

**FIVE-YEAR REVIEW REPORT**

**Third Five-Year Review Report**

**For the**

**Saco Tannery Waste Pits Site**  
**(Formerly the Saco Tannery Waste Pits Superfund Site)**

**Saco**

**York County, Maine**

**December 2008**

**PREPARED BY:**

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

Superfund Records Center  
SITE: Saco Tannery  
BREAK: 8:3  
OTHER: \_\_\_\_\_

Approved by:



December 30, 2008

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## ACRONYMS

ACL	Alternate Concentration Limit
ARAR	Applicable or Relevant and Appropriate Requirement
AWQC	Ambient Water Quality Criteria
BDL	Below Detection Limit
COC	Contaminant of Concern
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMR	Code of Maine Rules
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
ET	Ecotox Threshold benchmark value
FAME	Finance Authority of Maine
MCL	Maximum Contaminant Level
MEDEP	Maine Department of Environmental Protection
MEGs	Maximum Exposure Guidelines
mg/kg	milligrams per kilogram
MRSA	Maine Revised Statutes Annotated
NPL	National Priorities List
O&M	Operations and Maintenance
ppb	parts per billion
ppm	parts per million
RAG	Remedial Action Guideline
RAO	Remedial Action Objective
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SEL	Severe Effect Level
SSC	Superfund State Contract
SVOC	Semi-volatile organic compound
SWQC	State Water Quality Criteria
TBC	To be Considered
TCL	Target Compound List
TtNUS	Tetra Tech NUS, Inc.
USACE	U.S. Army Corps of Engineers
µg/L	micrograms per liter
VOC	volatile organic compound

This is the third five-year review for the Saco Tannery Waste Pits Site (Site). This statutory five-year review is required since hazardous contamination remains at the Site above levels that allow for unlimited use and unrestricted exposure. The review was completed in accordance with EPA Guidance OSWER NO. 9355.7-03B-P.

In 1956 a tanning company purchased the Site for disposal of its process wastes. The process wastes characteristically had high concentrations of chromium, volatile organic compounds, semi-volatile organic compounds, and included acids, and leather hides and scraps. For nearly two decades, wastes were disposed in two lagoons (approximately two acres each in size) and 57 smaller disposal pits. By the early 1980's the tanning company went bankrupt and title transferred to a quasi-state agency, the Finance Authority of Maine (FAME).

Investigations in the early 1980's and a removal action in 1983 were followed by completion of an RI/FS in October 1987. The ROD was signed on September 27, 1989. The ROD set forth a remedy that combined a source control cover system with institutional controls to restrict access and use of the Site and a monitoring program. The primary contaminants of concern affecting on-site soil, groundwater, surface water and/or sediment were determined to be arsenic, chromium, lead, monochlorobenzene and bis-2phthalate. Safe Drinking Water Act Maximum Contaminants Levels were set as the action levels for all groundwater contaminants, except for arsenic at four locations where alternate concentration limits were established.

On May 22, 1989, the Maine state legislature passed a resolution which permanently converted the Site to a wildlife preserve. The resolution prohibits development for residential or commercial use, excavation that penetrates the soil cover and/or utilization of the groundwater as a drinking water source. In addition to the legislative action, a deed restriction in the form of a conservation easement has been implemented on the property as a further assurance of the restrictions on future land use.

An Explanation of Significant Differences (ESD) was signed on January 16, 1993. The ESD allowed water collected from dewatering the pits and lagoons to be treated onsite and used for dust suppression rather than transported offsite for disposal. The ESD also changed the compensatory wetland requirement of the ROD to allow for the purchase of an off-site wetland area, the Saco Heath, since insufficient acreage was available on the Site to achieve the ROD objective of on-site compensatory wetlands.

Source control preparation activities were completed in the fall 1992. Construction of the soil cover systems took place from March through October 1993. Between April 1990 and March 1995, EPA conducted the monitoring program that included quarterly sampling of on-site monitoring wells, semi-annual surface water and sediment sampling, and annual sampling of residential wells on Flag Pond, Jenkins and Hearn Roads. In April 1995, responsibility for the monitoring program was transferred to MEDEP.

MEDEP and FAME continue operations and maintenance under a division of responsibility defined in a Memorandum of Agreement (1991) and Amended Memorandum of Agreement (2001). The O&M activities have been modified since the last five-year review. The MEDEP has reduced the groundwater and sediment sampling frequency to every two years, and has reduced the number of monitoring wells sampled. EPA concurred with these modifications.

Based on the data reviewed, observations from the site inspection, and interviews, the remedy is functioning as intended by the ROD. The source control portion of the remedy is complete and inspections have confirmed that the remedy is functioning as designed and remains protective of human health and the environment. Groundwater and sediment monitoring continue and maintenance is performed as necessary. The effective implementation of institutional controls, including legislation prohibiting development and use of site groundwater and fencing to restrict access to the cover system areas have thus far ensured the integrity of the cover systems and prevented exposure to site soils and groundwater.

The primary ARARs for groundwater on the Site are the MCLs and 1992 MEGs. While the MCL for arsenic has been reduced to 10 µg/l, and a number of the monitoring wells exceed this value, the restriction on use of site groundwater prevents any exposures.

Land use at the Site and adjacent properties has not changed and is not expected to change, and there are no additional routes of exposure.

Five-Year Review Protectiveness Statement:

Because the remedial actions implemented are protective, the Site is protective of human health and the environment. The soil cover systems constructed under the source control remedy are functioning as designed and remain in good condition, thus preventing contact with soils and sludge in the pits and lagoons. Institutional controls, including the resolution creating a wildlife preserve at the Site, the conservation easement restricting future use of the Site and its groundwater, and fencing restrict access to the soil cover systems and prevent exposure to soils and groundwater ensuring the Site remains protective of human health and the environment. Groundwater and sediment monitoring have shown reductions in concentrations of contaminants of concern, below many of the target levels established in the ROD. The monitoring results demonstrate that there is no off-site migration and contamination onsite is identifiable and localized. The monitoring program will continue to ensure that concentrations remain within acceptable ranges.

### Five-Year Review Summary Form

SITE IDENTIFICATION		
<b>Site name (from WasteLAN):</b> Saco Tannery Waste Pits Superfund Site		
<b>EPA ID (from WasteLAN):</b> MED980520241		
<b>Region:</b> 1	<b>State:</b> ME	<b>City/County:</b> Saco/York
SITE STATUS		
<b>NPL status:</b> Deleted from NPL (9/29/99)		
<b>Remediation status (choose all that apply):</b> Complete		
<b>Multiple OUs?</b> No	<b>Construction completion date:</b> October 1993	
<b>Has site been put into reuse?</b> No (Site is a permanent wildlife preserve)		
REVIEW STATUS		
<b>Lead agency:</b> EPA		
<b>Author name:</b> Terrence Connelly		
<b>Author title:</b> Remedial Project Manager	<b>Author affiliation:</b> EPA Region I	
<b>Review period:</b> 10/22/08 to 12/31/08		
<b>Date(s) of site inspection:</b> 10/29/08		
<b>Type of review:</b> Post-SARA		
<b>Review number:</b> Third		
<b>Triggering action:</b> Second Five-Year Review – 12/31/03		
<b>Triggering action date (from WasteLAN):</b> <u>12/31/03</u>		
<b>Due date (five years after triggering action date):</b> <u>12/31/08</u>		

**Issues: No issues were identified in this five-year review**

**Recommendations and Follow-up Actions:**

- It is recommended that O&M activities continue and periodically be reviewed to assure that it remains current with site conditions.

- Chromium concentrations in downstream locations appear to have increased. These locations will continue to be part of the monitoring program in order to assess whether this represents periodic variations of concentrations associated with sediment sampling as was concluded following extensive sampling in 1999 or is an actual increase.

**Protectiveness Statement(s):**

Because the remedial actions implemented for the Site are protective, the Site is protective of human health and the environment. The soil cover systems constructed under the source control remedy are functioning as designed and remain in good condition, thus preventing contact with soils and sludge in the pits and lagoons. Institutional controls, including the resolution creating a wildlife preserve at the Site, the conservation easement restricting future use of the Site and its groundwater, and fencing restrict access to the soil cover systems and prevent exposure to soils and groundwater ensuring the Site remains protective of human health and the environment. Groundwater and sediment monitoring have shown reductions in concentrations of contaminants of concern, below many of the target levels established in the ROD. The monitoring results demonstrate that there is no off-site migration and on-site contamination is identifiable and localized. The monitoring program will continue to ensure that concentrations remain within acceptable ranges.

## 1.0 INTRODUCTION

The purpose of this five-year review is to determine if the remedy selected for the Saco Tannery Waste Pits Superfund Site (Site) in Saco, Maine, is protective of human health and the environment. This report summarizes the five-year review process, investigations and remedial actions undertaken at the Site; evaluates the monitoring data collected; reviews the Applicable or Relevant and Appropriate Requirements (ARARs) specified in the Record of Decision (ROD) for changes; discusses any issues identified during the review; and presents recommendations to address these issues.

The United States Environmental Protection Agency, Region 1 (EPA) prepared this five-year review pursuant to the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) §121 and the National Contingency Plan. CERCLA §121 states:

“If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less 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 EPA interpreted this requirement further in the National Contingency Plan; 40 CFR §300.430(f)(4)(ii) states:

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

This is the third five-year review for the Site. The second five-year review was completed in December 2003 as a post-SARA statutory review in accordance with the 1989 ROD. This statutory five-year review is required since hazardous contamination remains at the Site above levels that allow for unlimited use and unrestricted exposure. The triggering action for the initial statutory review was initiation of the remedial action. Source control remedial activities were initiated in 1992 and construction activities were completed in October 1993. An interim monitoring program, which included groundwater, surface water and sediment sampling, began in 1990. EPA conducted the interim monitoring program until March 1995. MEDEP assumed responsibility for monitoring and operations and maintenance (O&M) activities on April 1, 1995.

EPA has conducted this five-year review of the remedial actions implemented at the Saco Tannery Waste Pits Site in Saco, Maine. Assistance was provided by Maine Department of Environmental Protection (MEDEP). Work on this review was performed between October and December 2008. The review was completed in accordance with EPA Guidance OSWER NO. 9355.7-03B-P.

## 2.0

## SITE CHRONOLOGY

**TABLE 2-1  
CHRONOLOGY OF SITE EVENTS**

EVENT	DATE
A tanning company purchased the property (previously a homestead/farmland) and utilized it for disposal of process wastes	1956
Waste disposal on-site ceased	Late 1970's
Tannery went bankrupt and title passed to a quasi-state agency (FAME)	1981
MEDEP, in conjunction with EPA, began site investigations	Early 1980's
Removal response action was conducted	July – October 1983
Site placed on NPL	September 1983
MEDEP began initial Remedial Investigation (Phase I RI)	1985
EPA initiated a Phase II RI and a Feasibility Study	October 1987
Maine legislature passed the resolution converting the Site to a permanent wildlife preserve	May 22, 1989
EPA issued a Wetlands and Floodplains Assessment and an FS addendum	June 1989
ROD signed	September 27, 1989
EPA began a monitoring program of on-site groundwater, surface water and sediment and residential wells adjacent to the Site	April 1990
Memorandum of Agreement between MEDEP and FAME signed	September 23, 1991
Conservation easement created by FAME recorded in the York County Registry of Deeds	June 23, 1992
Explanation of Significant Differences (ESD) signed	January 16, 1993
Site Preparation Remedial Action performed	October 6, 1992 – December 15, 1992
Soil Cover/Compensatory Wetlands Remedial Action performed	March 1, 1993 – October 20, 1993
Construction inspection	September 1993
Superfund State Contract for road repairs with MEDEP and City of Saco	April 1994
Operation and Function Period for Soil Covers	October 20, 1993 – October 1, 1994

Operation and Function Period for Compensatory Wetlands	October 20, 1993 – October 1, 1997
O&M for soil covers by MEDEP	October 1, 1994 – ongoing
Final inspection of soil covers; transfer of O&M responsibilities from EPA to MEDEP	March 24, 1995
Final inspection for restored on-site wetlands component of the remedial action	July 1996
First Five-Year Review signed	December 31, 1998
EPA conducted sediment sampling in response to a possible re-emergence of seeps from Chromium Lagoon 2 and Wet Area 1.	Spring 1999
Site deleted from the NPL	September 1999
Amended Memorandum of Agreement between MEDEP and FAME signed	July 10, 2001
Second Five-Year Review signed	December 19, 2003
MEDEP updated O&M Plan	2004 and 2007
O&M activities, including annual inspections, mowing, and repairs as needed, continued to be performed for FAME	2004 – 2008
Long-term monitoring of groundwater and sediments continued to be performed by MEDEP	2004-2007
MEDEP abandoned monitoring wells that were no longer part of the long-term monitoring program	2005
MEDEP performed hydrological assessment	2005

## **3.0 BACKGROUND**

### **3.1 Physical Characteristics**

The Site is located off Flag Pond Road in a rural, residential area of Saco, Maine (Figure 1). The approximately 212-acre parcel is relatively flat. It is bounded to the east by the Maine Turnpike, to the west by residential properties, to the south by Flag Pond Road, and to the north by the woods and fields. The majority of the Site is forested, both uplands and wetlands. Non-forested land consists of scrub-shrub wetlands, bedrock outcrops, and the covered pits and lagoons, and grasses are well established on the soil covers.

There are two surface water drainage-ways onsite, located in the northern and southwestern portions of the property. Both originate in a swampy region in the western part of the property near Waste Pits 7, 8, and 9 (Figure 2). One drainage-way flows in a southerly direction via poorly defined channels towards Flag Pond Road and eventually to Cascade Brook. The other drainage-way flows in a northeast direction to form the well-defined Stuart Brook. Stuart Brook then flows in a southeastern direction where it exits the site beneath the Maine Turnpike. Approximately one and a half mile farther downstream Stuart Brook joins Cascade Brook, which then flows another mile before discharging into Scarborough Marsh (thus, the entire site is located within the same watershed). A 100-year flood plain is located within the property boundaries, but the waste pits or lagoons are not located within the flood plain.

The site geology consists of unconsolidated glacial sediments and till that overlie the bedrock. The thickness of the glacial deposits ranges from 0 to 55 feet below ground surface with the maximum overburden located north of Stuart Brook along the northern edge of the Site. Topographically the Site slopes gently toward the north, west and east in a radial pattern.

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

Surrounding land uses to the west and south are primarily residential and agricultural. Interstate I-95 borders the Site to the east and this highway was expanded from two to three lanes in each direction since the last five-year review. A large wooded parcel bordered the Site to the north at the time of the last five-year review; portions of this parcel have since been clear cut. A large-scale rotating irrigation system is currently in place on this property.

A review of the current City of Saco zoning map indicated that the area around the Site remains a Conservation District, or Zone C-1. This zoning classification, C-1, is “designed to promote and preserve agriculture and open space, while permitting low density residential uses that do not conflict with this overall purpose.” Examples of permitted uses include, but are not limited to, cemeteries, single- and two-family dwellings, cluster residential projects, public parks, and agriculture.

Historical records indicate that from the 1800’s until the 1950’s farming and residential uses were the primary land uses of the Site and surrounding properties. Although the Site was converted into a commercial disposal area in 1956, the surrounding properties have continued to be residential areas and farms. There were approximately 60 single-family homes located within a half-mile radius of the Site at the time the ROD was signed in 1989; the number has gradually increased as farmland is converted into residential properties. Residential development is concentrated along Hearn Road and Flag Pond Road. All of the homes in the area have private wells and rely on groundwater for their water supply. A comparison of City of Saco tax records and aerial photography indicates that there have been only two additional homes constructed on the site-sides of Flag Pond and Hearn Roads since the previous five-year review. Figures 3 and 4 are aerial photographs taken on April 29, 1998 and August 5, 2007, respectively

and illustrate the essentially unchanged land use over the past ten years (Note that the 1998 photo was taken in springtime, prior to new growth, so it may appear that the vegetation on the soil cover systems was not established).

The groundwater aquifer in the area of the Site is classified under federal standards as IIB, suitable for use as a public water supply. Site groundwater flows radially outward from the highest point (located near monitoring wells MW-114) toward and discharging into the streams that originate on the Site. Groundwater also flows from the residential properties towards the Site. Therefore the potential for site contamination to migrate offsite into the private water supply wells is unlikely.

### **3.3 History of Contamination**

In 1956 a tanning company purchased the Site for disposal of its process wastes. Prior to that time the property was used as a homestead and farm. For nearly two decades, until the late 1970's, tanning process wastes were disposed of on the Site, although the actual processing activities were conducted off-site, across town. The process wastes characteristically had high concentrations of chromium, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs), and included acids, and leather hides and scraps. Wastes were disposed of onsite in two large lagoons (approximately two acres each in size) and 57 smaller disposal pits (during initial investigations 53 pits were discovered; four additional pits were uncovered in 1993 during the initial source control activities). The lagoons are located in the northwestern and northeastern portions of the property and are identified as "Chromium Lagoon 1" and "Chromium Lagoon 2" (see Figure 2 for pit and lagoon locations). The smaller 57 disposal pits are located throughout the property along both sides of the road system. By the early 1980's the tanning company went bankrupt, and title transferred to a quasi-state agency, the Finance Authority of Maine (FAME).

### **3.4 Initial Response**

In the early 1980's MEDEP and EPA conducted the first recorded site investigation. During a 1982 EPA investigation, three acid pits, known as Waste Pits 1, 27 and 30, were identified as areas that posed immediate and significant human health risks. Between July and October 1983, EPA remediated the three acid pits by removing the liquids, neutralizing the sludge in place with lime, and capping the pits. A fence was also erected along Flag Pond Road. EPA estimated that the total surface area of contamination was approximately 13 acres. The Site was placed on the National Priority List (NPL) in September 1983.

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

From 1985 through 1987 MEDEP, under a Cooperative Agreement with EPA, conducted a Phase I Remedial Investigation (RI) and Baseline Risk Assessment to determine the nature and extent of contamination and associated health risks at the Site. EPA initiated a Phase II RI and Feasibility Study (FS) in October 1987.

The RI found that the contaminated soil and standing water in the two lagoons and waste pits included high concentrations of chromium and lead, along with low VOC and SVOC concentrations. With the exception of two discrete areas on the Site, the western berm of Waste Pit 9 and the northern berm of Chromium Lagoon 2, contaminants levels were found to decrease significantly immediately below the visibly contaminated waste sludge. The FS evaluated potential cleanup alternatives for the Site and provided information used to select a remedy.

Groundwater contaminants included arsenic and monochlorobenzene at concentrations that exceeded the MCLs. (The MCL for monochlorobenzene was established after the ROD was signed.) No definitive source of arsenic was identified in the RI; arsenic is not a characteristic of tannery wastes. The RI identified the sludge in the waste pits and lagoons as the VOC source. Water quality data from residential wells in the immediate vicinity of the Site did not indicate any exceedances of MCLs. The investigations found no evidence of a hydraulic connection between the residential wells and the Site.

In June 1989, EPA issued a Wetlands and Floodplains Assessment report and a revised Proposed Plan that was accepted by MEDEP. Based on the results of these investigations, ARARs and other guidance, target cleanup goals were established to protect human health and the environment from the identified risks. On September 27, 1989, the ROD was signed. The ROD set forth a remedy for the Site that combined a source control cover system with institutional controls to restrict access to and use of the Site. The primary contaminants of concern affecting on-site soil, groundwater, surface water and/or sediment were determined to be arsenic, chromium, lead, and minimal SVOCs and VOCs.

## 4.0 REMEDIAL ACTIONS

This section summarizes the remedial actions selected and implemented at the Site and monitoring data results at the time of the 2003 FYR (data collected since 2003 is discussed in Section 6.0 of this report).

### 4.1 Remedy Selection

The September 27, 1989 ROD for the Site specified a multi-component remedy to address contaminated site soils and groundwater. Based on the RI, the following remedial action objectives (RAOs) were identified for the Site:

- Minimize exposure to contaminants or reduce contaminants to levels that are protective of human health and the environment;
- Reduce the threat of future leaching of chromium and/or reduce the levels of chromium in the sludge that could leach into the groundwater in the future;
- Prevent ingestion of contaminated groundwater; and
- Minimize exposure of wildlife to contaminated soil, sediments, and standing water.

The remedy selected in the ROD specified:

- Construction of soil cover systems over the waste pits and lagoons to minimize direct contact with contaminated soils and sludge;
- Creation of a legislatively-enacted institutional control to convert the Site to a permanent wildlife preserve within two years of ROD signing;
- Implementation of a groundwater monitoring network to monitor for releases of chromium into the groundwater;
- Performance of a groundwater, surface water, and sediment monitoring program and contingencies based on the monitoring results;
- Creation of compensatory wetlands on-site to replace the wetlands lost due to covering the pits and lagoons; and
- Performance of five-year reviews.

The source control component of the remedy specified construction of cover systems for all the pits and lagoons. Based on a review of the sampling data and other factors, the ROD did not require additional sampling to confirm the extent of contamination since, except for two discrete areas, the available data indicated that the contaminated soils and sludge were confined to the waste pits and lagoons. The two areas of the Site, located near Waste Pit 9 (e.g. Wet Area One) and a seep area near Chromium Lagoon 2 (e.g. Seep Area One) (see Figure 2), required further investigation prior to construction of the cover system. Sediments in Wet Area One contained chromium and lead concentrations that were attributed to a break in the berm surrounding Waste Pit 9. Sediments from Seep Area One contained high arsenic concentrations. The ROD established the cleanup target levels shown below to determine the extent of remediation required for the areas where contamination was found beyond the confines of the waste pits.

Contaminant	Target Cleanup Level (mg/kg)
Antimony	30
Arsenic	60
Total Chromium	2,000
Lead	125

The following components of the source control remedy were specified in the ROD: site preparation; remove ponded water from all pits and lagoons; install bio-intrusion barriers; cover the waste pits and lagoons; cover the wet area and seep area sediments; survey the final cover contours and install permanent markers; re-establish vegetation on covered and disturbed areas; create compensatory wetlands; conduct post-closure monitoring; and implement land use restrictions. The cover system for all pits and lagoons included the geotextile barrier, a minimum one-foot rock layer, a six to eight-inch stone layer, a minimum of two feet of till, and a minimum of 18 inches of topsoil. The covers were sloped at no less than three percent to promote runoff.

The ROD required the design and installation of a monitoring network and established action levels for the groundwater/surface water monitoring program. If the action levels were exceeded, the ROD required a further evaluation of the remedial action via contingencies described in the ROD. Safe Drinking Water Act Maximum Contaminant Levels (MCLs) were set as the action levels, or standards, for all groundwater contaminants, except for arsenic at four locations. EPA established Alternate Concentration Limits (ACLs) for four site monitoring wells (MW-101, MW-103, MW-111B, MW-114B) based on the maximum concentrations observed in the four wells during the RI. The arsenic ACLs for the four monitoring wells are shown in the table below.

Contaminant	ACL (µg/L)	Where Applicable
Arsenic	123	MW-103
Arsenic	77	MW-114B
Arsenic	64	MW-111B
Arsenic	70	MW-101

The ROD required quarterly groundwater monitoring for the five COC target compounds (arsenic, lead, manganese, monochlorobenzene, and bis(2-ethylhexyl) phthalate) and annual monitoring for Target Compound List (TCL) metals, VOCs and SVOCs. Monitoring of residential wells located contiguous to the Site was also included in the ROD. The residential well program included periodic collection and analysis of samples for TCL metals, VOCs and SVOCs from existing and new wells. Should new residential wells be installed, the ROD required the collection of water level data using continuous recorders to check for possible changes in groundwater flow patterns. The ROD specified that surface water and sediment samples be collected from on-site streams twice a year (low/high flow seasons) and analyzed, at a minimum, for the five target compounds.

The groundwater, residential well, surface water and sediment monitoring programs specified in the ROD were required for at least three years following completion of the soil cover systems. At that point, the ROD allowed for an evaluation of the data and a possible reduction in the monitoring program. Following the initial reassessment, the monitoring program would be reassessed periodically based on the data and trends. At a minimum the ROD required a reassessment at the time of each five-year review.

The ROD also included several contingencies to evaluate the need for additional remedial actions based on the results of the required monitoring. The first contingency was associated with the results of the groundwater monitoring program. If during groundwater monitoring any of the following circumstances occurred, EPA would evaluate the need for additional remedial actions:

- Chromium and other site-related groundwater contaminants other than arsenic are detected in on-site monitoring wells at levels greater than their MCLs;
- Arsenic levels in the four monitoring wells (MW101, MW-103, MW-111B, MW-114B) exceed the specific ACL established for each well;
- Arsenic concentrations exceed the MCL in any monitoring wells located at or around the Site boundary; or
- Contaminant concentrations above the Ambient Water Quality Criteria (AWQC) are detected in on-site identifiable streams because of discharge of site-related groundwater contaminants into surface water.

The second contingency was associated specifically with chromium in groundwater. If chromium was detected in groundwater from any of the wells along the property boundary at concentrations of 500 µg/L, (i.e. ten times the MCL for chromium), a source control remedial alternative using a treatment technology would be selected and implemented.

Since implementation of the selected remedy would result in contaminants remaining on the Site, the ROD required that EPA conduct five-year reviews. The reviews are required to assess site data to ensure that the remedial action continues to be protective of human health and the environment.

#### **4.2 Explanation of Significant Differences**

On January 16, 1993, EPA signed an Explanation of Significant Differences (ESD) which changed several provisions of the ROD. Rather than off-site treatment and disposal of the standing water from the waste pits and lagoons, the approximately 569,000 gallons of water were treated on-site and subsequently used for dust control on the three miles of dirt roads during the construction of the soil cover systems. In addition, the ESD changed the ROD requirement for creation of on-site compensatory wetlands since there was insufficient acreage on the Site to create wetlands to compensate for the 9.6 acres lost during construction of the remedy. The ESD allowed the MEDEP to purchase off-site wetlands as the State's ten percent cost share for the remedial action. MEDEP successfully negotiated the purchase of 247 acre parcel of the Saco Heath, located within two miles of the Site and within the same watershed as the Site. EPA deemed that the purchase of Saco Heath parcel was sufficient compensation for the State's requirements under the ROD.

#### **4.3 Remedy Implementation**

This section describes the implementation and responsibilities for the components of the remedy specified in the ROD. The responsibilities of EPA and MEDEP were defined in the Superfund State Contract for Site Preparation signed on September 14, 1992 (1992 SSC); and the Superfund State Contract for the Soil Cover System/Compensatory Wetlands signed on January 28, 1993 (1993 SSC). The two SSCs defined the responsibilities of the parties, including response action activities, funding, cost share, and administrative issues, to ensure compliance with CERCLA.

The 1993 SSC included provisions for the State to assure continuation of O&M actions for 30 years from the start of the O&M period. Specific O&M tasks were included in the Operations and Maintenance Plan attached to the SSC. The August 28, 1991 Memorandum of Agreement between MEDEP and FAME identified the two agencies' responsibilities for the State's O&M obligations. This MOA was amended in 2001.

##### **4.4.1 Source Control Remedial Activities**

The source control remedial activities were divided into two phases to accommodate the short construction season in Maine. Site preparation activities were completed between October and December 1992; the soil cover/compensatory wetlands activities were completed between March and October 1993.

As specified in the ROD, EPA was required to conduct the source control remedial activities, which included the installation of soil covers over the 57 waste pits, 2 lagoons, 2 wet areas and 2 seeps, the creation of compensatory wetlands, and site restoration. (These numbers include the four waste pits, and another wet area and seep area identified after remedial activities began and are described below). Prior to installation of the geotextile barriers, rock, stone and till in the disposal areas, land surveys, visual observations and berm excavations were performed to ensure that the contaminated soil and sludge were safely contained under the soil covers.

*Dewatering activities were conducted where ponded water was found and an estimated 569,000 gallons of water were treated onsite and used for dust control on the site dirt roadways. Initially the treated water was to be discharged to Stuart Brook, but regulatory and public concerns resulted in a re-evaluation and ultimately EPA's approval to use the treated water for dust suppression. During construction of the soil cover systems, an additional 531,000 gallons of water were brought onsite and used for dust suppression. Approximately 14,000 truckloads of fill material were transported across Flag Pond and Jenkins Roads to the Site during installation of the soil cover systems. Reconstruction of these heavily traversed roadways was subsequently conducted following the establishment of a Memorandum of Agreement between EPA and the City of Saco.*

During remediation of Chromium Lagoon 2, a second seep area, north of the lagoon, was identified, sampled and dewatered. This area is identified as Seep Area Two on Figure 2. The path of contamination followed the drainage pathway towards Stuart Brook. Since chromium and lead were detected at this location, approximately 10,000 square feet of soil were excavated and placed under the Chromium Lagoon 2 soil cover. Clean topsoil was placed in this excavated area and the area was subsequently re-vegetated.

Four additional waste pits (Waste Pits 54, 55, 56, and 57) were identified during the site preparation phase in 1993 (Figure 2). At each of these locations brush clearing, visual observations, land surveying and soil cover construction activities were conducted to ensure proper cover and containment of the contaminated soil and sludge. All soil covers were covered by topsoil and then hydro-seeded to encourage growth of grass on the covers to prevent erosion. On September 17, 1993, prior to site restoration and demobilization, a final inspection was conducted by EPA and MEDEP. At that time the source control remedial action component of the ROD was declared complete.

#### **4.4.2 Wetlands Compensation**

The remedy selected by the ROD included on-site compensation for wetlands lost because of the construction of the soil covers. Approximately 9.6 acres of wetlands were lost when the Site access roads were expanded and the soil covers were installed. A post-ROD assessment determined that there was insufficient acreage onsite to satisfy the requirements for wetlands creation under the ROD. Consequently, EPA and MEDEP structured the 1993 SSC to allow the purchase of compensatory off-site wetlands to serve as the State's cost share for the remedial action. MEDEP negotiated the purchase of 247 acre parcel within the Saco Heath, a unique habitat where northern range and southern range species overlapped. The owners of this parcel had a peat mining permit which if implemented would have significantly altered the heath.

In addition to the wetlands lost to the soil covers, a small area of wetlands was lost by the construction of the loop road north of Waste Pit 44. An area of less than one acre adjacent to the loop road was identified as

suitable for wetland development with some reconstruction of the elevation. This reconstruction and subsequent planting with wetland vegetation was completed in 1993. The wetlands specialist returned to the Site in the spring of 1994 to re-examine the compensation area. The survival rate of the vegetation was found to be acceptable.

Maine regulations require a three-year period of “operational and functional” monitoring for restored wetlands. A US Army Corps of Engineers wetlands biologist, who participated in the restoration plan, evaluated the restored wetlands for EPA. Following a July 17, 1996 site inspection, the USACE concluded that restoration of the remediated wet areas was successful. Restoration of areas impacted by site activities (truck scales and access roads expansion at the entrance to the site) was not as successful in replicating the existing wetlands. However as these were relatively small areas, one-sixth and one-third acres, respectively, and they were functioning as open water/emergent wetlands, corrective action was not recommended.

#### **4.4.3 Institutional Controls**

On May 22, 1989, the Maine state legislature passed a resolution which permanently converted the Site to a wildlife preserve (Appendix A). The resolution prohibits development for residential or commercial use, excavation that penetrates the soil cover and/or utilization of the groundwater as a drinking water source. In addition to the legislative action, a deed restriction in the form of a conservation easement was implemented on the property as a further assurance of the restrictions on future land use (Appendix B). MEDEP and FAME signed a Memorandum of Agreement in 1991, and amended it in 2001. These agreements established rules and regulations governing the use of the preserve and the agencies’ responsibilities for O&M.

#### **4.4.4 Monitoring Activities**

Monitoring activities have consisted of the interim monitoring conducted by EPA during implementation of the source control remedial action and the ongoing O&M monitoring performed by MEDEP.

#### Groundwater

This component of the ROD began in April 1990 with quarterly monitoring and was implemented in conjunction with the source control remedial action. Up to 16 monitoring well locations were sampled quarterly by the EPA until March 1995, when the MEDEP assumed O&M responsibilities.

EPA’s interim monitoring indicated that there was an outward flow of contamination from the waste pits towards the wetlands and forested areas but no flow of contaminants moving offsite. Given the relatively flat topography and the location of the waste pits, several isolated areas were found with arsenic and monochlorobenzene in groundwater. After the construction of the soil cover systems, EPA collected continuous piezometric data from multiple monitoring wells to assess whether there was any hydraulic connection between the residential wells and the Site. The data indicated that the residential wells did not have any measurable effect on the site groundwater. This was consistent with the regional groundwater flow direction from the residential areas toward the on-site wetlands and streams.

Since the beginning of the groundwater monitoring, the monitoring wells have been sampled for arsenic, chromium, lead, manganese and monochlorobenzene. The results were then compared to their appropriate standard, either the ACL or MCL, as specified by the ROD. In May 1995, the MEDEP sampled all 16 locations included in EPA’s monitoring program; over time MEDEP has reduced the number of locations and frequency of sampling based on a review of previous sampling events and the

condition of the monitoring wells. The list of analytes was reduced to the contaminants of concern and used by MEDEP as indicators of the need for more extensive analysis. During the last sampling event prior to the 2003 Five-Year Review, nine of the original sampling locations were sampled.

The 2003 Five-Year Review stated that of the nine wells sampled in April 2002, there was one exceedance of an arsenic ACL (MW-103); two exceedances of the arsenic MCL (MW-1, MW-114A); the lead action limit was exceeded in six of the nine wells sampled; and the monochlorobenzene MCL was exceeded in two wells (MW-103 and MW-114A). There were no MCL or ACL exceedances for any contaminants of concern in 2003, except for two exceedances of the arsenic MCL (MW-1, MW-114A). Chromium concentrations had been at either non-detect or very low levels since the construction of the soil cover systems.

The table below summarizes the arsenic data for the four ACL monitoring wells collected during the period that MEDEP performed long-term monitoring.

Monitoring Well	ACL (µg/l)	Concentration History 1995 – 2003
MW-101	70	ACL exceeded in 3 of 19 events (10/95, 10/00 and 10/01)
MW-103	123	ACL exceeded in 16 of 19 events; not exceeded in 4/97, 3/98 and 4/03
MW-111B	64	ACL exceeded in 1 of 19 events (10/95)
MW-114B	77	ACL exceeded in 2 of 19 events (7/95 and 10/95)

Groundwater from MW-103 was below its arsenic ACL for the first time in five years in the last sampling event before the 2003 FYR (April 2003). The April 2003 arsenic concentrations in the remaining eight wells were below the MCL in effect at the time of the ROD signing (e.g 50 µg/L); arsenic concentrations in four wells were below the current MCL (10 µg/L).

It is noted that the ACLs were set based on data collected using purge and bail sampling techniques and filtered samples that were standard procedures at the time of the RI. The Site was one of the first locations in the country where low-flow non-filtered sampling was piloted. Data from this effort demonstrated that chromium concentrations decreased to background whereas at some locations the arsenic concentrations increased.

The results of groundwater sampling events since the 2003 five-year review are discussed in Section 6.4.3. Locations of the nine wells are shown on Figure 5.

#### Surface Water and Sediment

The ROD remedy included semi-annual surface water and sediment sampling. Sediment sampling locations are shown on Figure 5, including one just west of the Maine Turnpike at the site boundary. The number of sampling locations and frequency of sampling have been modified since the monitoring program began in 1990.

The ROD set action levels for antimony, arsenic, total chromium, and lead. The total chromium action levels was a “To Be Considered” (TBC) action level for sediments based on a risk calculation from a 1980 stream water quality study associated with a Maine tannery. After this risk-based 2,000 mg/kg action level was established, EPA began using Ecotox Threshold benchmark values (ETs) for sediment and stream quality screening, comparing maximum measured contaminant concentrations to an

ecotoxicological-based benchmark. The ET Effects Range Low, value for chromium in sediment is 81 mg/kg. As noted in the 1998 FYR, these values are intended for screening; they are not regulatory criteria, site-specific cleanup standards, or remediation goals.

Similarly, the MEDEP has been using the Severe Effect Level (SEL) as a screening level. SELs are listed in Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario, March 1993. A SEL is defined as the level at which pronounced disturbance of the sediment-dwelling community can be expected. The SEL for chromium is 110 mg/kg.

There are no ET-ERL or SEL values for antimony. The arsenic values are 8.2 mg/kg and 33 mg/kg, respectively; the lead values are 47 mg/kg and 250 mg/kg, respectively.

The 1998 Five-Year Review stated that surface water sampling had not shown any contaminants of concern above either the AWQC or the Ecotox Threshold screening levels. Consequently, because there were no analytical detections of contaminants of concern in the surface water, MEDEP discontinued surface water sampling.

Sediment sampling after the completion of the soil cover systems continued to detect elevated levels of some contaminants of concern. In particular, O&M sediment sampling by MEDEP at two separate locations (SED-204, downstream of pit #9, and SED-104, downstream of Chromium Lagoon #2, both in the Stuart Brook drainage pathway) from 1995 to 1998 indicated the presence of chromium, at times exceeding the action level set in the 1989 ROD. Since this could possibly have been from a reoccurrence of seeps from separate pits, EPA performed extensive sampling and analysis in spring 1999. The sampling found the concentrations and extent of contamination to be similar to that identified in pre-design activities performed by EPA in 1991-1992. Inspections indicated that the soil covers remained functional and no seeps were identified. However, as the concentrations were above current screening levels and occasionally above the ROD cleanup target levels, EPA and MEDEP ecological risk assessors participated in a review of the data and site inspection. They concluded that the forested wetlands were functioning well and therefore, no remedial action was warranted.

Subsequent sampling by MEDEP leading up to the 2003 FYR continued to show high chromium levels at SED-104 and SED-204; the April 2003 concentrations were 110 mg/kg and 1,500 mg/kg, respectively. These chromium levels are below the ROD action level but above the ET screening level and SEL. Other metals continued to be detected below their respective ROD action levels.

The results of sediment sampling events since the 2003 five-year review are discussed in Section 6.4.4. The sediment sampling locations are shown on Figure 5.

### Residential Well Sampling

The ROD remedy included annual sampling of residential wells on Flag Pond, Jenkins and Hearn Roads. EPA collected samples annually from 1990 through 1995; no site-related contaminants were detected in the residential well samples. Consequently, because there were no analytical detections of contaminants of concern in the residential well samples, MEDEP discontinued this component of the monitoring program.

## **4.5 Operation and Maintenance**

The first Operation and Maintenance (O&M) plan for the Site was prepared as part of the September 1992 Remedial Design Report, and it was included in the 1993 SSC. MEDEP updated the O&M Plan on April

5, 1995. The O&M Plan has since been modified two more times by MEDEP after providing EPA opportunity to review and comment. The O&M activities include periodic inspection and maintenance, annual mowing of and around the soil covers, perform necessary repairs due to erosion, burrowing animals, off-road vehicles, and other forms of cover destruction with adequate materials. Inspection observations and details of any maintenance and repairs are required to be documented in an Inspection and Maintenance Report that is to be submitted after each site inspection is conducted. The O&M Plan and activities performed since the 2003 FYR are discussed in Section 6.4.5.

**5.0 PROGRESS SINCE LAST FIVE-YEAR REVIEW**

This is the third five-year review for the Site. The second five-year review, completed by EPA in 2003, concluded that because the remedial actions implemented for the Site were protective, the Site was protective of human health and the environment. The soil cover systems constructed under the source control remedy were functioning as designed and remain in good condition. Institutional controls were in place to prevent human exposure to soils and groundwater. Groundwater and sediment monitoring had shown reductions in concentrations of contaminants of concern, below many of the target levels established in the ROD. The monitoring results demonstrated that there was no off-site migration and on-site contamination was identifiable and localized.

The 2003 FYR identified three issues:

- Changes to MEDEP’s monitoring program had not been well documented;
- Changes to MEDEP’s inspection and maintenance plan had not been documented; required inspection and maintenance reports had not been prepared; and
- Because of installation of new residential water supply wells, there could be potential changes to the groundwater gradient on the Site

Consequently, the 2003 FYR made the following recommendations:

- Revise the O&M Plan to reflect current and planned future monitoring activities and ensure compliance with the revised plan;
- Reassess the frequency of inspections and inspection reporting requirements and revise the O&M Plan accordingly. Ensure compliance with the revised plan; and
- Develop a groundwater contour map using water level measurements from available monitoring wells and evaluate groundwater flow gradients.

**Actions Taken Since the Last Five-Year Review**

<b>Issues from Previous Review</b>	<b>Recommendations/ Follow-up Actions</b>	<b>Party Responsible</b>	<b>Milestone Date</b>	<b>Action Taken and Outcome</b>	<b>Date of Action</b>
Monitoring plan changes not documented	Revise the monitoring plan and provide documentation	MEDEP	Fall 2003	Monitoring plan updated and documented	Dec 2005
Inspections and maintenance not documented	Revise the O&M Plan and provide documentation	MEDEP/FAME	Fall 2003	O&M Plan revised and inspection reporting standardized	June 16, 2004 and Dec 19, 2007
Possible changes to groundwater flow directions	Develop groundwater contour map using site data	MEDEP	Fall 2003	Hydraulic Assessment performed	Dec 2005

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

### **6.1 Administrative Components**

EPA, the lead agency for this five-year review, notified MEDEP in fall 2008 that the third five-year review would be conducted. EPA Remedial Project Manager was Terrence Connelly. Tracy Weston Kelly of MEDEP was part of the review team.

The schedule established by EPA included completion of the review by December 2008.

### **6.2 Community Notification And Involvement**

EPA prepared a public notice announcing the five-year review and requesting public participation. The notice was published in December 2008 in the Biddeford Journal Tribune, a daily newspaper for York County, Maine. Since the publication of the public notice EPA was contacted by a Journal-Tribune reporter and a property owner on Hearn Road.

In the early years of EPA involvement community concern and involvement had been moderate to high. However, with the completion of the soil cover systems and the reduction in monitoring both onsite and offsite, interest has decreased almost entirely. A local community member continues to interact with MEDEP and FAME because of familial connections with the pre-tannery use of the property. There have also been sporadic discussions among FAME, City of Saco, and MEDEP and EPA regarding the long-term use of the Site for passive recreation that would be consistent with the legislative Resolve, but concerns about the legal framework have limited these discussions from proceeding further.

### **6.3 Document Review**

This five-year review included a review of relevant documents including decision documents and monitoring reports (See Appendix C).

### **6.4 Data Review**

A review was completed of various MEDEP, FAME, and EPA documents and monitoring reports. A summary of relevant data regarding the components of the Site remedy is presented below.

#### **6.4.1 Cover System Construction**

No repairs to the soil cover systems have been made or have been warranted since MEDEP assumed O&M responsibilities in April 1995. For details on the construction and sampling program in place during the soil cover systems construction, the reader is referred to the December 1995 Final Closure Report for Soil Cover/Compensatory Wetlands, prepared by Halliburton NUS Corporation, EPA's contractor for the remedy design and implementation.

#### **6.4.2 Compensatory Wetlands Monitoring**

Following the three-year period of "operational and functional" monitoring for the restored wetlands, as required by Maine regulations, and the determination that the restoration in the wet areas was successful, no further monitoring has been required as a component of the O&M Plan. The three-year period ended October 1, 1997 and there has been no wetlands monitoring since then.

### 6.4.3 Groundwater Monitoring

The ROD specified a groundwater monitoring program that focused in five contaminants: chromium, arsenic, lead, manganese, and monochlorobenzene. Section 4.4.4 above summarizes the data leading up to the 2003 FYR. Analysis of data since the 2003 FYR follows below.

#### Chromium

Concentrations of chromium (the metal foremost associated with tanning operations) have continued since 1995 to be near detection limits at all locations except at MW-114B, where concentrations have ranged from BDL to 160 µg/l (90 µg/l was the next highest concentration). At MW-114B, concentrations were stable and below 20 µg/l until spring 1998, but have experienced fluctuations since then.

#### Arsenic

Arsenic concentrations continue to exceed the ACL in one of four locations (MW-103) and the 2001 MCL in four of the other five wells in the long-term monitoring program. There does not appear to be a consistent trend with the concentrations, with arsenic concentrations at some wells stable over the past twelve years, and others fluctuating. As stated in Section 3.5, arsenic is not typically associated with the tanning industry.

#### Lead

Concentrations of lead have been near detection limits with only one detection above the action level of 15 µg/l since the 2003 FYR. This compares favorably with spring 2002 data when exceedance of the action level occurred in seven of the nine wells.

#### Manganese

Manganese concentrations exceeded the Maine MEG in six of the nine monitoring wells in 2003 through 2005. In the 2005 hydraulic assessment, MEDEP noted that manganese concentrations have remained stable since monitoring began with no marked decline in concentrations following the construction of the soil cover systems. Consequently, with these results and that manganese is not associated with the tanning industry, MEDEP recommended discontinuation of monitoring for manganese and EPA concurred with this recommendation.

#### Monochlorobenzene

Following the 2005 hydraulic assessment, MEDEP discontinued monitoring for monochlorobenzene except at MW-114A. This was done because for the other eight wells in the long-term monitoring, six never exceeded the MCL (100 µg/l) and the other two only once each. The MCL has been exceeded slightly at MW-114A seven times (100-130 µg/l), all since April 2000. Sampling will continue until there are at least three consecutive results below the MCL. Below is a summary table for monochlorobenzene results since 1995.

Monochlorobenzene Contaminant History 1995 – 2007			
Location	MCL Exceedance and Frequency	Maximum Concentration (µg/l)	Date of Maximum Concentration

MW-1	Never	64	11/96
MW-3	Never	44	04/97
MW-101	Never	26	11/96
MW-103	Once (1/22)	112	04/02
MW-111A	Never	BDL <sup>1</sup>	-
MW-111B	Never	BDL	-
MW-113A	Once (1/21)	173 <sup>2</sup>	10/95
MW-114A	7/23	130	10/03
MW-114B	Never	79	10/97

<sup>1</sup> BDL: below detection limit

<sup>2</sup> This value is suspect; the next highest concentration detected at MW-113A was 19 µg/l

Figure 5 (Figure 1 from MEDEP Dec 19, 2007 O&M Plan) shows the location of the sampling locations. Table 1 presents the groundwater data collected by MEDEP.

#### 6.4.4 Surface Water and Sediment Monitoring

MEDEP discontinued surface water sampling in 1999 since all prior sampling results showed no detections of any site contaminants of concern.

MEDEP decreased sediment sampling from semi-annual to annual sampling in 2002. With the completion of the hydraulic assessment in December 2005, MEDEP recommended that the sediment sampling frequency be further reduced to every two years. EPA concurred with this recommendation and it was implemented in 2007. MEDEP also decreased the number of sediment sampling locations in 1998.

Chromium continues to be detected in the sediment in the Stuart Brook drainage (SED-204, SED-301, SED-104, and SED-103) whereas the concentrations in the Cascade Brook drainage pathway are near the detection limit. While these chromium concentrations in the Stuart Brook sediments have remained below the ROD target cleanup level of 2000 mg/kg, they have exceeded the ET of 81 mg/kg and the SEL of 110 mg/kg. Chromium concentration in the two most upstream locations, SED-204 and SED-301, have generally decreased since the 2003 FYR with SED-301 below the ET-ERL value, whereas at the two downstream locations, SED-104 and SED-103, concentrations appear to be increasing.

Since the 2003 FYR, arsenic concentrations have been within the ROD action level of 60 mg/kg. Of the five sediment sampling locations, only SED-301 has consistently had arsenic concentrations and these have been decreasing since fall 2001 when it was last above the ROD level. The arsenic concentrations have also been below the SEL value since the 2003 FYR; with concentrations ranging from BDL to 32 mg/kg, there have been some exceedances of the ET-ERL.

Lead concentrations, similar to arsenic, have been within the ROD action level of 125 mg/kg since the 2003 FYR. The lead concentrations have also been below the SEL value since the 2003 FYR; with concentrations ranging from BDL to 93 mg/kg, there have been some exceedances of the ET-ERL. There does not appear to be any trend in the data collected since the 2003 FYR.

Figure 5 (Figure 1 from MEDEP Dec 19, 2007 O&M Plan) shows the location of the sampling locations. Table 2 presents sediment data collected by MEDEP.

#### **6.4.5 O&M Inspections**

The 2003 FYR noted that inspections had not occurred according to the schedule in the O&M Plan, nor were the inspections that did occur adequately documented. MEDEP recognized this and working with FAME, developed a standardized form for the annual inspections. Since the 2003 FYR, inspections were performed on November 29, 2004, December 3, 2005, December 18, 2006, and April 9, 2008. These inspections were carried out by the City of Saco Public Works Department under contract with FAME.

Additionally, FAME has contracted annually with other parties for the annual mowing of the soil covers and for maintenance and repairs as needed for the fencing and gates. FAME and MEDEP noted that there had been difficulty in locating suitable contractors for these component of annual maintenance, but for the past several years FAME has successfully contracted with a local landowner who has provided excellent mowing services and a contractor who has provided timely maintenance.

#### **6.5 Site Inspection**

As part of this five-year review, a site inspection was conducted on October 29, 2008 by MEDEP and EPA's project managers. The inspection included a site walkover, inspection of the lagoon and waste pits covers, and monitoring wells. Following the site inspection, EPA's project manager drove around the neighborhoods contiguous to the Site to check for new homes and developments.

The 2 lagoon and 57 waste pit cover systems are secured by chain-link fences and access along the roadway to these areas is restricted by vehicle and pedestrian locked gates. Walking in a counter-clockwise direction, all vehicular gates were opened and then closed behind. All gate locks opened without difficulty as did the gates themselves. The roads appeared in acceptable condition with no potholes or side slope failures observed. Vegetation had been removed a few feet away on both sides of the fencing, allowing for easy inspection of them, and they appeared to be in acceptable condition. A few of the pedestrian gates had had their hinges removed but MEDEP had secured them with chains. Warning signs were visible along the fence line, from inside, as well as outside, the property.

The annual mowing had recently been completed so visual inspection of the covers was quite easy. Not only were there no visible signs of erosion on the soil cover systems, the cover vegetation was well established with no bare spots or slumping observed.

Following the 2005 hydraulic assessment, the nine groundwater wells remaining in the long-term monitoring had their surface casing replaced and the remaining wells and piezometers were abandoned according to standard procedures. Currently, the wells are in good condition.

Copies of current tax maps and records were obtained at the City Tax Assessor's office and from their website in order to compare to tax records from 2003. This comparison found that only two homes have been built since 2003 on the site side (east) of Hearn Road between Flag Pond Road and Scarborough town line. No homes have been built on site side (north) of Flag Pond Road between I-95 and Hearn Road since 2003. Additionally, a home under construction on Carter Road at the time of the 2003 FYR, with its eastern property line abutting the Site near Lagoon #2, has since been completed.

Further observations from the inspection and site photographs are included in the site inspection report in Appendix D.

## 6.6 Interviews

General observations were documented during the site inspection on October 29, 2008 and file review at MEDEP offices on October 30, 2008. Additional interviews were conducted via telephone. The list of individuals interviewed regarding this five-year review is shown in Appendix E.

Tracy Weston Kelly became the MEDEP project manager in 2004 and participated in the October 2008 inspection for this review. Prior to her involvement, as documented in the 2003 FYR, there had been gaps in the documentation of changes made to the monitoring program and site maintenance and inspections. In the past five years, MEDEP has worked with FAME to get the O&M activities performed. Pursuant to the 2001 Amended MOA with FAME, MEDEP is responsible for the monitoring program and FAME is responsible for maintenance, including mowing, brush and tree clearing and fence repair. These responsibilities are being performed now and are being documented.

Katryn Gabrielson, Assistant Counsel FAME, stated that FAME has contracted with the City of Saco for the annual inspections, with a local landowner for the annual mowing, and with a local company for site maintenance. From review of the site file and the site inspection for this review, it appears that these arrangements are working well and the appearance and upkeep of the Site are visibly improved since the 2003 FYR.

Ms. Gabrielson is pleased that the current arrangements have worked out well, and she stated that FAME is prepared to ensure that its responsibilities are fulfilled. She did state that it would make long-term planning easier for FAME to know that their obligation does end after thirty years of O&M (referring to the oft-stated Superfund timeframe of assuring 30 years of O&M - see SSC description on page 9).

Peter Morelli, Director of City of Saco Planning and Development Department, is well familiar with the Site, having participated in discussions over the past several years regarding the possible use of the Site for passive recreation. The City is aware of the Legislative Resolve that prohibits development of the Site but remains open to the possibility of passive recreation if the legal framework could be addressed. His office also houses the site files that were transferred from the Dyer Public Library. Informed of the purpose for this five-year review, he said the City did not have any concerns regarding the current site conditions.

EPA met with Fred Clark, archivist at the Dyer Public Library on November 14, 2008. Mr. Clark provided a copy of a Record of Transfer of the site file from the library to Saco City Hall on December 9, 2004. Mr. Clark stated this was done because there had been no requests to view the file for several years prior to the transfer, and he was not aware of anyone requesting the file in the time since then. According to the index of files transferred, the most current file in the repository was the August 1999 documentation regarding the proposed deletion of the Site from the NPL.

Tom Carr, Biddeford & Saco Water Company, stated that public water supply on Flag Pond Road ends east of the Maine Turnpike and remains unavailable west of the Turnpike to Flag Pond Road or Hearn Road. Public water is available for approximately a quarter mile on the southern most end of Jenkins Road, so homes on the rest of Jenkins Road (about two and a half miles to its junction with Flag Pond Road) are all on private wells. Mr. Carr also stated that there had been no change in the public water system in this area since 2003.

## 7.0 TECHNICAL ASSESSMENT

### 7.1 Question A: Is The Remedy Functioning As Intended By The Decision Documents?

Yes.

Remedial action performance. The first five-year review noted that the remedy had achieved all four RAOs (see Section 4.1) and that exposures through direct contact or ingestion of soils and groundwater had been eliminated by the cover systems and restrictions formalized in the legislative resolution and conservation easement. This continues to be the case. The cover systems remain in good condition, future land and groundwater use is restricted, and monitoring has shown reductions in concentrations of contaminants of concern in groundwater and generally decreasing concentrations in sediments.

Operations and Maintenance. The required “functional and operational” periods for each component of the Site remedy have been successfully completed. EPA was responsible for monitoring from 1990 to 1995, when O&M responsibilities were transferred to MEDEP. MEDEP and FAME continue O&M under a division of responsibility defined in a 1991 MOA and 2001 Amended MOA. The O&M activities have been modified since MEDEP prepared the 1995 O&M Plan. The Plan allows for reevaluation and changes to inspection frequency, and monitoring frequency and analytes. Site inspections, annual mowing of the cover systems and repairs as needed have been performed regularly since the 2003 FYR and have been appropriately documented.

MEDEP has reduced the number of monitoring wells sampled to nine, four constructed in the overburden soil and five in the bedrock. From 2003 through 2007, MEDEP performed groundwater monitoring annually. After the 2007 sampling event, MEDEP decreased the frequency to every two years.

Opportunities for Optimization. In December 2005, MEDEP completed a hydraulic assessment of the Site. This assessment included a GPS survey, a well elevation survey and water level measurements, well condition assessment, hydraulic influence testing, review of water and sediment quality data, conclusions, and recommendations. These recommendations included selecting wells to maintain for long-term monitoring, adjustments to the frequency of sampling, and adjustments to the analytes to be tracked in the long-term monitoring program.

As noted above, the number of wells selected for the long-term monitoring has been reduced to nine. Additionally, because monochlorobenzene has been below its regulatory standards/action levels for all wells and sediment locations in the time period covered by this review except in one well, it will be tracked only in the one well (MW-114A). And finally, because manganese was not identified as a site-related contaminant, it was recommended that it be eliminated from the long-term monitoring program (see Section 6.4.3 for further discussions of monochlorobenzene and manganese).

EPA reviewed the Hydraulic Assessment and notified MEDEP in March 2006 that it concurred with the recommendations.

Indicators of Remedy Problems. This FYR did not identify any indicators of remedy problems.

Implementation of Institutional Controls. There has been no change in the institutional controls since the 2003 FYR which described the 1989 State of Maine legislature and the 1991 conservation easement placed on the property. They are included again in this FYR for ease in reviewing them (see Appendices A and B).

**7.2 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.

Changes in Exposure Pathways. The 1989 ROD identified unacceptable risk from future dermal contact with soils/sludge and sediment and ingestion of groundwater. With the implementation of the soil cover systems and the institutional controls, these exposure pathways have been eliminated. No new exposure pathways have been identified. Land use around at the Site has not changed and is not expected to change, and future development of the Site is restricted by the legislation and conservation easement.

In November 2002, EPA issued draft guidance on vapor intrusion to address the potential pathway of vapor moving from the subsurface into indoor air of a structure. However, because the site contaminants of concern are primarily metals (not volatile in the subsurface) and monochlorobenzene is essentially limited to one area of the Site (MW-114A), and institutional controls that prevent development are in place, this potential exposure pathway is not an on-site concern. Similarly, because the water level data and residential well water quality data demonstrate that the on-site groundwater is not migrating offsite, this potential exposure pathway is not an off-site concern.

Changes in Standards and TBCs. As part of this five-year review, ARARs and To Be Considered (TBC) guidance for the Site presented in the ROD were reviewed, and a review of current ARARs was conducted. Since the source control remedy has been completed, the source-specific ARARs cited in the ROD have been met. ARARs identified in the 1989 ROD and current ARARs and TBCs applicable to this five-year review are included in Appendix F of this report for reference.

There are no current chemical-specific ARARs that apply to soil contaminants at the Site. TBC guidance that was written following the 1990 ROD includes the 1997 Maine Remedial Action Guidelines (RAGs). RAGs for three exposure scenarios were developed, e.g. residential, trespasser and adult worker. With the legislation and other institutional controls in place on the Site, the only potentially applicable scenario is trespasser. The trespasser RAG for lead is 700 mg/kg, significantly above the 125 mg/kg target level established in the ROD. The trespasser RAG for arsenic is 30 mg/kg, or half the 60 mg/kg target level. Since the pits and lagoons have been covered, the potential route of exposure for a trespasser has been eliminated.

The chemical-specific ARARs that apply to groundwater contaminants are MCLs and Maine Maximum Exposure Guidelines for Drinking Water (MEGs), guidelines established by the Maine Department of Human Services. The MEGs have been updated three times since the 1989 ROD: 1992, 2000, and 2008. The 1992 MEGs are chemical-specific ARARs as they have been included by reference in MEDEP regulations; the 2008 MEGs are TBCs. Some of the 2008 MEGs are lower than MCLs as they are solely health-based guidelines. The MCL for arsenic was lowered to 10 µg/l effective February 2002. The MCL for chromium was increased from 50 µg/l to 100 µg/l in 1994. The MCL for monochlorobenzene (100 µg/l) was established after the ROD was signed. A comparison of the MCLs in effect at the time the ROD was signed (1989), the current MCLs, and the 1992 MEGs and 2008 MEGs is shown in the table below.

Contaminant	MCL at ROD (µg/l)	Current MCL (µg/l)	1992 MEG (µg/l)	2008 MEG (TBC) (µg/l)
Arsenic	50	10	NS <sup>1</sup>	10
Chromium	50	100	100	40
Lead	15 <sup>2</sup>	15	20	10
Manganese	NS	NS	200	500
Monochlorobenzene	NS	100	47	140
Bis (2-ethylhexyl) phthalate	NS	6	25	NS

<sup>1</sup>NS- No Standard

<sup>2</sup>Action Level; no MCL established

The ROD set Chemical-specific TBCs for sediments. The total chromium level was an action level for sediments based on a risk calculation from a 1980 stream water quality study associated with a Maine tannery. After the risk-based 2,000 mg/kg action level was established in the ROD, EPA began using Ecotox Threshold Effects - Low Range Level benchmark values (ET-ERL) for sediment and stream quality screening, comparing maximum measured contaminant concentrations to an ecotoxicologically-based benchmark. As noted in the first five-year review, ET-ERL are intended for screening; they are not regulatory criteria, site-specific cleanup standards, or remediation goals.

There have been no changes in ET-ERL values or Severe Effect Levels (SEL) since the last five-year review. EPA uses the ET-ERL for screening purposes for stream and sediment quality. The ET-ERL values for arsenic, lead, and chromium in sediment are 8.2 mg/kg (total), 33 mg/kg, and 81 mg/kg (total), respectively. The SELs are levels at which an impact on sediment biota can be expected. The SELs for arsenic, lead, and chromium in sediment are 33 mg/kg, 250 mg/kg, and 110 mg/kg, respectively. These screening levels have been exceeded on a non-routine basis at SED-301 (arsenic, chromium), SED-204 (chromium, lead) and SED-104 (chromium). The target clean-up levels established in the ROD have not been exceeded.

Changes in Toxicity and Other Contaminant Characteristics Arsenic is not a characteristic contaminant of tannery waste. Since the levels of arsenic detected in the waste pits were not significantly different from those outside the waste pits, EPA concluded that the arsenic may be from former pesticide use onsite or may be naturally occurring in the bedrock beneath the Site (elevated arsenic levels in groundwater have been reported in rural neighboring towns). The target level selected does not pose an unacceptable risk and is close to background concentrations. EPA did not require remediation of background arsenic concentrations based on the target cleanup levels established in the ROD. As discussed in Section 6.4, arsenic concentrations have generally been between the ROD action level and the ET-ERL value.

Chromium and lead results have followed a similar pattern; beneath their respective ROD action levels but at times about their respective ET-ERL values.

Changes in Risk Assessment Methods. The human health and ecological risks discussed in the ROD have been eliminated by the construction of the cover systems and the institutional controls, including the legislation prohibiting development of the Site and the use of groundwater. Sediment monitoring has shown no exceedances of the chromium action level. As noted previously, EPA now uses ET values as a

screening tool and MEDEP uses SELs. These risk-based values will continue to be used as screening TBC guidance. There are no changes that affect the protectiveness of the remedy. Since the target cleanup levels for groundwater are the MCLs rather than site-specific risk-based concentrations, changes in risk assessment methods would not affect the protectiveness of the remedy.

Expected Progress Towards Meeting RAOs. The ROD set four RAOs (see Section 4.1) With completion of the soil cover systems and the implementation of institutional controls, the four RAOs have been met. Site-wide monitoring and annual maintenance continue to assure that conditions remain unchanged.

### **7.3 Question C: Has Any Other Information Come To Light That Could Call Into Question The Protectiveness Of The Remedy?**

No. An increase in chromium concentrations in sediment was noted in two locations, SED-103 and SED-104. At the present time, the increases do not rise to the ROD target clean-up levels, though they do exceed the ET-ERL. These locations will continue to be tracked. As noted in Section 4.4.4, when elevated chromium concentrations were detected in SED-104 and SED-204 in 1998, EPA performed extensive sediment sampling in 1999 and concluded that the increases were natural fluctuations associated with sediment sampling. Subsequent sampling supported this interpretation.

### **7.4 Technical Assessment Summary**

Based on the data reviewed, observations from the site inspection, and interviews, the remedy is functioning as intended by the ROD. The source control portion of the remedy is complete and inspections have confirmed that the remedy is functioning as designed and remains protective of human health and the environment. Groundwater and sediment monitoring continue and maintenance is performed on the Site as necessary. The effective implementation of institutional controls, including legislation and a conservation easement prohibiting development on the Site and use of site groundwater, and fencing to restrict access have thus far ensured the integrity of the cover systems and prevented exposure to Site soils and groundwater. The legislative Resolve and conservation easement, included as Appendix A and B of this report, respectively, remain in effect.

The primary ARARs for groundwater on the Site are the MCLs and the 1992 MEGs. While the MCL for arsenic has been reduced to 10 µg/l, and a number of the monitoring wells exceed this value, the restriction on use of site groundwater prevents any exposures.

Land use at the Site and surrounding properties have not changed and is not expected to change, and there are no additional routes of exposure.

## 8.0

## ISSUES

No issues were identified during this five-year review. Issues that were identified in the 2003 FYR have been successfully addressed by MEDEP and FAME.

During the review of the ROD for this five-year review, it was noted that while the ROD set a target clean-up level for antimony in sediment for the seeps and wet areas outside the pits and lagoons that needed restoration, it was not one of the contaminants of concern that MEDEP has tracked in the monitoring component of the O&M Plan. Consequently, the entire history of sediment sampling for antimony was revisited.

According to the ROD, antimony was detected in one of six samples collected from these areas outside the pits and lagoons. From this one detection, antimony was included as a non-carcinogenic risk. For comparison, aluminum, calcium, manganese, and zinc were detected in all six samples, copper in five of the six samples, and mercury and selenium in two of the samples. Yet target cleanup levels were not set for any of these metals. The sole antimony detection was 1050 ppm, with the other samples reported at the detection limit of 55 ppm. These results in turn raise some questions; was the one detection an actual concentration or should it have been considered an outlier, should a target clean-up level have been set at roughly half the detection limit, and should a target clean-up level have been selected based on six samples?

A review of pre-remediation monitoring reports prepared by EPA's contractor revealed that antimony was not included in the target clean-up levels, yet was part of the TCL analyses. Looking at the first sediment sampling event (spring 1990), the sampling event as construction of the soil covers began (June 1993), and the three sampling events after construction was completed (October 1993, April 1994, and January 1995) a total of forty-three sediment samples were collected and analyzed for TCL metals. Antimony was detected in samples with the highest detection being 165 ppm in a wet area that was subsequently excavated and the sediments were placed under a cover system. The other two detected concentrations were 16.8 ppm and 7.4 ppm.

The findings of these reviews were discussed by EPA and MEDEP project managers. Since both pre- and post-remediation antimony concentrations were well below the target clean-up level set in the ROD, and that forty-three samples are seen as more representative of site condition than the six used by the ROD in identifying antimony as a contaminant of concern, the agencies concurred that antimony did not need to be added to MEDEP's sediment sampling program.

## **9.0 RECOMMENDATIONS AND FOLLOW-UP ACTIONS**

No recommendations for any changes are included in this review. The selected remedy has been successfully implemented, including institutional controls; MEDEP and FAME have established respective roles for the long-term groundwater and sediment monitoring, site maintenance, and inspections, and reporting; and MEDEP as lead agency, keeps EPA up to date with monitoring results.

It is recommended that O&M activities continue and periodically be reviewed to remain current with site conditions.

Second, as noted in Section 6.4.4, chromium concentrations in downstream locations appear to have increased. These locations will continue to be part of the monitoring program in order to assess whether this represents periodic variations of concentrations associated with sediment sampling as was concluded following extensive sampling in 1999 or is an actual increase.

## **10.0 PROTECTIVENESS STATEMENT**

Because the remedial actions implemented for the Site are protective, the Site is protective of human health and the environment. The soil cover systems constructed under the source control remedy are functioning as designed and remain in good condition, thus preventing contact with soils and sludges in the pits and lagoons. Institutional controls, including the legislative resolution creating a wildlife preserve at the Site, the conservation easement restricting future use of the Site and its groundwater, and fencing restricting access to the soil cover systems, prevent exposure to soils and groundwater ensuring the Site remains protective of human health and the environment. Groundwater and sediment monitoring have shown reductions in concentrations of contaminants of concern, below many of the target levels established in the ROD. The monitoring results including hydraulic influence testing performed by MEDEP demonstrate that there is no off-site migration and on-site contamination is identifiable and localized. The monitoring program will continue to ensure that concentrations remain within acceptable ranges.

## **11.0 NEXT REVIEW**

A fourth five-year review for the Saco Tannery Waste Pits Site will be conducted in 2013. This review is required since hazardous wastes remain at the Site above levels that allow for unlimited use and unrestricted exposure. The O&M Plan should again be reassessed at that time.

**TABLES**  
**SACO TANNERY WASTE PITS SITE**  
**2008 FIVE-YEAR REVIEW**

Saco Tannery Waste Pits  
Groundwater Quality

	Contaminant	May-92	Jul-92	May-95	Jul-95	Oct-95	Feb-96	Apr-96	Jul-96	Nov-96	Apr-97	Oct-97	Mar-98	Oct-98	Mar-99	Oct-99	Apr-00	Oct-00	Oct-01	Apr-02	Nov-02	Apr-03	Oct-03	Apr-04	Jun-05	Nov-06	Nov-07	ACL	MCL	MEG	
MW 1	Arsenic	15.1	12	13				20		11		11		18		15	17	12		11		14	10	0	21	9.5		10	10		
	Chromium	0	0	0.8				1		1.9		0		0		0	1	0		0		1	0	0	0	0	0		100	40	
	Lead	0	0	0				0		0		0		0		0	0	0		17		0	0	0	0	7	0		15	10	
	Manganese	1550	1410	1300					1000		1300		1100		1400		1400	1200	1200		1300		1400	1400	1400	1800	x	x		500	
	Monochlorobenzene	0	0	50					57.1		64		27.2		43		39.6	40.5	27		27.9		35	31	24	x	x		100	140	
MW 3	Arsenic	22	10.8	13	5	6	6	9	7	6.2	7	10	4	6	4					0		3		0	0	5	0		10	10	
	Chromium	93.8	0	0	0	0	0	0	0	1.3	0	0	0	0	0					0		0	0	0	0	0	0		100	40	
	Lead	22.5	0	0	0	0	0	0	0	0	0	0	0	0	0					15		0	0	0	0	7	0		15	10	
	Manganese	1440	617	540	430	460	500	400	440	540	600	480	440	470	330					320		390	320	320	340	x	x		500		
	Monochlorobenzene	0	0	39.6	17.6	13.8	10.4	34	26	33.4	43.6	19.9	28.6	23	16					8.7		18		7.7	8.6	x	x		100	140	
MW 101	Arsenic	65.4	49.6	53	56	87	60	50	58	67	26	52	45	59	46	55		72	82	46	66	46	67	38	38	59	36	70	10	10	
	Chromium	66.9	0	0	0	0	0	0	0	1.6	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0		100	40	
	Lead	15.7	0	0	0	0	0	0	0	0	0	0	0	0	0					20		0	0	0	0	7	0		15	10	
	Manganese	2310	1630	1300	1100	1800	1300	1000	1200	1200	300	1100	1200	980	910	990		1200	1300	1000	980	900	950	820	840	x	x		500		
	Monochlorobenzene	0	0	24.6	21.3	6.7	23.1	25.1	21.1	25.9	25.8	18.4	20	17	17	16.6		6.9	3.4	12.7	14	15	12	13	9.6	x	x		100	140	
MW 103	Arsenic	67.2	118	310	290	280	170	300	290	250	110	320	120	160	190	48	220	200	310	240	250	100	50	37	0.12	320	200	123	10	10	
	Chromium	23.3	5	4.8	3.3	2.5	6	5	5	5.3	6	4	5	7	5	3	4	4	4	3	3	3	3	9	0	0	0		100	40	
	Lead	4.9	0	0	0	0	0	0	0	0	0	0	0	0	0					25	3	0	0	0	0	5	0		15	10	
	Manganese	804	831	1100	850	1800	2300	1000	1100	1400	3600	1300	1400	3400	2100	1700	1400	1400	1100	1000	1100	1100	920	1400	2.1	x	x		500		
	Monochlorobenzene	0	0	20.7	39	42.3	10.4	27.7	20.9	87.9	7.2	46.6	26.9	12	52	25.8	79.5	32	96	112	91	38	97	22	67	x	x		100	140	
MW 111A	Arsenic	0		0				50												4	0	6	4	7	3	5	14	12		10	10
	Chromium	0		0				2												1	1	0	0	0	0	0	0		100	40	
	Lead	0		0				2												0	27	3	0	0	0	5	0		15	10	
	Manganese	58.2		1700				1000												400	64	300	10	130	10	0	x	x		500	
	Monochlorobenzene	0		0				0												0	0	0	0	0	0	0	0		100	140	
MW 111B	Arsenic	114		13	14	150	4	7	31	11	13	13	5	5	22					61	6	0	7	3	4	0	5	0	64	10	10
	Chromium	29.7		0	0	2	1	1	0	1.4	0	0	0	0	3					2	0	0	0	0	1	0	16	0		100	40
	Lead	15.2		0	0	0	0	0	0	0	0	0	0	0	0					0	11	0	0	0	0	0	34	0		15	10
	Manganese	1310		2500	2900	2400	3800	3900	3300	2600	3200	2500	1400	1100	940					1900	12	43	55	40	30	0.02	x	x		500	
	Monochlorobenzene	0		0	0	0	0	0	0	0	0	0	0	0	0					0	0	0	0	0	0	0	0		100	140	
MW 113A	Arsenic		14.9	4	10	10	2	7	6	0	0	0	0	4	0	0				13		130	4	9	29	52	<5		10	10	
	Chromium		0	0	0	1.9	0	2	2	2.4	0	0	0	0	0	2				1	2	1	1	0	0	0	0		100	40	
	Lead		0	0	0	0	0	0	0	0	0	0	0	0	0					0	0	21	3	0	0	0	5	0		15	10
	Manganese		3670	4700	4800	4700	6100	6000	5200	5800	4800	5500	5100	5500	5100	5100				4700	5000	4500	3500	4500	4100	4400	4400	x	x		500
	Monochlorobenzene		0	14.8	11.5	173	1.8	12.6	10	4.7	7.3	12.4	4.2	4.7	3.1	13.8				19	17	10.4	5.3	9.9	14	7.6	4.8	x	x		100
MW 114A	Arsenic	15.7	17.8	21	22	10	20	200	23	21	23	27	16	25	21	29	22	21	21	22	18	36	19	0	5	13	0		10	10	
	Chromium	0	0	0	0	6.6	2	1	2	2.4	0	0	0	0	0	2				1	2	1	1	0	0	0	0		100	40	
	Lead	0	12.2	0	2	0	0	0	0	0	0	0	0	0	0					0	0	21	3	0	0	0	7	0		15	10
	Manganese	6430	6790	13000	12000	10000	11000	9400	9400	9600	11000	9700	8400	7800	6400	7600	7600	7900	7600	7200	6900	6700	7400	6500	5000	5000	x	x		500	
	Monochlorobenzene	0	0	30	34.2	83.9	86.2	45	48	58.9	54.9	92.2	69.4	76	34	86.6	102	120	100	106	120	79	130	92	110	69	61		100	140	
MW 114B	Arsenic	57.7	108	34	88	78	20	30	39	13	20	33	23	22	19	16	20	20	18	75	19	13	14	0	11	<5	12	77	10	10	
	Chromium	31	0	10	6	6.6	17	10	15	13	9	12	16	18	9	80	37	31	26	36	56	41	160	63	23	0	90		100	40	
	Lead	0	10.3	0	0	0	0	0	0	0	0	0	0	0	0					13	3	0	0	0	0	6	3		15	10	
	Manganese	859	977	1100	1000	1300	1000	800	1400	820	700	1500	1100	1200	1200	630	670	1400	1600	1000	480	450	170	280	910	x	x		500		
	Monochlorobenzene	0	0	7.1	32.9	54.1	3.3	1.4	5.5	21.5	2.6	79.3	7.5	13	4.8	17.9	2.9	52	36	3.1	0	1.2	0	0	0	0	x	x		100	140

UNITS: ug/l (micrograms per liter or parts per billion [ppb])  
**Bold:** Concentration above Federal MCL  
 ACL: Alternate Concentration Limit (1989 EPA ROD)  
 MCL: Maximum Contaminant Level (EPA)  
 MEG: Maximum Exposure Guideline (Maine)  
 "0" : Below laboratory detection limit; it does not necessarily mean "zero"  
 x: Monitoring for this parameter discontinued

**Saco Tannery Waste Pits  
Sediment Quality**

	Contaminant	May-91	Oct-91	May-92	Oct-92	Jun-93	Oct-93	Apr-94	1995	Apr-96	Nov-96	Apr-97	Oct-97	Mar-98	May-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Oct-01	Apr-02	Apr-03	Apr-04	Jun-05	Nov-06	Nov-07	ROD Action Level	
SED 101	Arsenic			4.3												2.5	0	0	0		3	2	1	0	0	<2.7	<5	60	
	Chromium									4						6.5	4.9	6.4	4.1		6.2	8.2	8	9.1	0	0	<7.8	<5	2000
	Lead			19.9						7			20										15	17	10	93	<3	9.9	125
	Manganese			44.5						6			120			42	32	33	24		43	48	16	85	40	30	x	x	
	Monochlorobenzene																						<.01		0	x	x		
SED 102	Arsenic									5	3.2			2.4														60	
	Chromium									20	68	19	20	39														2000	
	Lead									14																		125	
	Manganese									160	130	110	120	103															
	Monochlorobenzene																												
SED 103	Arsenic			15.2						5	16	14	6.3	9.4		6.6	7.5	11	5.5	10	10	6	3	21	0	2.5	<5	60	
	Chromium			14						50	36	22	53	41		30	42	110	81	46	17	24	48	74	29	170	120	2000	
	Lead			14.7						8													18	8	20	10	26	9.5	125
	Manganese			337						220	340	270	280	350		210	240	670	360	310	480	200	260	5200	330	x	x		
	Monochlorobenzene																						<.01		0	x	x		
SED 104	Arsenic			12.4						10	10	12	11	9.1		11		7.2	11	9.7	2	10	5	0	8	12	<5	60	
	Chromium	738	578	590	663	332	380	700		920	100	750	950	670		270		120	390	350	45	630	110	250	50	430	450	2000	
	Lead			42.9						40													40	13	20	13	44	26	125
	Manganese			2200						980	1100	1300	3300	2800		1800		1300	3100	740	1200	1200	1300	2700	2400	x	x		
	Monochlorobenzene																						<.01		0	x	x		
104A	Chromium													1100														2000	
104B	Chromium													460														2000	
104C	Chromium													1000														2000	
104D	Chromium													160														2000	
SED 201	Arsenic									3																		60	
	Chromium									600	130	270	1700	68														2000	
	Lead									60																		125	
	Manganese									290	62	96	570	46															
	Monochlorobenzene																												
SED 204	Arsenic									3	5.3	6		6.1		5.8		7.3	4.6	5.3	3	3	3	0	0	<2.7	<5	60	
	Chromium			9.2						18000	240	150	1350	83		93		17	180	45	210	370	1500	880	19	140	31	2000	
	Lead			7.5						430												41	62	50	7	29	9.5	125	
	Manganese			77						1500	480	200	250	140		160		160	160	210	260	180	340	290	130	x	x		
	Monochlorobenzene																						<.01		x	x			
SED 301	Arsenic									280	71	73	83	64		58	69	70	73		85	54	50	18	32	23	25	60	
	Chromium	69	61.3	26.1	51	45.8	100	47.3		80	98	64	77/53	26		59	110	60	77		110	95	130	80	59	45	33	2000	
	Lead									40												41	35	30	16	30	14	125	
	Manganese									4000	1200	8700	33100	560		8200	8000	3100	10400		24000	23000	13000	8900	1500	x	x		
	Monochlorobenzene																						<.01		0	x	x		
SED 302	Arsenic									4																		60	
	Chromium									10																		2000	
	Lead									4																		125	
	Manganese									160																			
	Monochlorobenzene																												
SED 307	Arsenic																											60	
	Chromium																											2000	
	Lead																											125	
	Manganese																												
	Monochlorobenzene																												

UNITS: mg/kg (PPM or parts per million)      x = Monitoring for this parameter discontinued  
 Note: 0 = below reporting limit  
 Bold = above ROD Action Level

**FIGURES**  
**SACO TANNERY WASTE PITS SITE**  
**2008 FIVE-YEAR REVIEW**

Figure 1: Site Location  
 Saco Tannery Waste Pits Site  
 2008 Five-Year Review

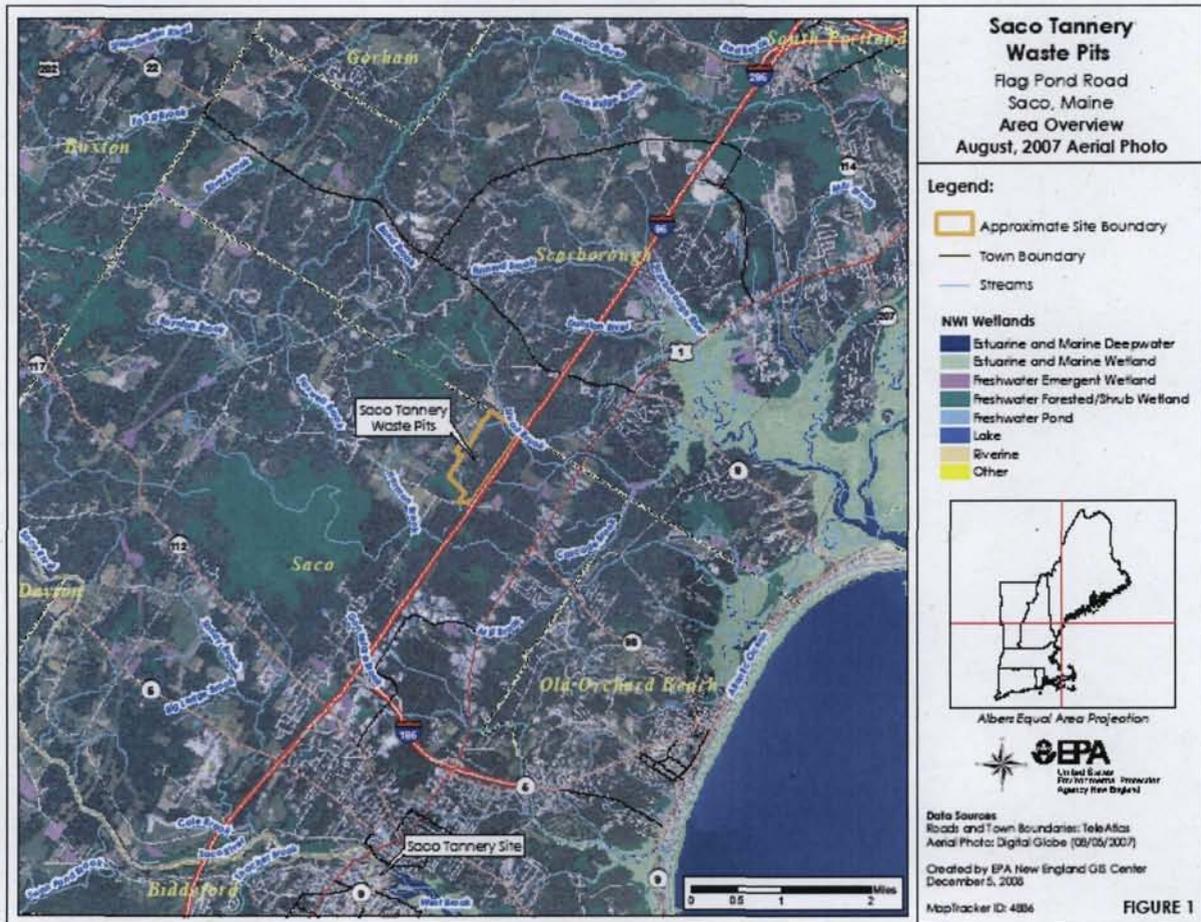


Figure 2: Waste Pits and Lagoons  
 Saco Tannery Waste Pits Site  
 2008 Five-Year Review

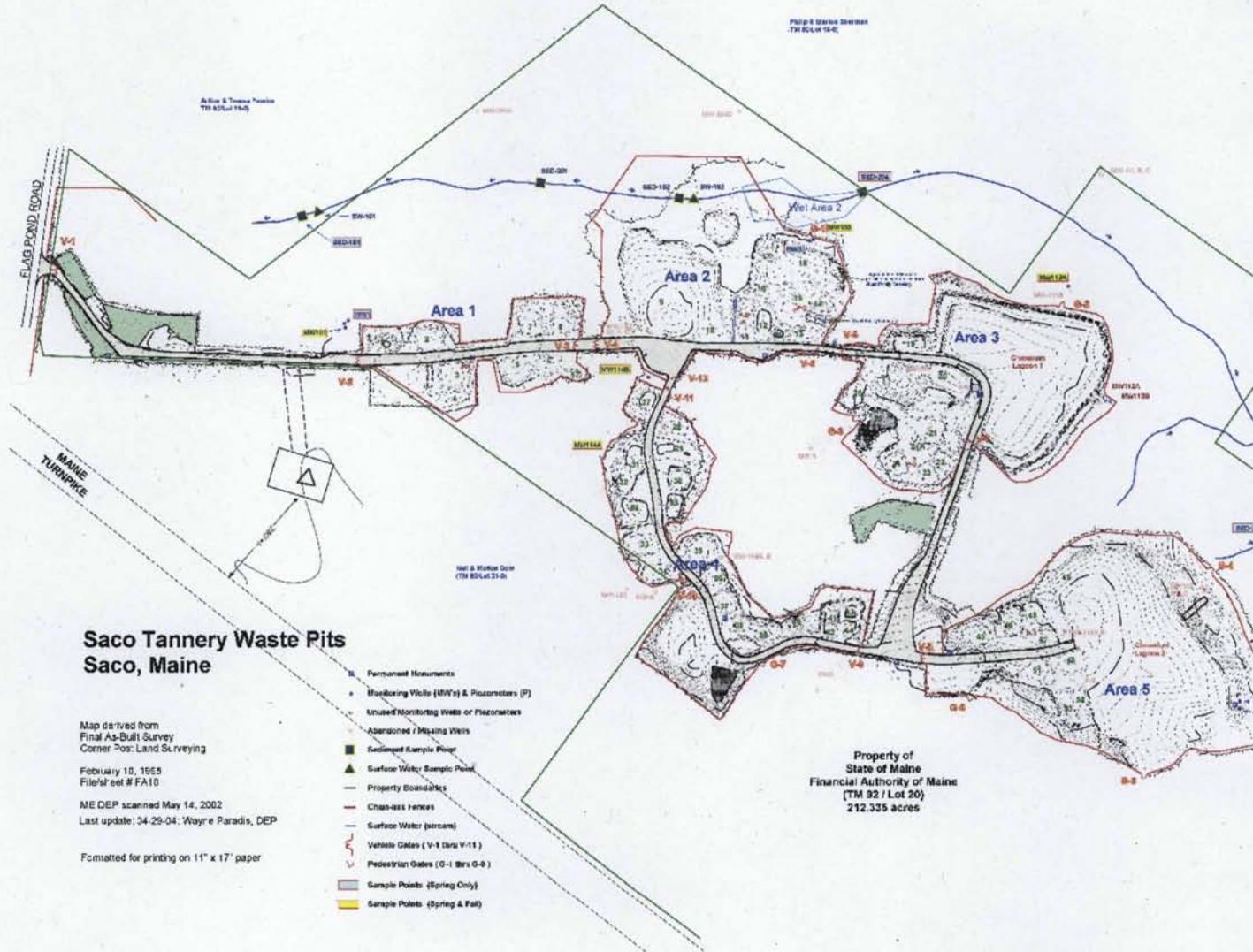


Figure 3: April 1998 Aerial Photograph of Site  
 Saco Tannery Waste Pits Site  
 2008 Five-Year Review

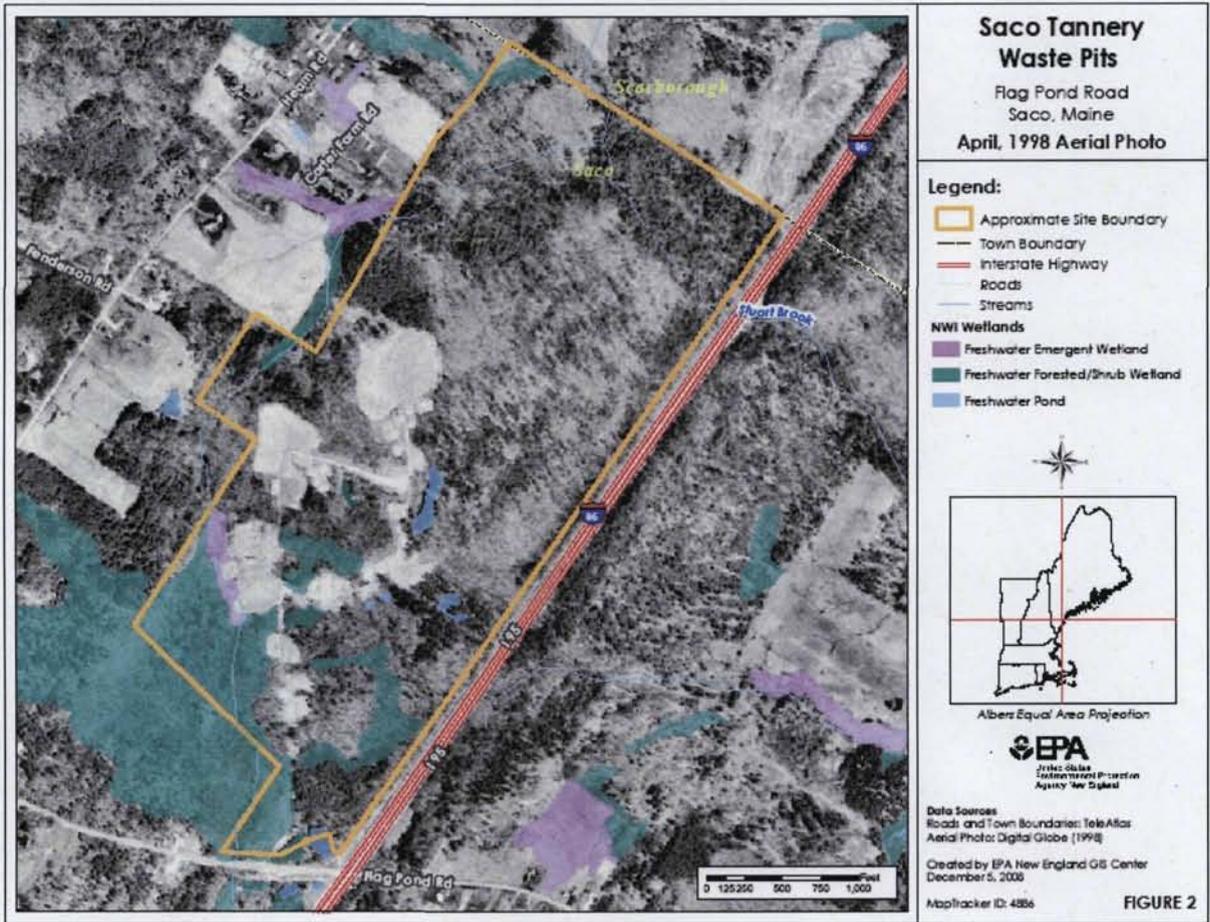
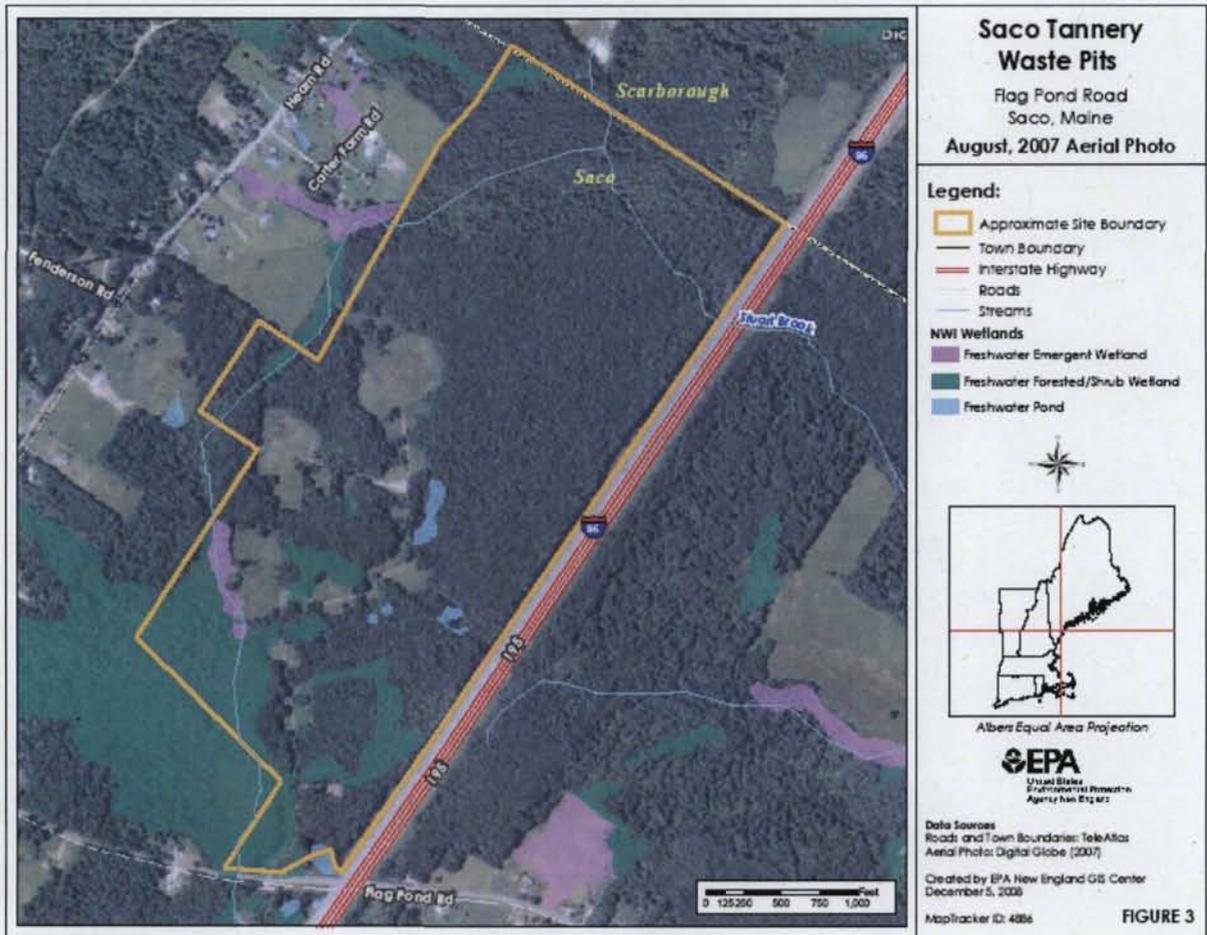
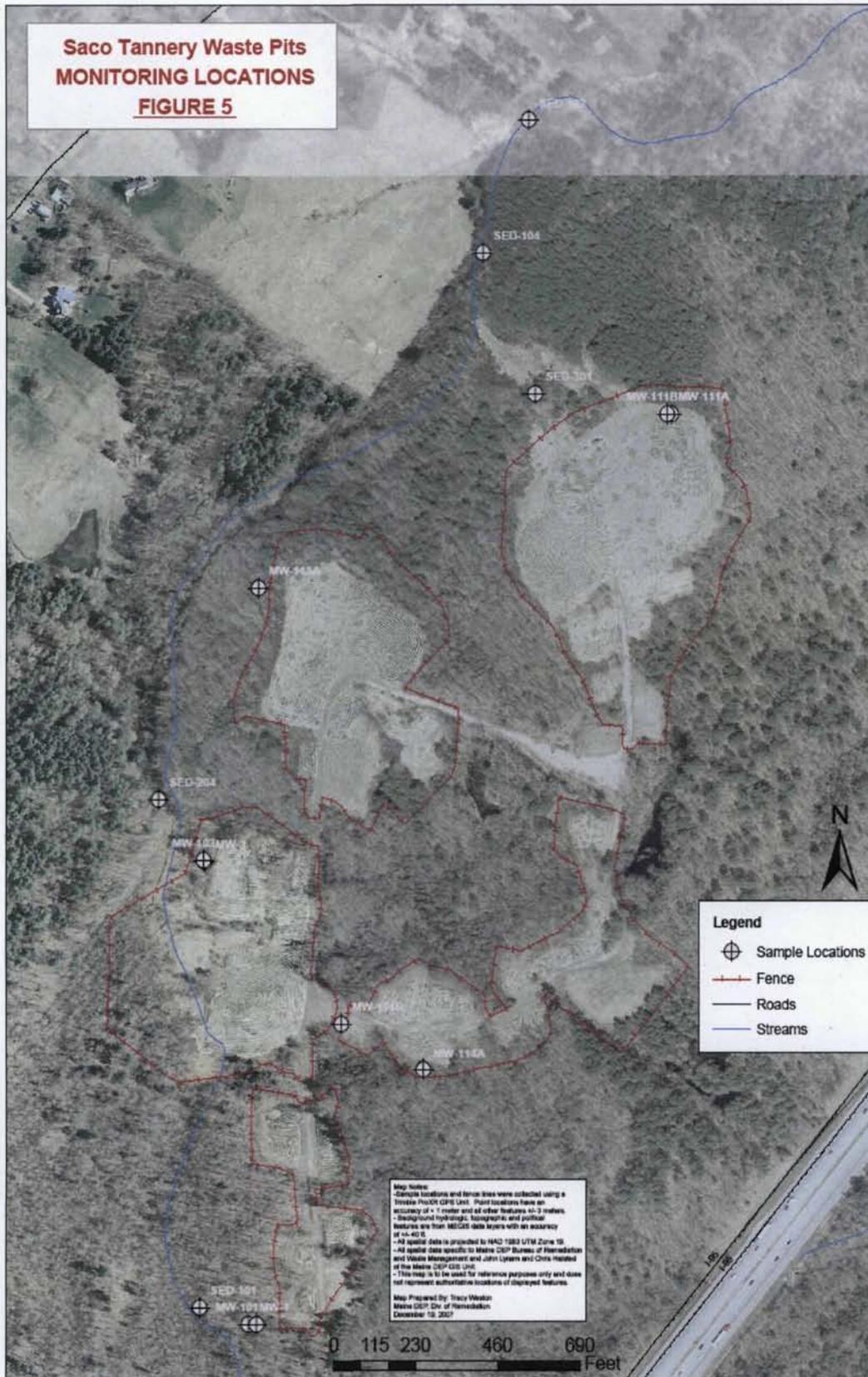


Figure 4: August 2007 Aerial Photograph of Site  
 Saco Tannery Waste Pits Site  
 2008 Five-Year Review



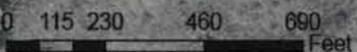
**Saco Tannery Waste Pits  
MONITORING LOCATIONS  
FIGURE 5**



**Legend**

- ⊕ Sample Locations
- Fence
- Roads
- Streams

**Map Notes:**  
 - Sample locations and fence lines were collected using a Trimble ProXSR GPS UNIT. Point locations have an accuracy of ± 1 meter and all other features ± 3 meters.  
 - Background hydrologic, topographic and aerial features are from MDCUS data layers with an accuracy of ± 40 ft.  
 - All spatial data is provided by NAD 1983 UTM Zone 18.  
 - All spatial data specific to Maine DEP Bureau of Remediation and Waste Management and John Lyons and Chris Heston of the Maine DEP GIS UNIT.  
 - This map is to be used for reference purposes only and does not represent actual on location of displayed features.  
 Map Prepared by: Tracy Menden  
 Maine DEP, Div. of Remediation  
 December 10, 2007



**APPENDIX A**

**MAINE LEGISLATIVE RESOLVE NO. 1682**

**2008 SACO TANNERY FIVE-YEAR REVIEW**



# 114th MAINE LEGISLATURE

## FIRST REGULAR SESSION - 1989

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Legislative Document

No. 1682

H.P. 1210

House of Representatives, May 22, 1989

Approved for introduction by a majority of the Legislative Council pursuant to Joint Rule 27.

Reference to the Committee on Housing and Economic Development suggested and ordered printed.

A handwritten signature in cursive script that reads "Ed Pert".

EDWIN H. PERT, Clerk

Presented by Representative GWADOSKY of Fairfield.

Cosponsored by President PRAY of Penobscot, Senator WEBSTER of Franklin and Representative FOSTER of Ellsworth.

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STATE OF MAINE

---

IN THE YEAR OF OUR LORD  
NINETEEN HUNDRED AND EIGHTY-NINE

---

Resolve, to Protect and Preserve Certain Property in Saco Owned by  
the Finance Authority of Maine.

---

(AFTER DEADLINE)

(EMERGENCY)





**APPENDIX B**

**SEPTEMBER 23, 1991 CONSERVATION EASEMENT**

**2008 SACO TANNERY FIVE-YEAR REVIEW**

CONSERVATION EASEMENT

FILE COPY  
28089

The Finance Authority of Maine, a body politic and corporate ("Owner"), owner of real property in Saco, York County, Maine, on the Flag Pond Road, so-called, and more particularly described in a Deed from NKL Tanning Inc. to Maine Guarantee Authority (now, by legislation, the Finance Authority of Maine), dated May 1, 1981 and recorded in the York County Registry of Deeds in Volume 2786, Page 187, less that portion thereof conveyed by Deed dated December 27, 1985 and recorded in the York County Registry of Deeds in Volume 3723, Page 166 (the "Site"), for the purpose of creating a Conservation Easement as defined and permitted by the Uniform Conservation Easement Act as enacted in the State of Maine, Subchapter VII-A of Chapter 7 of Title 33 M.R.S.A., §§476 et seq., the provisions of which and definitions in which are hereby incorporated herein by reference, releases to The Department of Environmental Protection of the State of Maine (which, together with its successors and assigns is to be the "Holder" as defined in said Act), a conservation easement in and to said real property constituting a non-possessory interest in said real property imposing the following limitations and affirmative obligations upon the Site and the owner thereof:

1. Future development of the Site shall be prohibited, except as approved by the Holder.
2. The use of on-site groundwater or surface water shall be prohibited, except as approved by the Holder.

Rec'd 8/31/92  
Original in "ED"  
PC to Upstair

3. Any excavation of the Site or activities which would penetrate or in any way damage any remediation or containment systems in place at the Site are prohibited, except as approved by the Holder.
4. Any proposed change in the deed or property ownership must be approved by the Holder.
5. Any prospective owner or lessee of the Site must be informed of the fact that hazardous substances are located at the Site, and agree to abide by the terms and agreements of the Memorandum of Agreement by and between the Owner and the Maine Department of Environmental Protection, dated August 28, 1991, the terms and provisions of which are hereby incorporated herein by reference.

The United States Environmental Protection Agency is hereby granted a "third party right of enforcement" as defined in said Act.

The said Finance Authority of Maine has caused this instrument to be signed in its name by Timothy P. Agnew, its Chief Executive Officer, duly authorized, this 23rd day of September, 1991.

WITNESS:

Kelly J. Chase

FINANCE AUTHORITY OF MAINE

BY:

Timothy P. Agnew  
Timothy P. Agnew  
Its Chief Executive Officer

STATE OF MAINE

Kennebec, ss.

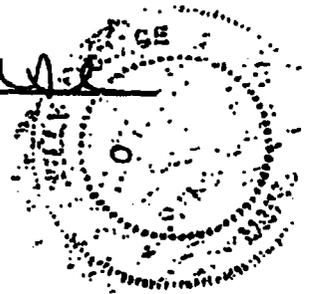
September 23, 1991

Then personally appeared the above named Timothy P. Agnew, Chief Executive Officer of the Finance Authority of Maine, and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said Finance Authority of Maine.

Before me,

Kelly J. Chase

KELLY J. CHASE  
NOTARY PUBLIC, MAINE  
MY COMMISSION EXPIRES JULY 24, 1995



The foregoing rights and duties in favor of the Maine Department of Environmental Protection as Holder are hereby **ACCEPTED**.

Dean C. Marriott  
Dean C. Marriott, Commissioner  
State of Maine Department of  
Environmental Protection

The foregoing rights of third party enforcement in favor of the United States Environmental Protection Agency are hereby **ACCEPTED**.

Juui Belaga  
United States Environmental  
Protection Agency

RECEIVED YORK S.S.

92 JUN 23 AM 10:44

ATTEST: Anne M. Stone  
REGISTER OF DEEDS

**APPENDIX C**

**DOCUMENT REVIEW LIST/REFERENCES**

**2008 SACO TANNERY FIVE-YEAR REVIEW**

## Documents Reviewed/REFERENCES

Carr, 2008. Telephone communication with Tom Carr, Biddeford & Saco Water Company. December 5, 2008.

EPA, 1989. *Record of Decision, Saco Tannery Waste Pits Site, Saco, Maine*. U.S. Environmental Protection Agency, Region 1, Boston, Massachusetts. September 27, 1989.

EPA, 1993. *Superfund State Contract Between The State of Maine and the U.S. Environmental Protection Agency for the Soil Cover System/Compensatory Wetlands. Saco Tannery Waste Pits Site, Saco, Maine*. January 28, 1993.

EPA, 1995. *Pre-Final Inspection Report, Saco Tannery Waste Pits Site, Saco, Maine*. U.S. Environmental Protection Agency. June 1995.

EPA, 1996. *ECO Update – Ecotox Thresholds*. Intermittent Bulletin, Volume 3, Number 2, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 540/F-95/038. January 1996.

EPA, 1998a. *Five-Year Review Report, Saco Tannery Waste Pits Site, Saco, Maine*. U.S. Environmental Protection Agency. December 31, 1998.

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EPA, 1999a. *Sediment Sampling Memorandum, Saco Tannery Waste Pits Site, Saco, Maine*. Terrence Connelly, U.S. Environmental Protection Agency. May 21, 1999.

EPA, 2001. *Comprehensive Five-Year Review Guidance*. U.S. Environmental Protection Agency, Office of Emergency and Remedial Response. OSWER Directive 9355.7-03B-P. June 2001.

EPA, 2002. *2002 Edition of the Drinking Water Standards and Health Advisories*. U.S. Environmental Protection Agency - Office of Water. EPA 822-R-02-038. Summer 2002.

FAME, 2008. Telephone communication with Katryn Gabrielson, Assistant Counsel, Finance Authority of Maine. December 5, 2008

Halliburton, 1990. *Draft Technical Memorandum, Interim Monitoring Program Round 1 (April 1990) and Round 2 (July 1990) Sampling and Analysis Results, Saco Tannery Waste Pits Site, Saco, Maine*. Halliburton NUS Corporation. October 1990.

Halliburton, 1993. *Draft Technical Memorandum No. 6, Interim Monitoring Program Round 11 (October 1992) and Round 12 (January 1993) Sampling and Analysis Results, Saco Tannery Waste Pits Site, Saco, Maine*. Halliburton NUS Corporation. May 1993.

Halliburton, 1994. *Draft Technical Memorandum No. 7, Interim Monitoring Program Round 13 (June 1993) and Round 14 (August 1993) Sampling and Analysis Results, Saco Tannery Waste Pits Site, Saco, Maine*. Halliburton NUS Corporation. January 1994.

Halliburton, 1994. *Draft Technical Memorandum No. 8, Interim Monitoring Program Round 15 (October 1993) and Round 16 (January 1994) Sampling and Analysis Results, Saco Tannery Waste Pits Site, Saco, Maine.* Halliburton NUS Corporation. June 1994.

Halliburton, 1995. *Draft Technical Memorandum No. 9, Interim Monitoring Program Round 17 (April 1994) and Round 18 (August 1994) Sampling and Analysis Results, Saco Tannery Waste Pits Site, Saco, Maine.* Halliburton NUS Corporation. January 1995.

Halliburton, 1995. *Draft Technical Memorandum No. 10, Interim Monitoring Program Round 19 (January 1995) and Round 20 (March 1995) Sampling and Analysis Results, Saco Tannery Waste Pits Site, Saco, Maine.* Halliburton NUS Corporation. August 1995

Maine, 1989. "Resolve, to Protect and Preserve Certain Property in Saco Owned by the Finance Authority of Maine." State of Maine Legislature, Document No. 1682, H.P. 1210. May 22, 1989.

Maine, 1992. *Conservation Easement.* Finance Authority of Maine. September 23, 1991, recorded at York County Registry of Deeds June 23, 1992.

Maine, 2008. *Maine Bureau of Health Maximum Exposure Guidelines for Drinking Water.* Department of Human Services, State of Maine. July, 2008.

MEDEP, 1991. *Memorandum of Agreement.* August 28, 1991.

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Ontario, 1993. *Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario.* Ministry of the Environment, Ontario, Canada. August 1993.

Saco, 2003. *City of Saco Zoning Ordinance, amended through January 8, 2003.*

**APPENDIX D**

**FIVE-YEAR REVIEW INSPECTION CHECKLIST**

**2008 SACO TANNERY FIVE-YEAR REVIEW**

## Five-Year Review Site Inspection Checklist

I. SITE INFORMATION													
<b>Site name:</b> Saco Tannery Waste Pits Site	<b>Date of inspection:</b> October 29, 2008												
<b>Location and Region:</b> Saco, Maine; Region 1	<b>EPA ID:</b> MED980520241												
<b>Agency, office, or company leading the five-year review:</b> EPA	<b>Weather/temperature:</b> Sunny, mid 40's												
<b>Remedy Includes:</b> (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"><input checked="" type="checkbox"/> Landfill cover/containment</td> <td style="width: 50%;"><input type="checkbox"/> Monitored natural attenuation</td> </tr> <tr> <td><input checked="" type="checkbox"/> Access controls</td> <td><input type="checkbox"/> Groundwater containment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td><input type="checkbox"/> Vertical barrier walls</td> </tr> <tr> <td><input type="checkbox"/> Groundwater pump and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Surface water collection and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Other</td> <td></td> </tr> </table>		<input checked="" type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation	<input checked="" type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment	<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls	<input type="checkbox"/> Groundwater pump and treatment		<input type="checkbox"/> Surface water collection and treatment		<input type="checkbox"/> Other	
<input checked="" type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation												
<input checked="" type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment												
<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls												
<input type="checkbox"/> Groundwater pump and treatment													
<input type="checkbox"/> Surface water collection and treatment													
<input type="checkbox"/> Other													
<b>Attachments:</b> <input checked="" type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached													
II. INTERVIEWS (Check all that apply)													
1. <b>O&amp;M site manager:</b> <u>Katryn Gabrielson</u> <u>Assistant Counsel, FAME</u> <u>Dec 2, 2008</u> <div style="display: flex; justify-content: space-around; font-size: small;"> <span>Name</span> <span>Title</span> <span>Date</span> </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input checked="" type="checkbox"/> by phone   Phone no. 207 623-3263 Problems, suggestions; <input type="checkbox"/> Report attached: <u>No problems noted with site activities now down to site maintenance, groundwater and surface water monitoring.</u>													
2. <b>O&amp;M staff:</b> <u>N/A</u> _____      _____      _____ <div style="display: flex; justify-content: space-around; font-size: small;"> <span>Name</span> <span>Title</span> <span>Date</span> </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone   Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____													



**III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)**

1.	<b>O&amp;M Documents</b>	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
	X O&M manual	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> As-built drawings	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Maintenance logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	Remarks: <b>N/A – there is no ongoing remediation. MEDEP updated the O&amp;M Plan in Dec 2007. Per a MOA with FAME, MEDEP performs the environmental monitoring and FAME is responsible for site inspections, annual mowing, and repairs as needed.</b>			
2.	<b>Site-Specific Health and Safety Plan</b>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
	<input type="checkbox"/> Contingency plan/emergency response plan	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
	Remarks _____ _____ _____			
3.	<b>O&amp;M and OSHA Training Records</b>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
	Remarks _____ _____ _____			
4.	<b>Permits and Service Agreements</b>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Effluent discharge	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Waste disposal, POTW	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Other permits _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	Remarks _____ _____ _____			
5.	<b>Gas Generation Records</b>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	Remarks _____ _____ _____			
6.	<b>Settlement Monument Records</b>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	Remarks _____ _____ _____			
7.	<b>Groundwater Monitoring Records</b>	<input type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
	Remarks: <b>MEDEP provides EPA with updated monitoring data tables and figures</b>			
8.	<b>Leachate Extraction Records</b>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	Remarks _____ _____ _____			

9. **Discharge Compliance Records**       Readily available       Up to date       N/A  
 Air  
 Water (effluent)       Readily available       Up to date       N/A  
Remarks \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

10. **Daily Access/Security Logs**       Readily available       Up to date       N/A  
Remarks \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_



<b>C. Institutional Controls (ICs)</b>	
1. <b>Implementation and enforcement</b>	
Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Type of monitoring (e.g., self-reporting, drive by): <b>During scheduled site inspection and periodic site visits</b>	
Frequency: <b>Varies, but typically a few times a year</b>	
Responsible party/agency: <b>MEDEP, FAME</b>	
Contact: <b>Tracy Weston Kelly, Katryn Gabrielson</b>	
Phone No. See above	
Reporting is up-to-date	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Reports are verified by the lead agency	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Specific requirements in deed or decision documents have been met	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Violations have been reported	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Other problems or suggestions: <input type="checkbox"/> Report attached	
2. <b>Adequacy</b>	<input checked="" type="checkbox"/> ICs are adequate <input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A
Remarks: <b>A 1989 Maine State Legislative Resolve (see Appendix A) and a 1991 Restrictive Covenant (see Appendix B) are in place and implemented.</b>	
<b>D. General</b>	
1. <b>Vandalism/trespassing</b>	<input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No vandalism evident
Remarks: <b>There continues to be evidence that the Site is used for hunting and snowmobiling (outside the fenced soil cover areas). These traditional uses started before the Site became an NPL site. No vandalism has been noted in the period covered by this five-year review.</b>	
2. <b>Land use changes on site</b>	<input checked="" type="checkbox"/> N/A
Remarks	
3. <b>Land use changes off site</b>	<input type="checkbox"/> N/A
Remarks: <b>Three more homes have been built on the site-side of adjacent roads in the area since the last five-year review, and this is consistent with historical land use.</b>	
<b>VI. GENERAL SITE CONDITIONS</b>	
<b>A. Roads</b>	<input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A
1. <b>Roads damaged</b>	<input checked="" type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A
Remarks: <u>There is approximately a mile of dirt roads on the Site that provide access to the cover systems. The roads and drainage culverts are checked as part of the site inspection</u>	
<b>B. Other Site Conditions</b>	
Remarks:	
<b>VII. SOIL COVERS</b> <input checked="" type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	

A. Soil Cover Surface	
1.	<b>Settlement</b> (Low spots) <input type="checkbox"/> Location shown on site map <b>X</b> Settlement not evident Areal extent _____ Depth _____ Remarks: <b>The cover systems comprise approximately ten acres. Prior to construction of the soil cover systems, the two lagoons were about two acres each and the waste pits were typically less than 2,000 square feet. No settlement was observed in the latest five-year inspection.</b>
2.	<b>Cracks</b> <input type="checkbox"/> Location shown on site map <b>X</b> Cracking not evident Lengths _____ Widths _____ Depths _____ Remarks _____
3.	<b>Erosion</b> <input type="checkbox"/> Location shown on site map <b>X</b> Erosion not evident Areal extent _____ Depth _____ Remarks : <b>No erosion was observed in the latest five-year inspection; the vegetative cover is well established.</b>
4.	<b>Holes</b> <input type="checkbox"/> Location shown on site map <b>X</b> Holes not evident Areal extent _____ Depth _____ Remarks _____
5.	<b>Vegetative Cover</b> <b>X</b> Grass <b>X</b> Cover properly established <b>X</b> No signs of stress <input type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram) Remarks: <b>The vegetative cover is well established. It has now been fourteen years since all construction was completed (initial remedial action was completed in 1993; one of the cover systems was reopened in 1994 to consolidate contaminated sediments removed from wetlands outside pit #9) and the vegetation is thoroughly established.</b>
6.	<b>Alternative Cover (armored rock, concrete, etc.)</b> <b>X</b> N/A Remarks _____
7.	<b>Bulges</b> <input type="checkbox"/> Location shown on site map <b>X</b> Bulges not evident Areal extent _____ Height _____ Remarks _____
8.	<b>Wet Areas/Water Damage</b> <input type="checkbox"/> Wet areas/water damage not evident <b>X</b> Wet areas <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Ponding <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Seeps <input type="checkbox"/> Location shown on site map Areal extent _____ <input type="checkbox"/> Soft subgrade <input type="checkbox"/> Location shown on site map Areal extent _____ Remarks: <b>There are forested and shrub-scrub wetlands on the Site but no wet areas or ponding on the soil cover systems.</b>
9.	<b>Slope Instability</b> <input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map <b>X</b> No evidence of slope instability Areal extent _____ Remarks _____



<b>D. Cover Penetrations</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
1.	<b>Gas Vents</b>	<input type="checkbox"/> Active	<input type="checkbox"/> Passive
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs Maintenance	
	<input type="checkbox"/> N/A		
	Remarks _____		
	_____		
	_____		
2.	<b>Gas Monitoring Probes</b>	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> N/A
	<input type="checkbox"/> Evidence of leakage at penetration		
	Remarks _____		
	_____		
	_____		
3.	<b>Monitoring Wells</b> (within surface area of landfill)	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> N/A
	<input type="checkbox"/> Evidence of leakage at penetration		
	Remarks _____		
	_____		
	_____		
4.	<b>Leachate Extraction Wells</b>	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> N/A
	<input type="checkbox"/> Evidence of leakage at penetration		
	Remarks _____		
	_____		
	_____		
5.	<b>Settlement Monuments</b>	<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed <input type="checkbox"/> N/A
	Remarks _____		
	_____		
	_____		

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

3.	<b>Outlet Works</b> Remarks _____ _____ _____	<input type="checkbox"/> Functioning <input type="checkbox"/> N/A
4.	<b>Dam</b> Remarks _____ _____ _____	<input type="checkbox"/> Functioning <input type="checkbox"/> N/A

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

2.	<b>Performance Monitoring</b> <input type="checkbox"/> Performance not monitored Frequency _____ Head differential _____ Remarks _____ _____ _____	Type of monitoring _____ <input type="checkbox"/> Evidence of breaching
<b>IX. GROUNDWATER/SURFACE WATER REMEDIES</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
<b>A. Groundwater Extraction Wells, Pumps, and Pipelines</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	<b>Pumps, Wellhead Plumbing, and Electrical</b> <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells properly operating <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks: _____ _____ _____	
2.	<b>Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____ _____ _____	
3.	<b>Spare Parts and Equipment</b> <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided <input checked="" type="checkbox"/> N/A Remarks _____ _____ _____	
<b>B. Surface Water Collection Structures, Pumps, and Pipelines</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	<b>Collection Structures, Pumps, and Electrical</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____ _____	
2.	<b>Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b> <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____ _____	
3.	<b>Spare Parts and Equipment</b> <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks _____ _____ _____	

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

2. Monitoring data suggests:  
 Groundwater plume is effectively contained     Contaminant concentrations are declining

<b>E. Monitored Natural Attenuation X N/A</b>	
1.	<b>Monitoring Wells</b> (natural attenuation remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____ _____
<b>X. OTHER REMEDIES</b>	
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.	
<b>XI. OVERALL OBSERVATIONS</b>	
<b>A.</b>	<b>Implementation of the Remedy</b>
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). <b>The remedy implemented in the early 1990s continues to be effective, preventing contact with waste and contaminated groundwater. The 2001 MOA between FAME and MEDEP and the updated O&amp;M Plan prepared by MEDEP have established the responsibilities of the two parties for the overall site maintenance. While the 2003 five-year review noted that the O&amp;M activities, monitoring, and reporting were not being performed as required, for the past four years all facets of O&amp;M have been implemented, and consequently, the Site is in excellent condition.</b>	
<b>B.</b>	<b>Adequacy of O&amp;M</b>
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <b>See above.</b>	
<b>C.</b>	<b>Early Indicators of Potential Remedy Problems</b>
Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. <b>No indicators of potential remedy problems were observed in the five-year inspection nor in the monitoring data.</b>	
<b>D.</b>	<b>Opportunities for Optimization</b>
Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. <b>Monitoring data continues to be evaluated by MEDEP and EPA to assure that there is sufficient coverage of the groundwater contamination.</b>	

**Five-Year Review Inspection Team Roster  
Saco Tannery Waste Pits Site  
October 29, 2008**

**Maine DEP Representatives**

Tracy Weston Kelly, Project Manager

**EPA Representatives**

Terrence Connelly, RPM

**Site Inspection Photographs  
2008 Saco Tannery Five-Year Review**



**Photo #1: Looking west across Maine Turnpike to Site from Flag Pond Overpass**



**Photo #2: Looking northwest across Maine Turnpike to Site**



**Photo #3: View of Pits 28 and 29 (representative of all the waste pits)**



**Photo #4: Looking southwest from Pit 9 to Area #2 Fence with yellow warning signs (representative of area perimeter fences)**



**Photo #5: Former location of portable water treatment system, now with vegetation established. Taken from access road leading to Lagoon#2**



**Photo #6: Looking west across Lagoon #2 toward Seep Area #1**



**Photo #7: Riprap at upper slope of Seep Area #1, now heavily overgrown**



**Photo #8: Monitoring well MW-114B in front of Area 1 perimeter fence (representative of site monitoring wells)**

**APPENDIX E**  
**SITE INTERVIEW LIST**  
**2008 SACO TANNERY FIVE-YEAR REVIEW**

**Tracy Weston Kelly, Project Manager  
Maine Department of Environmental Protection  
Augusta, Maine**

**Katryn Gabrielson, Assistant Counsel  
FAME  
Augusta, Maine**

**Peter Morelli, Director  
City of Saco Planning and Development  
Saco, Maine**

**Fred Clark, Archivist  
Dyer Public Library  
Saco, Maine**

**Tom Carr  
Biddeford & Saco Water Company  
Biddeford, Maine**

**APPENDIX F**

**ARARS and TBCS**

**2008 SACO TANNERY FIVE-YEAR REVIEW**

**IDENTIFICATION OF PROBABLE CHEMICAL-SPECIFIC ARARs AND TO-BE-CONSIDERED CRITERIA, ADVISORIES, AND GUIDANCE**

<b>REQUIREMENT/GUIDANCE</b>	<b>STATUS</b>	<b>REQUIREMENT/GUIDANCE SYNOPSIS</b>
<b>GROUNDWATER</b>		
<i>Federal Regulatory Requirements and Guidance</i>		
SDWA (Section 1412 – MCLs) (40 CFR Part 141, Subpart B)	Relevant and appropriate	MCLs regulate the concentration of contaminants in public drinking water supplies. MCLs are relevant and appropriate for all site contaminants except where ACLs were established for arsenic at four monitoring wells. The MCL for arsenic is relevant and appropriate at the point of exposure in on-site streams and in monitoring wells at and around the site boundary.
<i>State of Maine Regulatory Requirements and Guidance</i>		
Maine Hazardous Waste Management Rules, 38 MRSA § 1301 <i>et seq.</i> , Chap. 800 – 802, 850, 851, 853-857	Relevant and appropriate	These rules incorporate RCRA hazardous waste regulations, including standards for hazardous waste facilities. “No hazardous waste or constituent or derivative thereof shall appear in ground or surface waters at a concentration above background level, or above current public health drinking water standards for Maine, including the Maximum Exposure Guidelines, or standards for aquatic toxicity, whichever is more stringent (Ch. 854, 58(A)(3)(a)). [Note: per MEDEP, the 1992 MEGS are incorporated by reference in these rules.]
Maximum Exposure Guidelines (MEGS) for Drinking Water (Bureau of Health, Maine Department of Human Services, January 20, 2000)	To be considered	MEGs are the Bureau of Health's most recent recommendations for concentrations of chemical contaminants in drinking water. MEGs are health-based guidelines and are not legally enforceable.
Maine Standards for Classification of Groundwater, 38 MRSA §§ 465c & 470	Applicable	Site groundwater is classified as GW-A, as defined in this statute.
<b>SEDIMENT</b>		
<i>Federal Guidance</i>		
Ecotox Threshold benchmark values (ETs) for chromium	To be considered	ETs are federal benchmark values used for sediment screening purposes only. A maximum contaminant concentration is compared with an ecotoxicologically based benchmark.

IDENTIFICATION OF PROBABLE CHEMICAL-SPECIFIC ARARS AND TO-BE-CONSIDERED CRITERIA, ADVISORIES, AND GUIDANCE  
(CONTINUED)

REQUIREMENT/GUIDANCE	STATUS	REQUIREMENT/GUIDANCE SYNOPSIS
<b>SEDIMENT (Cont.)</b>		
<i>State of Maine Regulatory Requirements and Guidance</i>		
Severe Effect Level (SEL) for chromium (Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario, March 1993)	To be considered	SELs are levels at which a pronounced disturbance of the sediment-dwelling community can be expected.
<b>SURFACE WATER</b>		
<i>Federal Guidance</i>		
Federal Ambient Water Quality Criteria	To be considered	AWQC are health and environment based criteria developed for carcinogens and non-carcinogens. AWQC are TBCs for monitoring on-site streams.
<i>State of Maine Regulatory Requirements</i>		
Maine Standards for Classification of Fresh Surface Waters, 38 MRSA §465	Applicable	Stuart Brook is a Class B water, as defined in this statute.

IDENTIFICATION OF PROBABLE ACTION-SPECIFIC ARARS AND TO-BE-CONSIDERED CRITERIA, ADVISORIES, AND GUIDANCE

REQUIREMENT/GUIDANCE	STATUS	REQUIREMENT/GUIDANCE SYNOPSIS
<b>GROUNDWATER</b>		
<i>Federal Regulatory Requirements</i>		
RCRA Groundwater Protection Standards, 40 CFR, Part 264, Subpart F.	Relevant and Appropriate	The groundwater monitoring program will comply with these regulations.
RCRA Closure and Post-Closure, 40 CFR, §§ 264.110-264.120, 264.310, Part 264, Subpart F.	Relevant and Appropriate	These regulations include provisions for development of a post-closure plan, maintenance, and groundwater monitoring

**IDENTIFICATION OF PROBABLE LOCATION-SPECIFIC ARARS AND TO-BE-CONSIDERED CRITERIA, ADVISORIES, AND GUIDANCE**

<b>REQUIREMENT/GUIDANCE</b>	<b>STATUS</b>	<b>REQUIREMENT/GUIDANCE SYNOPSIS</b>
<b>GROUNDWATER</b>		
<i>State of Maine Regulatory Requirements</i>		
Maine Standards for Classification of Groundwater (38 MRSA, Chapter 3, § 470)	Applicable	The groundwater at the Site is classified under the Maine Standards as GW-A (i.e., water shall be of such quality that it can be used for domestic purposes). Degradation of site groundwater is prohibited.
<b>SURFACE WATER</b>		
<i>State of Maine Regulatory Requirements</i>		
Maine Standards for Classification of Minor Drainages, 38 MRSA, Chapter 3, § 468	Applicable	These regulations prohibit degradation of a Class B water, e.g. Stuart Brook.
Maine Alteration of Rivers, Streams, and Brooks, 38 MRSA, § 425 et seq.	Applicable	These regulations prohibit interference with the flow or quality of Stuart Brook.
<b>WETLANDS/FLOODPLAINS</b>		
<i>Federal Regulatory Requirements</i>		
Executive Order 11990, Protection of Wetlands (40 CFR Part 6, Appendix A)	Applicable	The Wetlands Executive Order requires federal agencies to minimize the destruction, loss, or degradation of wetlands, and preserve and enhance natural and beneficial values of wetlands.
<i>State of Maine Regulatory Requirements</i>		
Maine Freshwater Wetlands Act, 38 MRSA, Chapter 3, §§ 405-410	Relevant and Appropriate	These standards regulate activities in the vicinity of a wetland.
<b>OTHER NATURAL RESOURCES</b>		
<i>State of Maine Regulatory Requirements</i>		
Maine Site Location Act, 38 MRSA Chapter 3 §§ 481 - 490	Applicable	These regulations prohibit adverse impacts on certain natural resources.