW-10C	FS	GW	T	Vinyl chloride	0.84 J	2	µg/L
Perched	MW-10C	FS	GW	T	Xylenes, Total	94.3	590	µg/L
Perched	MW-10C	FS	GW	T	Zinc	10.9	59	µg/L
Southern Flowpath Wells	MW-206A	FS	GW	T	Arsenic	7.5	30	µg/L

Table 2.4-1: Groundwater Detections

FLOW PATH	SAMPLE LOCATION	QC CODE	MEDIA	FRACTION	PARAMETER	CONCENTRATION	ACL	UNITS
Southern Flowpath Wells	MW-212A	FS	GW	T	1,1-Dichloroethane	3.2	5	µg/L
Southern Flowpath Wells	**MW-212A**	**FS**	**GW**	**T**	**Arsenic**	**31.1**	30	µg/L
Southern Flowpath Wells	MW-212A	FS	GW	T	Tetrahydrofuran	4.1 J	3300	µg/L
Southern Flowpath Wells	MW-212A	FS	GW	T	Vinyl chloride	0.88 J	2	µg/L
Southern Flowpath Wells	MW-212B	FS	GW	T	1,1-Dichloroethane	1.1	5	µg/L
Southern Flowpath Wells	**MW-212B**	**FS**	**GW**	**T**	**Arsenic**	**284**	30	µg/L
Southern Flowpath Wells	MW-212B	FS	GW	T	Benzene	0.66	5	µg/L
Southern Flowpath Wells	MW-212B	FS	GW	T	Chloroethane	2	1300	µg/L
Southern Flowpath Wells	MW-212B	FS	GW	T	Vinyl chloride 524.2	1.1	2	µg/L
Southern Flowpath Wells	MW-212B	FS	GW	T	Vinyl chloride 8260 B	1.2	2	µg/L
Southern Flowpath Wells	MW-5A	FD	GW	T	1,1-Dichloroethane	0.85 J	5	µg/L
Southern Flowpath Wells	MW-5A	FS	GW	T	1,1-Dichloroethane	0.78 J	5	µg/L
Southern Flowpath Wells	MW-5A	FD	GW	T	Arsenic	4.8	30	µg/L
Southern Flowpath Wells	MW-5A	FS	GW	T	Arsenic	5.8	30	µg/L
Southern Flowpath Wells	MW-5A	FS	GW	T	Benzene	0.34 J	5	µg/L
Southern Flowpath Wells	MW-5A	FD	GW	T	Benzene	0.35 J	5	µg/L
Southern Flowpath Wells	MW-5A	FS	GW	T	Chloroethane	1.1 J	1300	µg/L
Southern Flowpath Wells	MW-5A	FD	GW	T	Chloroethane	2	1300	µg/L
Southern Flowpath Wells	MW-5A	FD	GW	T	Nickel	17.4	88	µg/L
Southern Flowpath Wells	MW-5A	FS	GW	T	Nickel	16.9	88	µg/L
Southern Flowpath Wells	**MW-5A**	**FD**	**GW**	**T**	**Vinyl chloride 524.2**	**2**	2	µg/L
Southern Flowpath Wells	MW-5A	FS	GW	T	Vinyl chloride 524.2	1.8	2	µg/L
Southern Flowpath Wells	**MW-5A**	**FS**	**GW**	**T**	**Vinyl chloride 8260 B**	**2**	2	µg/L
Southern Flowpath Wells	**MW-5A**	**FD**	**GW**	**T**	**Vinyl chloride 8260 B**	**2**	2	µg/L
Southern Flowpath Wells	MW-5A	FD	GW	T	Zinc	10.9	59	µg/L
Southern Flowpath Wells	**MW-8A**	**FS**	**GW**	**T**	**1,1-Dichloroethane**	**17**	5	µg/L
Southern Flowpath Wells	**MW-8A**	**FD**	**GW**	**T**	**1,1-Dichloroethane**	**16**	5	µg/L
Southern Flowpath Wells	MW-8A	FS	GW	T	1,2-Dichloropropane	2	5	µg/L
Southern Flowpath Wells	MW-8A	FD	GW	T	1,2-Dichloropropane	1.9 J	5	µg/L
Southern Flowpath Wells	**MW-8A**	**FS**	**GW**	**T**	**Arsenic**	**367**	30	µg/L
Southern Flowpath Wells	**MW-8A**	**FD**	**GW**	**T**	**Arsenic**	**403**	30	µg/L
Southern Flowpath Wells	MW-8A	FS	GW	T	Chloroethane	8	1300	µg/L
Southern Flowpath Wells	MW-8A	FD	GW	T	Chloroethane	7.1	1300	µg/L
Southern Flowpath Wells	MW-8A	FD	GW	T	Tetrahydrofuran	2.8 J	3300	µg/L
Southern Flowpath Wells	MW-8A	FD	GW	T	Trichloroethene	0.4 J	5	µg/L
Southern Flowpath Wells	MW-8B	FS	GW	T	1,1-Dichloroethane	2.8	5	µg/L
Southern Flowpath Wells	**MW-8B**	**FS**	**GW**	**T**	**Arsenic**	**677**	30	µg/L
Sphagnum Bog	MW-211A	FS	GW	T	Arsenic	5.8	30	µg/L
Sphagnum Bog	**MW-211B**	**FS**	**GW**	**T**	**Arsenic**	**118**	30	µg/L
Sphagnum Bog	MW-9A	FS	GW	T	Arsenic	14.9	30	µg/L
Sphagnum Bog	MW-9B	FS	GW	T	1,1-Dichloroethane	1.2	5	µg/L
Sphagnum Bog	MW-9B	FS	GW	T	Arsenic	29	30	µg/L
Sphagnum Bog	MW-9B	FS	GW	T	Tetrahydrofuran	12.4	3300	µg/L
Sphagnum Bog	MW-9C	FS	GW	T	Arsenic	6.3	30	µg/L

NOTES:
Bold entry indicates result equals or exceeds the ACL
µg/L = Micrograms per liter
ACL = Alternative concentration limit
QC = Quality Control
FS = Field Sample
FD = Field Duplicate
T = Total

Prepared/Date: MHL 07/24/07
Checked/Date: NWH 07/30/07

Table 2.4-2 Surface Water and Sediment Detection

FLOW PATH	SAMPLE LOCATION	QC CODE	MEDIA	FRACTION	PARAMETER	CONCENTRATION		PCL	UNITS
Annabessacook Lake	SED-108	FS	SED	T	Zinc	24200		270000	UG/KG
Annabessacook Lake	SED-108	FD	SED	T	Zinc	20700		270000	UG/KG
Annabessacook Lake	SED-108	FS	SED	T	Nickel	12000		50000	UG/KG
Annabessacook Lake	SED-108	FD	SED	T	Nickel	10400		50000	UG/KG
Annabessacook Lake	SED-108	FS	SED	T	Arsenic	9700		31000	UG/KG
Annabessacook Lake	SED-108	FD	SED	T	Arsenic	6200		31000	UG/KG
Annabessacook Lake	SED-8	FS	SED	T	Zinc	16900		270000	UG/KG
Annabessacook Lake	SED-8	FS	SED	T	Nickel	9100		50000	UG/KG
Annabessacook Lake	SED-8	FS	SED	T	Arsenic	20600		31000	UG/KG
Annabessacook Lake	SW-108	FS	SW	T	Zinc	8.6		59	µg/L
Annabessacook Lake	SW-108	FD	SW	T	Zinc	12.2		59	µg/L
Annabessacook Lake	SW-7	FS	SW	T	Zinc	6.6		59	µg/L
Cattail Marsh/Seep Marsh	SED-18	FS	SED	T	Zinc	10700		270000	UG/KG
Cattail Marsh/Seep Marsh	SED-18	FS	SED	T	Nickel	12300		50000	UG/KG
Cattail Marsh/Seep Marsh	SED-18	FS	SED	T	Arsenic	6200		31000	UG/KG
Cattail Marsh/Seep Marsh	SED-18	FS	SED	T	Acetone	40.2		4100	UG/KG
Cattail Marsh/Seep Marsh	SED-SPMRSH	FS	SED	T	Zinc	64300		270000	UG/KG
Cattail Marsh/Seep Marsh	SED-SPMRSH	FS	SED	T	Nickel	15400		50000	UG/KG
Cattail Marsh/Seep Marsh	SED-SPMRSH	FS	SED	T	Arsenic	11200		31000	UG/KG
Cattail Marsh/Seep Marsh	SP-MRSH	FS	SW	T	Nickel	2.9	J	88	µg/L
Cattail Marsh/Seep Marsh	**SP-MRSH**	**FS**	**SW**	**T**	**Arsenic**	**29**		5	µg/L
Cattail Marsh/Seep Marsh	**SP-MRSH**	**FS**	**SW**	**D**	**Arsenic**	**22.2**		5	µg/L
Cattail Marsh/Seep Marsh	SP-MRSH	FS	SW	T	Acetone	4.4	J	390	µg/L
Cattail Marsh/Seep Marsh	SW-18	FS	SW	T	Toluene	0.3	J	650	µg/L
Hoyt Brook	SED-11	FS	SED	T	Zinc	32300		270000	µg/kg
Hoyt Brook	SED-11	FS	SED	T	Nickel	11000		50000	µg/kg
Hoyt Brook	SED-11	FS	SED	T	Arsenic	3900		31000	µg/kg
Hoyt Brook	SED-114N	FS	SED	T	Zinc	33700		270000	µg/kg
Hoyt Brook	SED-114N	FS	SED	T	Nickel	29900		50000	µg/kg
Hoyt Brook	**SED-114N**	**FS**	**SED**	**T**	**Arsenic**	**341000**		31000	µg/kg
Hoyt Brook	SED-117	FS	SED	T	Zinc	52200		270000	µg/kg
Hoyt Brook	SED-117	FD	SED	T	Zinc	38500		270000	µg/kg
Hoyt Brook	SED-117	FS	SED	T	Nickel	15300		50000	µg/kg
Hoyt Brook	SED-117	FD	SED	T	Nickel	12700		50000	µg/kg
Hoyt Brook	SED-117	FS	SED	T	Arsenic	7600		31000	µg/kg
Hoyt Brook	SED-117	FD	SED	T	Arsenic	6100		31000	µg/kg
Hoyt Brook	SED-119	FS	SED	T	Zinc	27600		270000	µg/kg
Hoyt Brook	SED-119	FS	SED	T	Nickel	11000		50000	µg/kg
Hoyt Brook	**SED-119**	**FS**	**SED**	**T**	**Arsenic**	**42500**		31000	µg/kg
Hoyt Brook	SED-120	FS	SED	T	Zinc	22200		270000	µg/kg
Hoyt Brook	SED-120	FS	SED	T	Nickel	8800		50000	µg/kg
Hoyt Brook	SED-120	FS	SED	T	Arsenic	3000		31000	µg/kg
Hoyt Brook	SP-114N	FS	SW	D	Zinc	7.1		59	µg/L
Hoyt Brook	SP-114N	FS	SW	T	Zinc	8		59	µg/L
Hoyt Brook	SP-114N	FS	SW	D	Nickel	4		88	µg/L
Hoyt Brook	SP-114N	FS	SW	T	Nickel	5.5		88	µg/L
Hoyt Brook	SP-114N	FS	SW	T	Cis-1,2-Dichloroethene	0.46	J	70	µg/L
Hoyt Brook	SP-114N	FS	SW	T	Chloroethane	8.7		1300	µg/L
Hoyt Brook	**SP-114N**	**FS**	**SW**	**D**	**Arsenic**	**220**		5	µg/L
Hoyt Brook	**SP-114N**	**FS**	**SW**	**T**	**Arsenic**	**484**		5	µg/L

Table 2.4-2 Surface Water and Sediment Detection

FLOW PATH	SAMPLE LOCATION	QC CODE	MEDIA	FRACTION	PARAMETER	CONCENTRATION		PCL	UNITS
Hoyt Brook	SP-114N	FS	SW	T	1,1-Dichloroethane	1		5	µg/L
Hoyt Brook	SW-117	FS	SW	T	Zinc	6.8		59	µg/L
Hoyt Brook	SW-117	FS	SW	T	Diethylphthalate	43.7	J	1700	µg/L
Hoyt Brook	SW-119	FS	SW	T	Zinc	9.1		59	µg/L
Hoyt Brook	SW-11	FS	SW	T	Zinc	8.8		59	µg/L
Hoyt Brook	SW-120	FS	SW	T	Zinc	7.6		59	µg/L
Hoyt Brook	SW-32	FS	SW	T	Zinc	6.8		59	µg/L
Seep East/Sphagnum Bog	SED-3	FS	SED	T	Zinc	6400	J	270000	µg/kg
Seep East/Sphagnum Bog	SED-3	FS	SED	T	Nickel	2400	J	50000	µg/kg
Seep East/Sphagnum Bog	SED-3	FS	SED	T	Arsenic	550	J	31000	µg/kg
Seep East/Sphagnum Bog	SED-3	FS	SED	T	Acetone	813	J	4100	µg/kg
Seep East/Sphagnum Bog	SED-304	FS	SED	T	Zinc	64800	J	270000	µg/kg
Seep East/Sphagnum Bog	SED-304	FS	SED	T	Nickel	19800	J	50000	µg/kg
Seep East/Sphagnum Bog	SED-304	FS	SED	T	Arsenic	17400	J	31000	µg/kg
Seep East/Sphagnum Bog	SED-304	FS	SED	T	Acetone	615	J	4100	µg/kg
Seep East/Sphagnum Bog	SED-4	FS	SED	T	Zinc	71900		270000	µg/kg
Seep East/Sphagnum Bog	SED-4	FS	SED	T	Nickel	17900		50000	µg/kg
Seep East/Sphagnum Bog	SED-4	FS	SED	T	Arsenic	23500		31000	µg/kg
Seep East/Sphagnum Bog	SW-4	FS	SW	D	Zinc	10.6		59	µg/L
Seep East/Sphagnum Bog	SW-4	FS	SW	T	Zinc	18.7		59	µg/L
Seep East/Sphagnum Bog	SW-4	FS	SW	T	Nickel	2.1		88	µg/L
Seep East/Sphagnum Bog	**SW-4**	**FS**	**SW**	**T**	**Arsenic**	**46.4**		5	µg/L
Seep East/Sphagnum Bog	SW-3	FS	SW	D	Zinc	19.2		59	µg/L
Seep East/Sphagnum Bog	**SW-3**	**FS**	**SW**	**T**	**Zinc**	**77.6**		59	µg/L
Seep East/Sphagnum Bog	SW-3	FS	SW	T	Toluene	0.63	J	650	µg/L
Seep East/Sphagnum Bog	SW-3	FS	SW	D	Nickel	1.4		88	µg/L
Seep East/Sphagnum Bog	SW-3	FS	SW	T	Nickel	5.6		88	µg/L
Seep East/Sphagnum Bog	**SW-3**	**FS**	**SW**	**T**	**Arsenic**	**6.3**		5	µg/L
Seep East/Sphagnum Bog	SW-3	FS	SW	T	Acetone	4.6	J	390	µg/L
Seep East/Sphagnum Bog	SW-304	FS	SW	D	Zinc	8.8		59	µg/L
Seep East/Sphagnum Bog	**SW-304**	**FS**	**SW**	**T**	**Zinc**	**137**		59	µg/L
Seep East/Sphagnum Bog	SW-304	FS	SW	D	Nickel	1.4		88	µg/L
Seep East/Sphagnum Bog	SW-304	FS	SW	T	Nickel	37.5		88	µg/L
Seep East/Sphagnum Bog	**SW-304**	**FS**	**SW**	**T**	**Arsenic**	**40.5**		5	µg/L
Seep East/Sphagnum Bog	SW-304	FS	SW	T	Acetone	9.4		390	µg/L
Seep East/Sphagnum Bog	SW-305	FS	SW	D	Zinc	8.2		59	µg/L
Seep East/Sphagnum Bog	SW-305	FS	SW	T	Zinc	19.3		59	µg/L
Seep East/Sphagnum Bog	SW-305	FS	SW	D	Nickel	1.3		88	µg/L
Seep East/Sphagnum Bog	SW-305	FS	SW	T	Nickel	1.4		88	µg/L
Seep East/Sphagnum Bog	**SW-305**	**FS**	**SW**	**T**	**Arsenic**	**7.9**		5	µg/L
Seep East/Sphagnum Bog	**SW-310**	**FS**	**SW**	**T**	**Zinc**	**66.3**		59	µg/L
Seep East/Sphagnum Bog	SW-310	FS	SW	D	Zinc	21.1		59	µg/L
Seep East/Sphagnum Bog	SW-310	FS	SW	T	Nickel	3	J	88	µg/L
Shoreline West	SED-322	FS	SED	T	Zinc	10000		270000	µg/kg
Shoreline West	SED-322	FS	SED	T	Nickel	3100		50000	µg/kg
Shoreline West	SED-322	FS	SED	T	Arsenic	1900		31000	µg/kg
Shoreline West	SW-322	FS	SW	T	Zinc	45.6		59	µg/L
Shoreline West	SW-322	FS	SW	D	Zinc	27.2		59	µg/L
Shoreline West	SW-322	FS	SW	T	Toluene	0.52	J	650	µg/L
Shoreline West	SW-322	FS	SW	T	Nickel	5.2		88	µg/L
Shoreline West	SW-322	FS	SW	T	Acetone	6.2		390	µg/L

NOTES:
Bold entry indicates result equals or exceeds the ACL
µg/L = Micrograms per liter
ACL = Alternative concentration limit
QC = Quality Control
FS = Field Sample
FD = Field Duplicate
T = Total

Prepared/Date: MHL 07/24/07
Checked/Date: NWH 07/30/07

ATTACHMENT 11
ME DEP COMMENT LETTER, DATED SEPTEMBER 20, 2007

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAVID P. LITTELL
COMMISSIONER

September 20, 2007

Ms. Anni Loughlin
U.S. EPA, Reg. 1
1 Congress Street
Suite 1100 (HBT)
Boston, MA 02114-2023

Re: **Review of Draft "Five-Year Review Report" for the Winthrop Landfill Superfund Site, Winthrop, Maine" received September 13, 2007**

Dear ~~Ms. Loughlin~~ Anni:

The Maine Department of Environmental Protection (MEDEP) has reviewed the revised draft "Five-Year Review Report" text for the Winthrop Landfill Superfund Site, Winthrop, Maine which was prepared by the U.S. Environmental Protection Agency (EPA) and submitted to us on September 13, 2007.

The MEDEP agrees with the two (2) issues identified in Table 2 of Section 8.0 of the report and concurs with the recommendations and follow-up actions listed in Table 3 of Section 9.0 to address the two (2) issues.

Additionally, the MEDEP appreciates the opportunity to be part of the Five-Year Review Report review team and we look forward to continuing our collaborative working relationship at this site.

If you have any questions or concerns regarding this letter, please contact me directly at (207) 287-8554 or at (207) 287-2651.

Sincerely,

Rebecca L. Hewett

Rebecca L. Hewett, Project Coordinator
Division of Remediation
Bureau Remediation & Waste Management

pc: Mary Jane O'Donnell, EPA
Ted Wolfe, MEDEP

5-yrReview draft 9-13-2007.doc

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