SUMMIT

ENVIRONMENTAL CONSULTING • GEOTECHNICAL ENGINEERING • CONSTRUCTION MATERIALS TESTING

PN: 16349

February 5, 2008

Ms. Jean Firth
Maine Department of Environmental Protection
17 State House Station
Augusta, Maine 04333

RE: Focused Feasibility Study
Old Howland Tannery, Howland, Maine

Dear Ms. Firth:

Summit Environmental Consultants, Inc. (Summit) is transmitting an original and a PDF file of the Focused Feasibility Study (FFS) for selected Areas of Concern (AOC) associated with the "Old Howland Tannery" in Howland, Maine (Site). This feasibility study developed, evaluated, and recommended remedial alternatives for AOC-4 and AOC-5. Please feel free to contact either of us with questions concerning the FFS.

Sincerely,

SUMMIT ENVIRONMENTAL CONSULTANTS, INC.

John K. Cressey
Project Scientist

James W. Bouquet, P.E.
Principal Engineer

CC: Ms. Glenna M. Armour, Town of Howland

Lewiston:
640 Main Street • Lewiston, ME 04240
Tel: (207) 795-6009 • Fax: (207) 795-6128

Bangor:
8 Harlow St., Suite 4A • Bangor, ME 04401
Tel: (207) 262-9040 • Fax: (207) 262-9080

Augusta:
434 Cony Road • Augusta, ME 04330
Tel: (207) 621-8334 • Fax: (207) 626-9094

Portland:
1 Industrial Way, Suite 7 • Portland, ME 04103
Tel: (207) 221-6360 • Fax: (207) 221-6146

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PN: 16349

February 5, 2008

Glenna Armour, Town Manager
Town of Howland
PO Box 386
Howland, Maine 04448-0386

RE: Focused Feasibility Study
Old Howland Tannery, Howland, Maine

Dear Ms. Armour:

Summit Environmental Consultants, Inc. (Summit) is transmitting three copies and a PDF file of the Focused Feasibility Study (FFS) for selected Areas of Concern (AOC) associated with the "Old Howland Tannery" in Howland, Maine (Site). This feasibility study developed, evaluated, and recommended remedial alternatives for AOC-4 and AOC-5. Please feel free to contact either of us with questions concerning the FFS.

Sincerely,

SUMMIT ENVIRONMENTAL CONSULTANTS, INC.

John K. Cressey
Project Scientist

James W. Bouquet, P.E.
Principal Engineer

CC: Ms. Jean Firth, MEDEP

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640 Main Street • Lewiston, ME 04240
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Ms. Jean Firth
Maine Department of Environmental Protection
17 State House Station
Augusta, Maine 04333

RE: Focused Feasibility Study
Old Howland Tannery, Howland, Maine

Dear Ms. Firth:

Summit Environmental Consultants, Inc. (Summit) has prepared this Focused Feasibility Study (FFS) for selected Areas of Concern (AOC) associated with the property referred to as the "Old Howland Tannery" in Howland, Maine (Site). The purpose of this feasibility study is to develop, evaluate, and recommend remedial alternatives for AOC-4 and AOC-5. The costs provided are based on estimates obtained from a limited number of sources; actual costs may vary based upon bid results.

This FFS was developed to address AOCs associated with the former tannery landfill identified during the Phase II Environmental Site Assessment fieldwork completed by Campbell Environmental Group, Inc. (CEG) and the Maine Department of Environmental Protection (MEDEP) in February 2005.

1.0 INTRODUCTION

1.1 Site Location

The Old Howland Tannery (Howland) Site is located in Howland, Maine located at 20 Old County Road (Route 6/155). The Site is adjacent to the convergence of the Penobscot and the Piscataquis Rivers. The Site is designated as Lot 37 on Town of Howland Tax Map U09 and is approximately 12 acres in size. Refer to the Site Locus Map (Figure 1).

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1.2 Site History

In 1889, the Howland Falls Pulp Company mill was built at the convergence of the Penobscot and Piscataquis Rivers. A fire destroyed this mill in 1893. A brick factory and sulfite mill were built after the fire in 1893. In 1897 the mill was reorganized into the Howland Pulp Company. In 1904 the facility was renamed the Howland Pulp and Paper Company.

In 1921, the Howland Pulp and Paper Company merged with Advance Bag and Paper Company and changed the name of the facility to Advance Bag and Paper Company. In 1940, the Atlas Plywood Company (Atlas) bought the buildings owned by Advance. During 1940, Atlas and the Gilman Paper Company (Gilman) both moved onto the property. Atlas manufactured plywood crates used for the shipment of refrigerators, shoes and military equipment. Gilman manufactured paper bags for the packaging of cement, grain and flour. In 1949 Gilman ceased production at the facility.

The St. Regis Paper Company purchased the property from Atlas in 1950, and became Howland's largest employer. Atlas remained on a portion of the property. St. Regis vacated their portion of the property in late 1952 due to increased competition, but Atlas remained on-site until 1955.

In 1957 Pine Tree Tannery moved onto the property and began tannery operations. Pine Tree closed this facility in 1971, when new environmental regulations required the construction of a pollution abatement facility. Uses on the property since 1971 included a shoe manufacturer, log storage, a wreath factory, a door and window manufacturer, and storage of asbestos panels.

A current topographic Site Plan is presented as Figure 2.

1.3 Phase II ESA

A *Phase II Investigation Report – Old Howland Tannery – 20 Old County Road – Howland, Maine* was completed by Campbell Environmental Group (Campbell) in February 2005. Eleven (11) AOCs were identified on the property. AOCs associated with the former tannery landfill include the Settling Tank Area (AOC-4), located east of the tannery building, and the Dump Area (AOC-5) located on the eastern edge of the property along the Penobscot River. Phase II investigation activities included the excavation of test pits and installation of soil borings and micro wells. Soil, sediment, groundwater and pore water samples were collected and analyzed for one or more of the following constituents; volatile organic compounds (VOCs), semi- volatile organic compounds (SVOCs), priority pollutant metals and polychlorinated byphenyls (PCBs). The findings associated with AOC-4 and AOC-5 are discussed below.

<u>AOC-4</u>

Tannery wastes collected in the building drain system were discharged via underground piping to a settling tank located east of the building. The area associated with this settling tank is designated as AOC-4 in the Phase II Report. The approximate location

of AOC-4 is shown in Figure 2. Contaminates detected in the settling tank include VOCs, SVOCs and metals (primarily associated with dyes, pigments and solvents).

The potential for risks to public heath by direct contact, inhalation and ingestion are limited within AOC-4 as contaminates are located below ground surface. However, considering groundwater flow to the north-northeast, and evidence of a settling tank discharge outfall located in the river bank, the Phase II Report suggests that the Penobscot River could have been impacted by contaminates in the vicinity of the settling tank.

Definitive settling tank dimensions could not be determined in the Phase II report; however, test pit information suggests the tank was/is approximately 125 feet by 15 feet. Possible soil impacts were reported up to 10 feet below ground surface (bgs), with depth to ground water approximately 4 feet bgs.

AOC-5

Industrial waste appears to have been placed along the eastern portion of the property. This area extends along the bank of the Penobscot River from approximately Route 6 to the south to a line northeast of the building (refer to Figure 2). Materials within AOC-5 include waste leather scraps and ash fill. Sampling indicated the presence of Polycyclic Aromatic Hydrocarbons (PAHs) typical of tannery operations and metals associated with the use of dyes and pigments. Diesel Range Organics (DRO) were detected in samples collected within this area and appear to be a combination of a Stoddard solvent, boiler ash and heavy petroleum lubricants, consistent with expected wastes from an industrial facility. Low concentrations of PCBs were also detected.

The former dump area extends from Route 6 at the south, north along the Penobscot River. AOC-5 terminates northeast of the building. The limit of waste varies from approximately 120 feet to 250 feet west of the riverbank. Based on Phase II test pit information, waste depth appears to vary between the surface and 10 feet in depth, depending upon location. The area is also littered with industrial debris including empty drums.

There is the potential for risks to public heath by direct contact, inhalation and ingestion within AOC-4 as contaminates are located at and below the ground surface. The Site is currently accessible by the public, who could potentially come in contact with impacted materials (soil and debris). Additionally, surface water runoff potentially can come in contact with impacted materials located at the surface. The Penobscot River could potentially have been impacted by contaminates from the runoff and sediment from soil erosion.

The approximate location of AOC-5 is shown on Figure 2.

1.4 Remedial Objectives

The purpose of this FFS is to develop, evaluate, and recommend remedial alternatives for remediating the contaminated soil associated with AOC-4 and AOC-5. The remedial objectives for the Site are to eliminate, or minimize the possibility of human and ecological receptor exposure to impacted soils.

Those remedial alternatives that do not include complete soil removal will require adherence to the *Groundwater and Soil Management Plan - Old Howland Tannery – Howland, Maine*, prepared by Woodard & Curran dated December 1, 2005. A deed restriction prohibiting excavation activity in areas of known contamination without first notifying MEDEP to receive permission will also be required.

2.0 EVALUATION OF REMEDIAL ALTERNATIVES FOR IMPACTED SOIL

The remedial objectives for the impacted soil located on the Site are to prevent human dermal contact with reported contamination and surface debris and to limit contaminates from migrating into the Penobscot River via bank erosion and surface water runoff. See Figure 2 for a Site Plan depicting the areas of concern.

2.1 Considered Alternatives

Three remedial options have been identified to meet the remedial objectives: Option 1 - Excavation of impacted soil with off-site disposal; Option 2 - Placement of a soil barrier layer over the impacted areas; and Option 3 – "No Action". A fourth alternative (Option 2A) considers removal of impacted soils associated with the settling tank (AOC-4) in conjunction with placement of the barrier layer. These alternatives were selected based upon 1) their implementability, 2) cost associated with completion of the alternative, and 3) effectiveness of the alternative.

2.1.1 Option 1: Soil Remediation via Excavation and Off-Site Disposal

A large-scale soil excavation and removal would be conducted to remove soil contamination within the limits of AOC-4 and AOC-5. Soil would be removed to meet clean-up standards prescribed by MEDEP. The soil would be transported to an off-site disposal facility and replaced with clean backfill.

Effectiveness

Excavation of subsurface soils will meet remedial objectives; therefore, will provide protection to human health and the environment by removing residual material with concentrations of contaminants above remedial goals from the Site. Because the subsurface soils will be permanently removed from the Site, the potential for future direct exposure will be eliminated and no unacceptable residual risk will remain at the Site. The removal action will be non-reversible. Therefore, it will provide long-term effectiveness and permanence.

Implementation of this alternative could have potential short-term adverse effects on site workers. Risks to site workers during removal of subsurface soil activities will be minimized by the development and adherence of a site-specific Health and Safety Plan (HASP). The HASP will also address the reduction of potential risks to Site workers during removal and stockpiling activities. Removal and handling of contaminated soils

could result in particulate emissions. Off-site transportation of subsurface soils will comply with U.S. DOT regulations to reduce potential exposure of the general public to soils being transported to the disposal facility.

Implementability

This alternative uses well-demonstrated and readily available technologies. It is anticipated that removal of subsurface soils can be completed safely. An excavation contractor using OSHA 1910.120 trained personnel will conduct soil removal activities. The use of off-site transportation and disposal for impacted soil is common. Soil samples for laboratory analytical procedures, as required by the disposal facility, will be required once per 250 tons of soil removed.

Removal of subsurface soils will not interfere with the ability to perform future actions at the Site. The removal, handling, and transportation of impacted soils will be performed using conventional construction equipment and technologies. If unsaturated, the soil will be loaded directly into waiting trucks for hauling and disposal at a secure solid waste handling facility. If saturated, soils will be temporarily stockpiled adjacent to the excavation and allowed to drain into the excavation. Groundwater would be contained within the limits of the excavation and not be permitted to flow off-site or to the river.

Site restoration activities will be consistent with the Town of Howland's site reuse plans including placement and grading of clean off-site fill, placement of riprap along the river bank, grass cover and landscaping for long-term erosion and sediment control (e.g., trees and shrubs).

Implementation of this alternative will require procurement of appropriate permits including Natural Resource Protection Act (NRPA) Permit for shoreland stabilization with anticipated involvement/approval by the US Army Corps of Engineers. In addition, the Maine Construction General Permit with the associated Erosion and Sediment Control Plan will be required.

Cost

Costs for this alternative consist of direct and indirect costs. In determining the cost of this option, the estimated quantity of soil to be removed for off-site disposal was based on the assessment of impacted soils as recorded in the test pit logs as presented in Appendix A of the Phase II ESA referenced in 1.3 above. Disposal of impacted soils is assumed to occur at the Juniper Ridge Landfill facility in
West Old Town, Maine. This alternative assumes that neither groundwater storage nor on/off-site treatment will be required.

The cost of this work is estimated at $4,500,000. Table 1 summarizes the cost estimate for this alternative. The placement of stone-filled gabion baskets in lieu of riprap along the riverbank would increase the cost by an estimated $60,000.

Table 1: Cost Estimate for Soil Removal

Work Items	Unit Price	Unit	Quantity	Estimated Cost
Mobilize/Demobilize	$5,000	Unit	3	$15,000
Erosion & Sediment Controls (Silt Fence)	$3	LF	1,000	$3,000
Clear & Grub (including stump removal - 50% Site)	$6,000	Acre	1.75	$10,500
Clearing (50 % Site)	$1,000	Acre	1.75	$1,750
Strip top 6 Inches & Remove Exposed Debris	$3	CY	3,200	$9,600
Excavate & Temporarily Stockpile Impacted Materials	$5	CY	25,700	$128,500
Characterization Sampling (one per 250 tons)	$1,000	Each	164	$164,000
Load Impacted Materials (truck measure)	$2	CY	32,125	$64,250
Haul and Dispose of Impacted Materials (Juniper Ridge)	$65	TN	41,120	$2,672,800
Furnish & Place Riprap	$40	CY	1,000	$40,000
Backfill w/ Granular Material w/in Groundwater Layer	$13	CY	9,800	$127,400
Backfill w/ Common Borrow above Groundwater Layer	$9	CY	29,200	$262,800
Topsoil	$16	CY	2,300	$36,800
Seed & Mulch	$1,500	Acre	2.5	$3,750
Trees	$300	EA	32	$9,600
Shrubs	$50	EA	200	$10,000
Subtotal				**$3,559,750**
Contingency	15%	% Total		$533,963
Fuel Surcharge	5%	% Total		$177,988
Health & Safety	1%	% Total		$35,598
Design and Bidding		LS		$15,000
Permitting		LS		$12,000
Oversight		LS		$110,000
Estimated Total				$4,444,298
	Say Estimated Total			**$4,500,000**

2.1.2 Option 2: Soil Barrier Layer Placement

Following clearing of the site and removal of surface debris, a 12-inch thick soil barrier layer would be placed over the surface of AOC-4 and AOC-5. The soil barrier layer will consist of a marker layer (i.e., caution tape, snow fence) placed directly over the grubbed area, then an eight (8) inch thick layer of common borrow. The common borrow will be overlain by a 4 inch thick layer of topsoil.

Effectiveness

Placement of a soil barrier layer will provide protection to human health and the environment by removing surficial waste debris and limiting contact with underlying impacted soils. Grading of the site to drain and subsequent placement of the barrier and vegetative layers will encourage non-erosive precipitation runoff and evapotranspiration; thus limiting the potential for leaching of contaminates from the soil to ground water. Although this alternative will protect the public from coming in contact with impacted soils and protect the river from additional contaminant input, the contaminated subsurface soils will remain on the Site. If excavation activities were to be conducted in this area of the Site in the future, work would be subject to the Groundwater and Soil Management Plan. An additional item necessary for this option would be a deed restriction or covenant identifying remaining areas of impacts and land use restrictions.

Implementation of this alternative could have potential adverse effects on site workers. Risks to site workers during removal of surface debris and topsoil stripping/screening/stockpiling will be minimized by the development and adherence of a site-specific HASP. Limited removal and handling of contaminated soils could result in particulate emissions. Off-site transportation of impacted soils will comply with U.S. DOT regulations to reduce potential exposure.

Implementability

This alternative uses well-demonstrated and readily available technologies. It is anticipated that the removal of surface debris and topsoil can be completed safely. Following clearing, grubbing and debris removal, the surface within the limit of waste will be graded to promote positive drainage, eliminating hummocks and low areas. The barrier layer will consist of 12 inches of soil material, with the stripped topsoil reused for the bottom six inches (maximum). The remainder of the barrier layer will be 6 inches (minimum) of a low permeability soil (e.g., clay or till). The barrier layer will be overlain by a four-inch thick layer of topsoil. Local (Maine-based) contractors are available to perform these activities.

The alternative assumes that removed debris and residuals from the topsoil screening will require off-site disposal. The use of off-site transportation and disposal for impacted soil is common. The removal, handling, and transportation of soils will be performed using conventional construction equipment and technologies.

Site restoration activities will be consistent with the Town of Howland's site reuse plans including placement and grading of clean off-site fill, placement of riprap along the river bank, grass cover and landscaping for long-term erosion and sediment control (e.g., trees and shrubs).

Implementation of this alternative will require procurement of appropriate permits in including a NRPA Permit for shoreland stabilization with anticipated involvement/approval by the US Army Corps of Engineers. In addition, the Maine Construction General Permit with the associated Erosion and Sediment Control Plan will be required.

Cost

Costs for this alternative consist of direct and indirect costs. As presented in Table 2, the estimated cost of this alternative is $510,000. The placement of stone-filled gabion baskets in lieu of riprap along the riverbank would increase the cost by an estimated $60,000.

Table 2: Cost Estimate for Soil Barrier Layer

Work Items	Unit Price	Unit	Estimated Quantity	Estimated Cost
Mobilize/Demobilize	$5,000	Unit	2	$10,000
Erosion & Sediment Controls (Silt Fence)	$3	LF	1000	$3,000
Clear & Grub (including stump removal - 50% Site)	$6,000	Acre	1.75	$10,500
Clearing (50 % Site)	$1,000	Acre	1.75	$1,750
Grade Surface and Remove Exposed Debris	$3	CY	3200	$9,600
Characterization Sampling (one per 250 tons)	$1,000	Each	3	$3,000
Load Impacted Materials (truck measure)	$2	CY	578	$1,156
Haul and Dispose of Impacted Materials (Juniper Ridge)	$65	TN	800	$52,000
Furnish & Place Riprap	$40	CY	1000	$40,000
Furnish and Place 8" Common Borrow Barrier Layer	$7	CY	5000	$35,000
Furnish and Place 4" Topsoil Barrier Layer	$16	CY	2300	$36,800
Seed & Mulch	$1,500	Acre	2.5	$3,750
Trees	$300	EA	32	$9,600
Shrubs	$50	EA	200	$10,000
Subtotal				**$226,156**
Contingency	15%	% Total		$33,923
Fuel Surcharge	5%	% Total		$11,308
Health & Safety	1%	% Total		$2,262
Design and Bidding				$15,000
Permitting		LS		$12,000
Oversight and CQA		LS		$70,000
Develop Institutional Controls & Survey		LS		$4,000
Total Estimated Cost				$374,649
		Say Estimated Total		**$400,000**

Option 2A: Focused Soil Removal In Conjunction With Soil Barrier Layer

In addition to remediation measures presented in Option 2 with the placement of a soil barrier layer, Option 2A would include the removal and disposal of impacted soils from within the former settling tank area (AOC-4). Impacted soil within this approximately 125-foot by 15-foot area and associated piping would be removed and transported off-site for disposal. The excavated area would be backfilled with clean fill. In addition, the former discharge pipe from the tannery building will need to be located and removed/sealed to limit infiltration of residual wastes into the clean area. The alternative will also address the location and removal of the former discharge pipe from the settling tank to the river outfall.

Effectiveness

Removal of subsurface soils in the settling tank area will meet remedial objectives; therefore, will provide protection to human health and the environment by removing residual material with concentrations of contaminants above remedial goals from AOC-4. Since the source is no longer on-site, it will provide long-term effectiveness and permanence in the area where it is performed. Removal of subsurface soils from the former Settling Tank Area will mitigate the potential for future direct exposure from this area; however, the potential for limited residual risk due to migration of impacts from the adjacent AOC-5 remains.

Implementation of this alternative could have potential adverse effects on site workers. Risks to site workers during removal of subsurface soil activities will be minimized by the development and adherence of a site-specific HASP. The HASP will also address the reduction of potential risks to Site workers during removal and stockpiling activities. Removal and handling of contaminated soils could result in particulate emissions. Off-site transportation of subsurface soils will comply with U.S. DOT regulations to reduce potential exposure.

This alternative eliminates the source of contamination from AOC-4 and incorporates a means for preventing future migration of impacts from the adjacent AOC-5 and to the river.

Implementability

This alternative uses well-demonstrated and readily available technologies. It is anticipated that removal of subsurface soils can be completed safely. The use of off-site transportation and disposal for impacted soil is common. The removal, handling, and transportation of soils will be performed using conventional construction equipment and technologies. Local (Maine-based) contractors are available to perform these activities.

Cost

In determining the cost of this option, some significant assumptions were made, such as the size of the settling tank and the extent of impacted soil associated with AOC-4. The

actual amount of impacted soil may vary. The cost of this work is estimated at $227,000. The cost also assumes that removal will be preformed in addition to, an in conjunction with, Option 2. If removal and disposal of impacted soil associated with AOC-4 were performed without implementing Option 2, the removal costs presented in Table 3 below would be expected to escalate.

Table 3: Cost Estimate for Focused Soil Removal in Former Settling Tank Area

Work Items	Unit Price	Unit	Estimated Quantity	Estimated Cost
Mobilize/Demobilize	$5,000	Unit	0.5	$2,500
Erosion & Sediment Controls (Silt Fence)	$3	LF	100	$300
Excavate & Temporarily Stockpile Impacted Materials	$5	CY	1200	$6,000
Characterization Sampling (one per 250 tons)	$1,000	Each	8	$8,000
Load Impacted Materials (truck measure)	$2	CY	1200	$2,400
Haul and Dispose of Impacted Materials (Juniper Ridge)	$65	TN	2000	$130,000
Backfill w/ Granular Material w/in Groundwater Layer	$13	CY	1200	$15,600
Backfill w/ Common Borrow above Groundwater Layer	$9	CY	300	$2,700
Subtotal				**$167,500**
Contingency	15%	% Total		$25,125
Fuel Surcharge	5%	% Total		$8,375
Health & Safety	1%	% Total		$1,675
Design				$2,500
Oversight and CQA		LS		$15,000
Total Estimated Cost				$220,175
		Say Estimated Total		**$225,000**

2.1.3 Option 3: No Action

No action would be taken and the Site would remain unchanged.

Effectiveness

Impacted soil is present at a depth of approximately two feet below ground surface within AOC-4, the potential for direct exposure associated with AOC-4 is limited. However, residual risk from the impacted soils and potentially the surface debris present across AOC-5 will remain at the Site. A No Action alternative will not provide long-term effectiveness and permanence.

Site activities will require conformance with requirements of the previously referenced *Groundwater and Soil Management Plan*. If excavation activities are to be conducted within AOC-4 and AOC-5 in the future, additional investigations and site specific work practices would be necessary to address the potential for encountering contaminated soils. Therefore, an additional item necessary for this option would be a deed restriction or covenant.

Implementability

The Town of Howland would maintain ownership of the Site and not allow redevelopment of the property in the area of known contamination. As required in the No Action Assurance Letter issued by MEDEP in April 2007 under the Voluntary Response Action Program (VRAP), the Town will erect a chain link fence around the "old dump area" (AOC-4 and AOC-5). This work is tentatively scheduled for April 2008. This alternative does not address the existing contamination known to be present on the Site, the possibility of contamination migrating to the river, or the Town of Howland's redevelopment goals for the Site. Therefore, the No Action Alternative is not consistent with remedial goals.

Cost

Cost to implement the No Action alternative is estimated at $5,000. This cost includes a development of institutional controls, the deed restriction and associated deed restriction survey. This cost does not include the installation of fencing and signage for the property.

2.2 Selection of Preferred Remedial Alternative for Impacted Soil

A summary of the proposed remedial alternatives is presented in Appendix A. Based upon the review of the alternatives discussed in Section 2.1, Summit has created the following matrix for the evaluated alternatives.

Table 4: Comparison of Alternatives

Option	Contamination Removed	Contamination Capped On-Site	Contamination Migration Mitigated	Deed Restriction Required for Future Excavation	Ranking of Costs (1 to 6) 1 = low 6=high
#1: Soil Removal Via Excavation	√		√		6
#2: Soil Barrier Layer		√	√	√	3
#2A: Focused Soil Removal in Conjunction w/ Soil Barrier Layer	**√ (Limited to AOC-4)**	√	√	√	4
No Action				√	1

All the options except "no action" meet the remedial objectives for the site while allowing the property to be reused, the "focused soil removal in conjunction with a soil barrier layer" is the most cost effective option for this site. This option removes the most highly contaminated soil (AOC-4). Contamination will remain onsite; however, these materials will be covered by a soil barrier layer, allowing reuse of the Site for public assess. In addition, removal of the highly contaminated soils from AOC-4, grading and the barrier layer will facilitate natural degradation of the remainder of contaminated soil on the site. Site grading and the soil barrier layer will limit infiltration of precipitation into the underlying waste, thus limited impacts to the adjacent Penobscot River.

3.0 SITE-WIDE ALTERNATIVES

3.1 VRAP Application

Liability limitations extended by the April 2007 No Action Assurance Letter issued by MEDEP for the Old Howland Tannery do not include the "old dump area" (AOC-4 and AOC-5). However, this letter does require fencing to be erected around this area. Following alternative selection, the Town of Howland should apply to the MEDEP's VRAP department to request extending the release of liability to AOC-4 and AOC-5. The VRAP program attempts to provide liability protection for owners, buyers and/or sellers of property that may contain environmental impacts. In conjunction with implementation of the selected remedial alternative, the VRAP will complete the necessary objectives as detailed throughout this FFS process.

4.0 SUMMARY OF REMEDIAL ALTERNATIVES

Table 5 summarizes the proposed remedial alternatives and associated costs for the area discussed above.

Table 5: Summary of Recommended Remedial Alternatives and Estimated Costs

Area	Proposed Remedial Alternative	Estimated Cost
Impacted Soil	Soil Barrier Layer Placement (AOC-4 and AOC-5)	$400,000
Impacted Soil	Focused Soil Removal (AOC-4)	$225,000
Site-Wide Alternatives	Deed Restrictions; Survey, VRAP Application	$5,000
	Total Estimated Cost	**$630,000**

Please feel free to contact either of us with questions concerning the remedial alternatives presented in this report.

Sincerely,

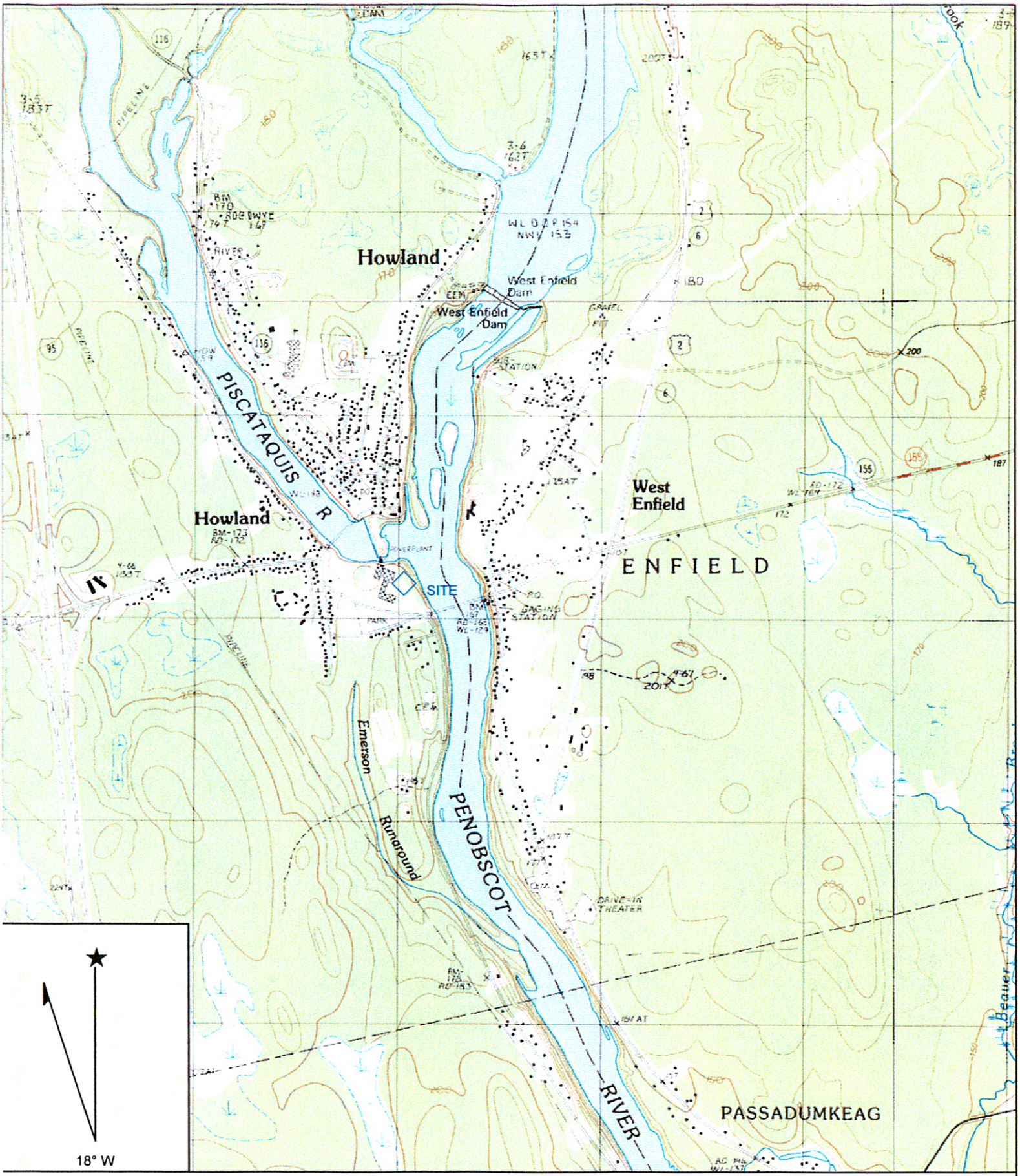
SUMMIT ENVIRONMENTAL CONSULTANTS, INC.

John K. Cressey
Project Scientist

James W. Bouquet, P.E.
Principal Engineer

CC: Ms. Glenna M. Armour, Town of Howland
Mr. Hank Andolsek, MEDEP

FIGURES



Name: HOWLAND
Date: 12/21/2007
Scale: 1 inch equals 2000 feet

Location: 045° 14' 14.0" N 068° 38' 56.6" W
Caption: FIGURE 1
SITE LOCUS MAP
OLD HOWLAND TANNERY

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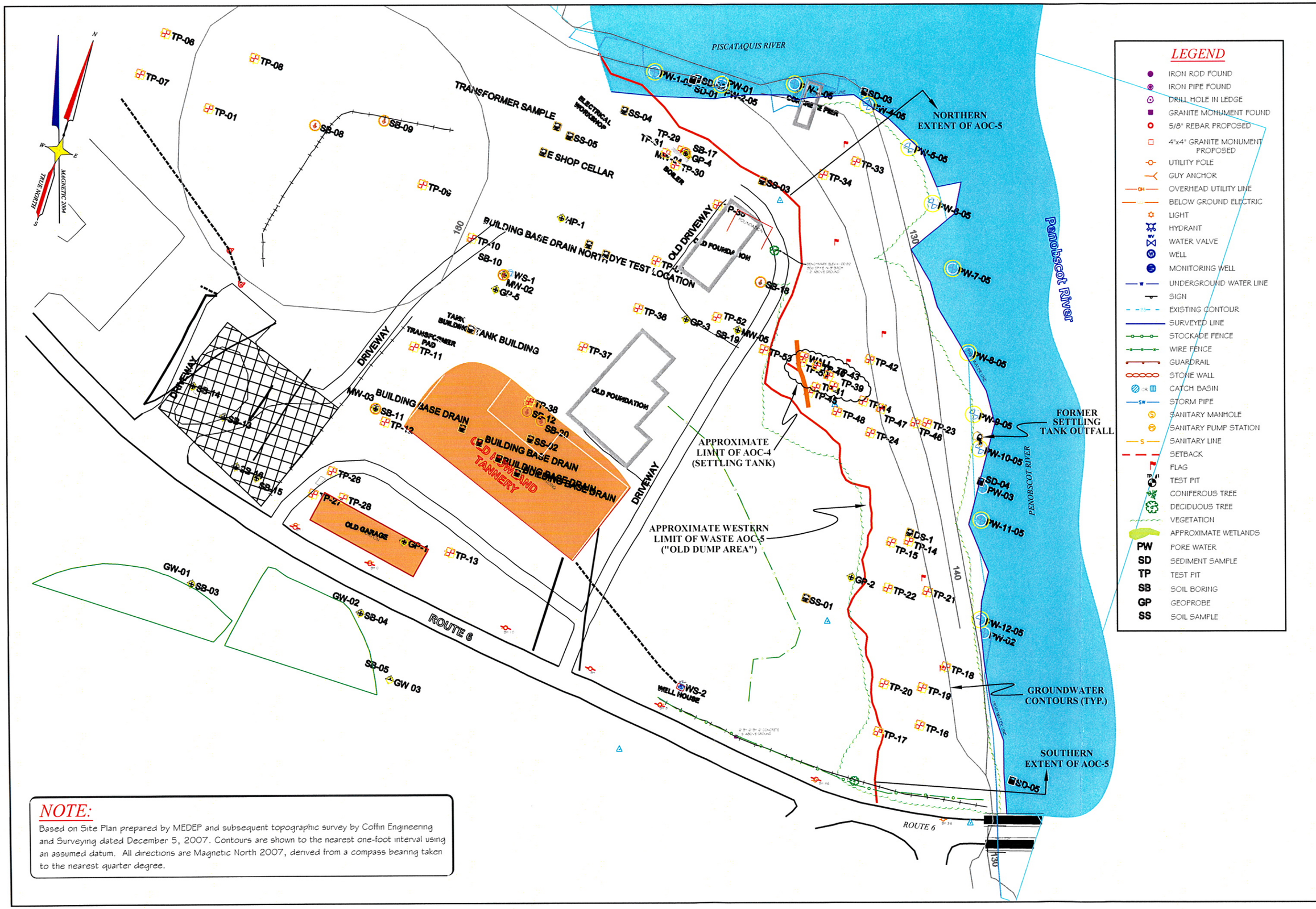

NOTE:

Based on Site Plan prepared by MEDEP and subsequent topographic survey by Coffin Engineering and Surveying dated December 5, 2007. Contours are shown to the nearest one-foot interval using an assumed datum. All directions are Magnetic North 2007, derived from a compass bearing taken to the nearest quarter degree.

640 MAIN STREET
LEWISTON, MAINE 04240I
(207) 795-6009
WWW.SUMMITENV.COM

SUMMIT ENVIRONMENTAL CONSULTANTS, INC.

DRAWN BY: B.N.C.	APPROVED BY: J.W.B.
DATE: 12/21/07	APPROXIMATE SCALE: NONE

TITLE: FEASIBILITY STUDY - LANDFILL
PROJECT: OLD HOWLAND TANNERY
CLIENT: MAINE DEP

JOB NUMBER: 16349

FIGURE: 2

APPENDIX A

SUMMARY OF REMEDIAL ALTERNATIVES

SUMMARY OF REMEDIAL ALTERNATIVES
Contaminated Soil (AOC-4 & AOC-5)
Old Howland Tannery, Howland, Maine

Remedial Alternative	Overall Protection of Human Health and the Environment	Technical Practicality	Implementability	Reduction of Toxicity, Mobility and Volume	Short Term Effectiveness	Practicability and Estimated Cost	Comments
1) Soil Removal Via Excavation (AOC 4 and AOC 5)	• Risks to human health by direct contact, inhalation (dust), and ingestion of contaminated media (AOC 5) are significantly reduced by removing contaminated media from the site. • Risks to the environment by stormwater runoff or groundwater leaching are reduced by removing contaminated media from the site (AOC 4 and AOC 5).	• Soil removal and off-site disposal utilize standard excavation and construction techniques and are therefore technically practical for the property.	• Removal of contaminated soil is an accepted form of remediation and has been proven to be effective in reducing contamination.	• As soil is removed the volume of contaminated soil is reduced; therefore, the toxicity and mobility of the contaminants is reduced.	• Removal of contaminated media is an effective and proven method of remediation.	• Impacted soil removal, and off-site disposal will cost approximately $4,500,000.	• Because the property is adjacent to the Penobscot and Piscataquis Rivers, erosion and sedimentation control will be necessary during removal activities. • This alternative was not selected primarily due to cost.
2) Soil Barrier Layer Installation and Focused Removal of AOC 4 soil	• Risks to human health by direct contact, inhalation (dust), and ingestion of contaminated media are significantly reduced by placing a soil barrier layer over the contaminated soil (AOC-5). • Risks to the environment by stormwater runoff or groundwater leaching are reduced by removing contaminated media from AOC 4 (Former Settling Tank Area).	• Soil barrier placement utilizes standard excavation and construction techniques; therefore, is technically practical for the site. • Soil removal and off-site disposal utilizes standard excavation and construction techniques and is therefore technically practical for AOC 4. • Deed restrictions and survey markers will mitigate unintended disturbance in the future.	• Placement of a soil barrier layer is easily implemented; however, institutional controls must be maintained and the owners of the site must abide by the restrictive covenant(s). • Removal of contaminated soil within AOC 4 is an accepted form of remediation and has been proven to be effective in reducing contamination.	• As contaminated soils are capped and seeded, the infiltration of surface water is minimized; therefore, the toxicity and mobility of the contaminants is reduced. • Capping does not necessarily reduce the overall toxicity or volume of the soil but reduces the direct contact and migration of contaminants. • As soil is removed the volume of contaminated soil is reduced; therefore, the toxicity and mobility of the contaminants is reduced.	• A soil barrier layer limits human contact, inhalation, and ingestion risks if the soil cap is not disturbed. • Removal of contaminated media is an effective and proven method of remediation.	• Placement of a soil barrier layer and removal of impacted soil within AOC 4 will cost approximately $730,000.	• Because the property is adjacent to the Penobscot and Picataquis Rivers, erosion and sedimentation control will be necessary during soil capping activities. • Because contaminated soil will remain onsite below the barrier layer in AOC 5, this alternative will require an Environmental Covenant to prohibit excavation/disturbance to protect the integrity of the barrier layer. • This alternative was primarily selected based on cost and effectiveness of implementability and practicality.
3) No Action	• No reduction in risks. • Potential risks to human health by direct contact, inhalation (dust), and ingestion will remain. • Stormwater runoff may introduce contaminated sediments to the Penobscot River and increase risks to the environment.	• Not applicable.	• Not applicable.	• No reduction in toxicity, mobility or volume of the contaminated media.	• Not applicable.	• No cost.	• This alternative does not reduce identified health or environmental risks and was not selected due to these reasons

Notes: Shaded area indicates selected remedial alternative.